Producer Tom Dowd · Bruce Springsteen On Tour · Unveiled: Euphonix Digital Console

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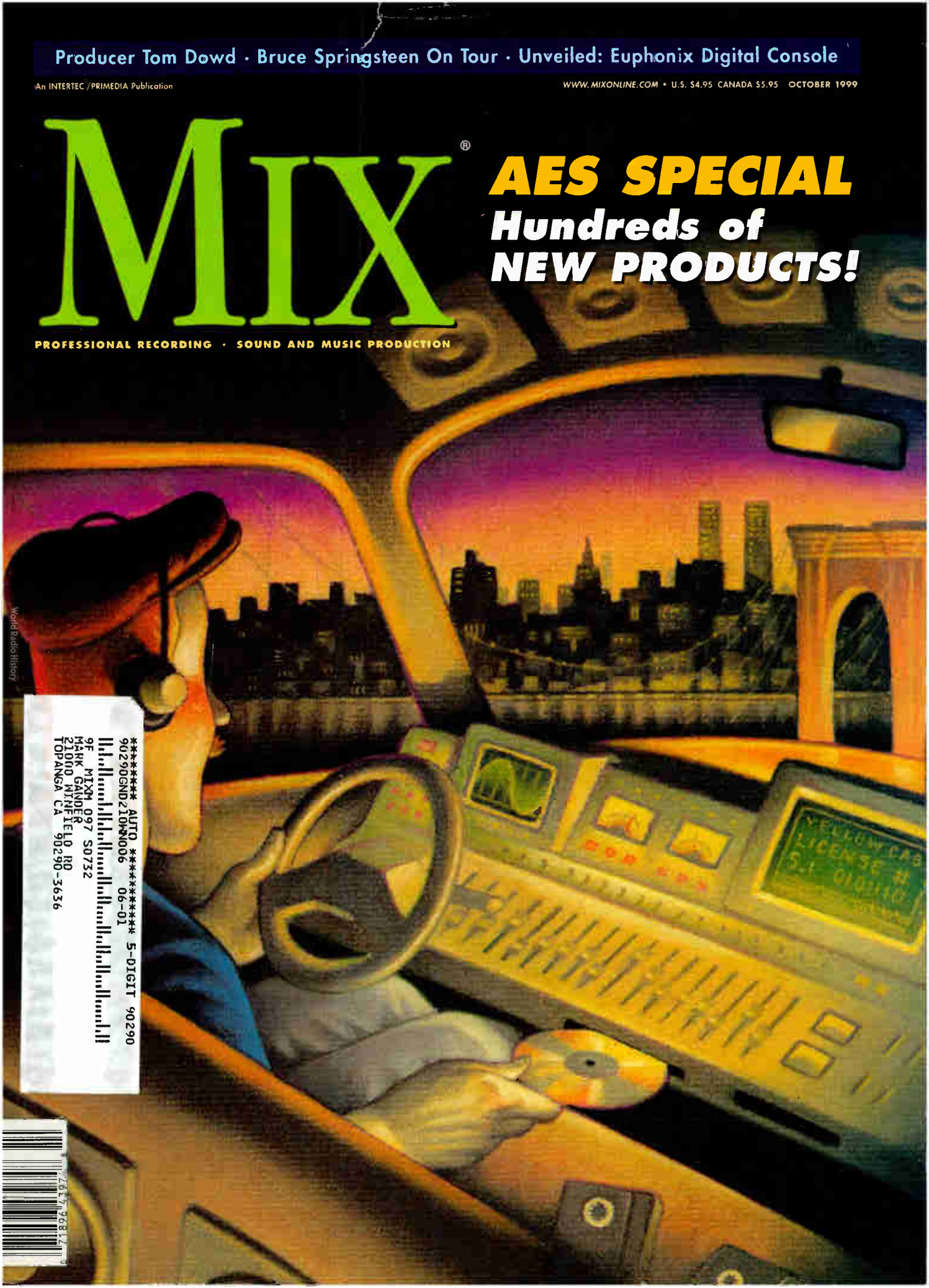

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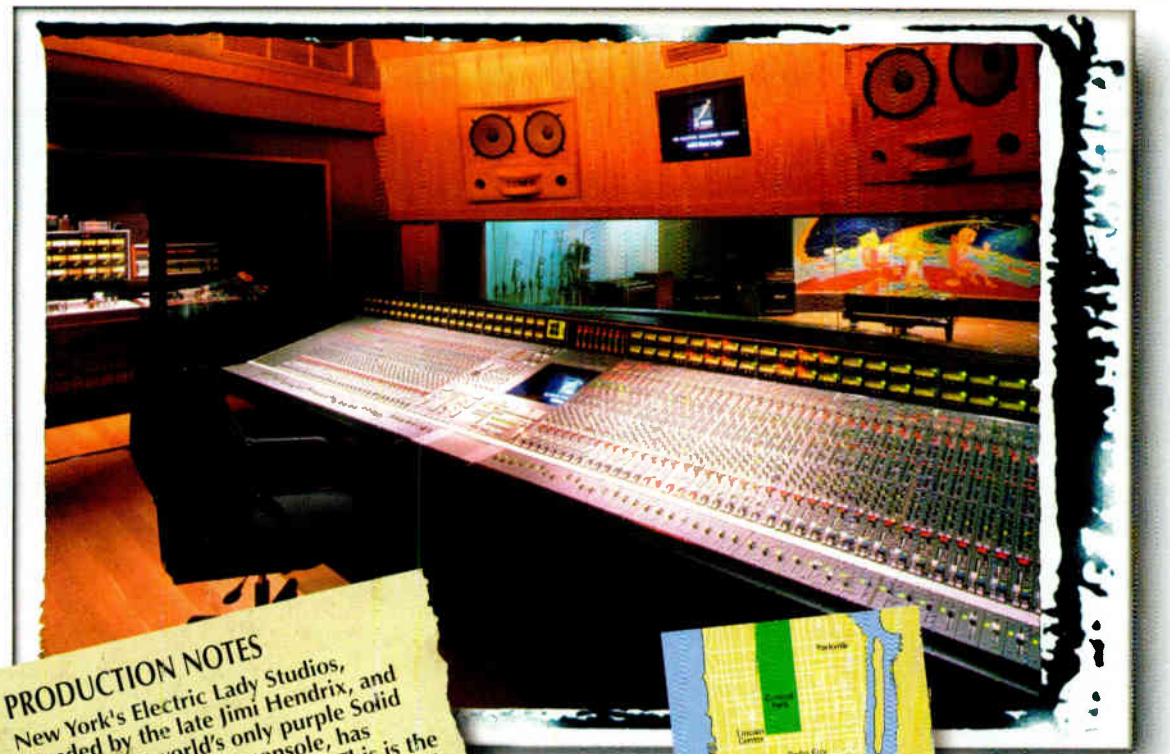
# Great Studios Of The World



## PRODUCTION NOTES

New York's Electric Lady Studios, founded by the late Jimi Hendrix, and home of the world's only purple Solid State Logic SL 9000 J console, has installed a second SSL 9000 J. This is the third Solid State Logic console at Electric Lady, making the facility all-SSL for the first time since its opening in 1970. President and studio manager Mary Campbell says, "The first SSL room was booked all the time and the requests to book another 9000 came as often as 30 times a week. We are very excited that Electric Lady has become an all-SSL facility."

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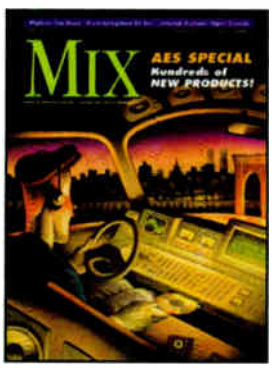
**On the Cover:** We were cruising across the Brooklyn Bridge on our way to the AES convention, and we needed to check some reference discs of our upcoming release. Fortunately, we were able to flag one of those 24/96 Yellow Cabs. Good thing we were in New York City, where all the taxis seem to have the latest gear. Thanks to illustrator Greg Tucker for capturing the magic moment.

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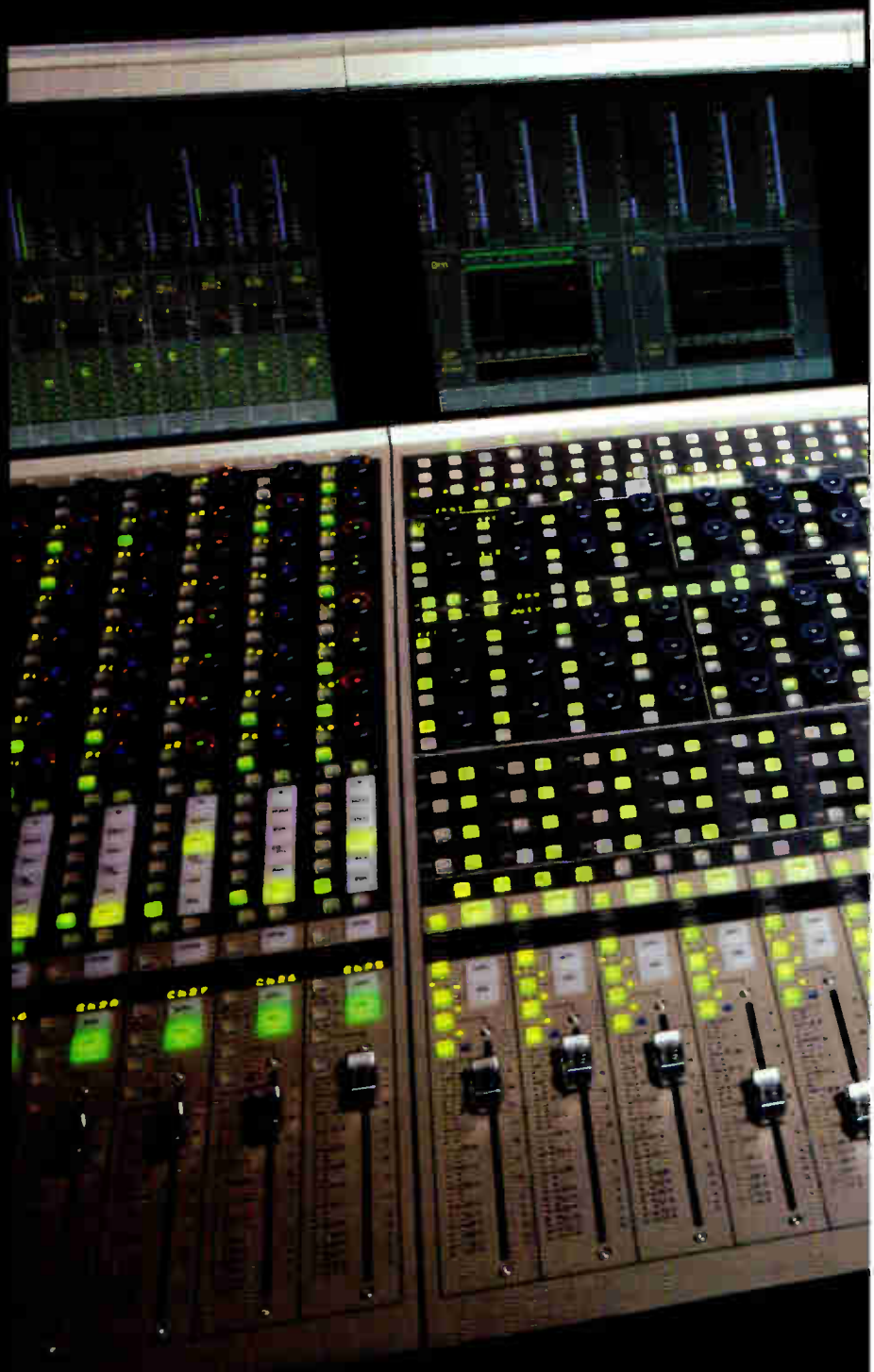

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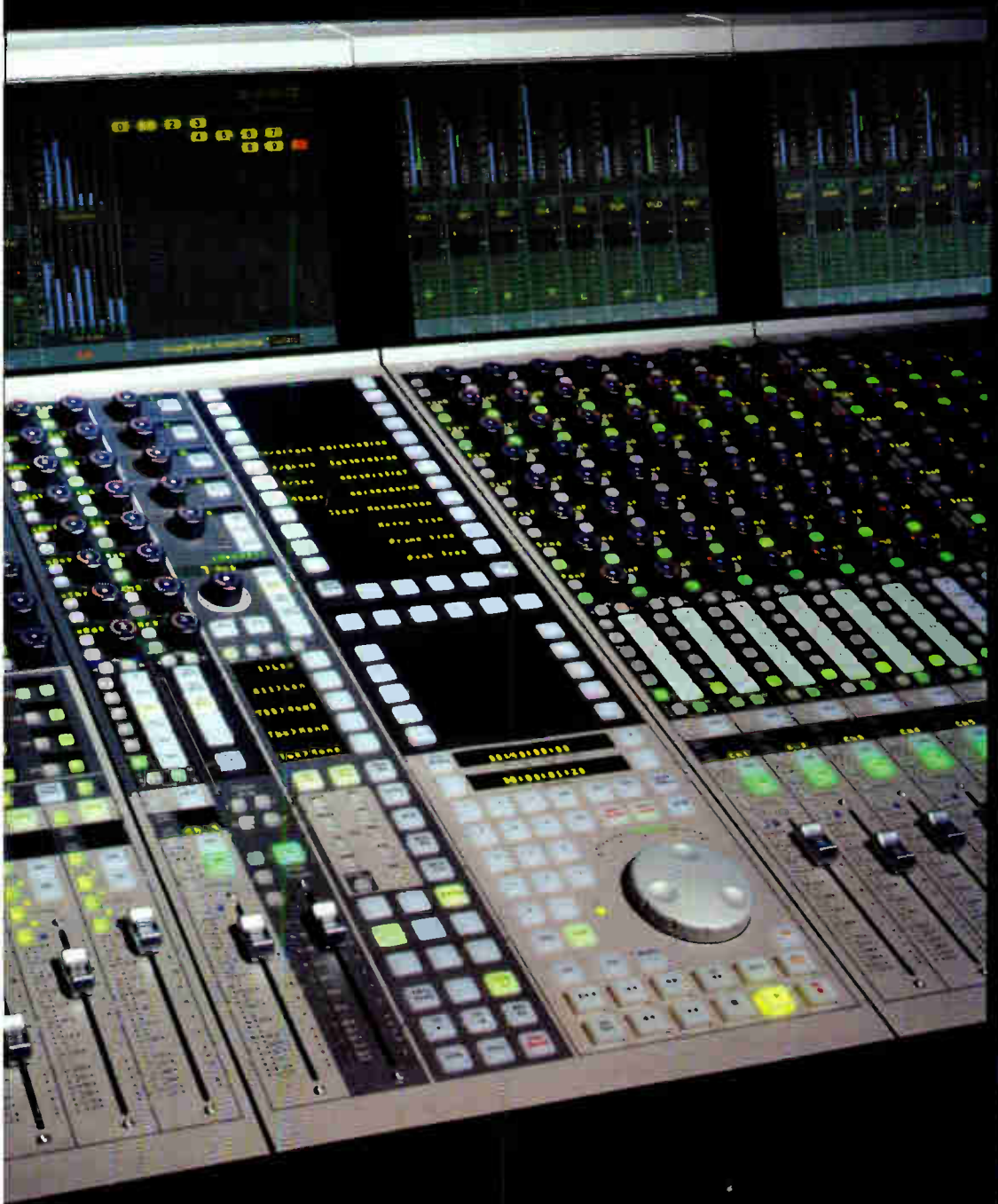

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# FROM THE EDITOR

## ADVANCING THE ART OF SOUND

These days, it's easy to become so caught up in technology that we sometimes lose our focus on the creative side of audio. Plug-in mania has replaced plugged-in maniacs. Flying Faders have replaced flying fingers. And mouse clicking has replaced tape flanging. Just in the nick of time, the 107th Audio Engineering Society convention rolls into New York from September 24-27 with the theme "Advancing the Art of Sound." The emphasis on the artistic aspects of the audio engineer seems both timely and commendable.

With the selection of legendary producer/musician Chet Atkins as the convention's keynote speaker, and the enormous variety of technical tours, papers and workshops being presented, this AES definitely has a hands-on and back-to-basics feel. Programs such as the popular Grammy® Professional Recording forum, the three-day AES Platinum Artists and Producers Series and presentations on mic techniques will no doubt appeal to veterans and rookies alike.

Then again, it is an AES show, so workshops on MP3, high-resolution audio, digital radio, audio exchange via networking, multichannel mixing and audio for the Internet will prove essential to anyone serious about audio. Checking out new technologies is always high on anyone's list, and with a record 400-plus exhibitors signed on at press time, the main hall at the Javitz center will be packed with the latest techno-toys.

High on anyone's "must-see" list will be the North American debuts of the Euphonix digital recording console, digital live boards from Yamaha and InnovaSON, Digidesign's low-cost Digi 001 workstation and standalone, disk-based multitracks from Mackie and Tascam. And the market for analog gear remains constant, with new recording consoles from Audient and Calrec, and the return of Universal Audio, reintroducing its classic LA-2A and 1176 tube compressors.

Rocket Network will no doubt generate interest with its client software (version 2.0), which allows for long-distance ADR, file transfer or session collaboration—without the expense of ISDN lines. Already supported by a growing number of software vendors—including Steinberg, Emagic and Sonic Foundry—RocketControl permits the creation of both public and private "virtual studios," where you can tweak signal processing, plug-in and mix parameters from a remote location, with parties on both sides hearing the changes instantaneously. Besides the obvious applications—session players tracking without leaving their homes, or cross-country playbacks for client approvals—the technology opens the way for such interesting new concepts as studios renting time on their outboard racks or acoustic chambers during off-hours. The possibilities seem endless…

Meanwhile, in keeping with the New York AES theme, Blair Jackson interviews this year's TEC Hall of Fame inductee, Tom Dowd; Maureen Droney talks with Mix Master Jimmy Douglass; Dan Daley looks at the state of New York recording; Mark Frink visits the Tony-Award winning musicals "Annie Get Your Gun" and "Fosse"; and Eric Rudolph discusses the Diana Krall project with producer Tommy LiPuma and drops in on the new Springsteen tour. There's plenty more, including late-breaking details on new technologies and, of course, our annual AES Products Guide, with the inside dirt on more than 400 of this year's hottest new products. And if you're in New York for AES, drop by booth 1358 and say hello.

See you there!

George Petersen

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# FEEDBACK

### PERCEPTION AND REALITY

I thought Paul Lehrman's article in the August *Mix* ("Making the Most of Audio 101—An Address to the Incoming Class of 2003") was very insightful.

What really prompted me to write was looking at the part of the article about bad pay, working conditions and so on from a different point of view. Although Paul is completely correct in his assessment, can we really just accept this as okay in our industry? I propose that it's a real problem. I think we are losing many talented engineers and producers who end up working as computer system administrators in order to earn a living and have families and do other human things. Those experienced people are then replaced by younger people and the cycle continues. It's possible that this reality has an effect on the perception (among clients, employers...) of our profession, which then reinforces the reality.

I don't know what can be done about it. I suppose it's driven by supply and demand economics, but maybe it's worth discussing.

*Jim Moses*
*Technical Director, Audio Engineer*
*Princeton University Music Dept.*

### YAMAHA CONVERSION CARD

There are a couple of errors in Phil De Lancie's article on digital consoles ["Digital Consoles: News in the Music Recording and Post-Production Markets," July 1999] that need correction:

The Yamaha MY4-AD 24-bit conversion card mentioned in the article is intended for use with the Yamaha 01V console, not the 02R/03D as stated; this card is not compatible with those consoles. In addition, the card has user-switchable input levels (-10, +4, +10), not in/out levels as stated in the article.

*Larry Italia*
*Yamaha Corp. of America*

### SINKING OUR TEETH INTO EXABYTE

I wish to know more about Exabyte and DDP (mentioned in one of your last articles on editing classical music). Could you explain what formats are being used by mastering and duplication houses, regarding Exabyte and DDP?

Also, is DDP a software program that writes Red Book (or compatible) to the Exabyte format? If so, is it proprietary to SADiE, or can other DAWs (like Pro Tools) write DDP to Exabyte?

*James Gruft*
*DocJHG@aol.com*

*Brady Sharp of SADiE tech support replies: An Exabyte is a backup tape drive that we [SADiE] support for backing up project files and audio files. A DDP is more or less a CD image written to an Exabyte tape. The Exabyte Eliant 820 is the current "standard" Exabyte that we recommend. An Exabyte Mammoth holds around three times the information, but takes different formula tapes that are not standard to DDPs. In other words, you can successfully write the image to a Mammoth drive, but most plants don't have Mammoth drives to read them.*

*In our view, for DDPs, the Eliant 820 would be your best choice. Most plants probably have 8505XL drives, which the Eliant is fully compatible with (with a transport twice as fast!). 112-meter Exabyte tapes would be the best delivery method, since you won't need all the space on the tape anyway, and on the off-chance that the plant only has an 8500 or 8505 (NON-XL), they wouldn't be able to read the longer 160m tapes.*

*As for your second question, DDP stands for Duplicate Disk Protocol, and it is a spec developed by Doug Carson and Associates to be used with their laser beam recorder software that is used to produce glass masters at plants. It has all of the instructions and pertinent information needed to record a CD glass master.*

*There is DDP 1.0 spec and DDP 2.0 spec, the main difference being that DDP 2.0 writes the Table of Contents at the end of the tape, so that if it is a multisession authoring project, the new session can be written at the end over the old TOC and a new TOC can be written at the end of that session, rather than having to rewrite the whole first session.*

*Both SADiE and Sonic Solutions can write their PQ information to the DDP 1.0 and 2.0 specs. [Neither Pro Tools nor Masterlist CD supports DDP.—Eds.] And yes, any DDP 1.0 or 2.0 tape can be read into any other platform as long as the platform supports the DDP spec.*

### GREGG ALLMAN'S KEYS

I read the recent very good article on the Allman Brothers in *Mix* by Russell Tice ["Tour Profile," July 1999] and wanted to correct a couple of errors regarding Gregg Allman's Hammond/ Leslie equipment. Gregg carries two Hammond B-3s and Leslie 122s that we (GOFF Professional) rebuilt and regularly maintain. We have supplied similar custom Hammond and Leslie equipment to many other pros, including Keith Emerson, Page McConnell (Phish), Sheryl Crow, Page and Plant, Lenny Kravitz, The Eagles, Hall & Oates, etc. Several hundred touring artists worldwide, covering virtually every style of music, regularly tour with our custom equipment.

*Al Goff*
*GOFF Professional*
*Newington, Conn.*

### LOW-COST LPS

I'm looking for info on laser-cut records.

Here's what I know: They come in two sizes: 9-inch and standard 12-inch. They are made out of a very thin, clear vinyl material. I understand that they can be made in very small quantities—less than 100—for comparatively little money, and they can be played on regular turntables.

Are you familiar with this? And can you tell me of any pressing plants that can make them? Any info you can provide would be very helpful, as I'm considering releasing a project on them.

*Douglas Bregger*
*Silver Springs, Md.*

*It sounds like you're describing Eva-Tone, which has been making Soundsheets for more than 30 years, and, yes, the company is still in business. Eva-Tone can be contacted at 800/EVA-TONE or visit the company on the Web at www.eva-tone.com.* —George Petersen

*Send Feedback to* Mix, *6400 Hollis St. #12, Emeryville, CA 94608; fax 510/653-5142; or e-mail mixeditorial@intertec.com.*



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# CURRENT

### DAVID ROBINSON NAMED PRESIDENT OF AUDIO ENGINEERING SOCIETY

Dolby Laboratories senior vice president of technology David Robinson begins his tenure as AES president following the 107th convention. Since Robinson joined the AES in 1967, he has participated in nearly every convention, served as co-chair of the 97th and 105th conventions and was VP International from 1995-1997.

Robinson is a graduate of Cambridge University with an M.A. in natural sciences (physics and electrical engineering). He joined Dolby Labs in 1966 and became chief engineer soon thereafter. In 1976 he was named VP of engineering and has been involved in all aspects of the design, manufacture and marketing of Dolby professional audio equipment and consumer licensing programs.

An author of several technical publications, Robinson is a member of the Institution of Electrical Engineers, a contributor to the Focal Encyclopedia of Film & TV Techniques and a member of SMPTE.

### ROBIN COXE-SKOLFIELD 1951-1999

Robin Coxe-Skolfield, a professor at Berklee College of Music and activist on behalf of women in audio, died of cancer on August 9.

Known professionally as Robin Coxe-Yeldham, she was a senior associate professor at Berklee for 17 years, after being asked by Wayne Wadhams to help develop and establish Berklee's Department of Music Production and Engineering in 1982. She was also a contributing editor to Wadhams' *Sound Advice* textbook.

In recognition of her efforts, Robin received Berklee's prestigious "Dean of Faculty" award in 1991. In 1995, the AES granted her a special "Granny" award, naming her as "The First Lady in Audio Education in America." Robin focused much of her energy encouraging women to pursue careers in audio, and founded the AES "Women in Audio 2000" project.

Robin's friendly manner, humor and zeal for instilling excellence in her students will not soon be forgotten. She is survived by her daughter, Dakota Coxe-Yeldham; second husband, Simaen Skolfield; mother, Georgia Mattson Coxe; father, Weld Coxe; sister, Sal Coxe; and brother, Donald Coxe.

Contributions can be made in Robin's honor to "Berklee Women in Audio Scholarship," Berklee College of Music, 1140 Boylston Street, Boston, MA 02215.

### SDMI SELECTS ARIS TECHNOLOGY FOR WATERMARKING

The Secure Digital Music Initiative (SDMI) selected an audio watermarking technology for use in the initial screening function to be included in the next generation of portable devices for digital music.

Chosen from a number of competing proposals, the ARIS technology was selected for robustness and listening quality—a number of experts listened to a diverse selection of music samples to ensure that the watermark was inaudible.

The ARIS watermarking technology will be used to indicate when the software used by Phase I portable devices should be upgraded to incorporate new Phase II technology, which will accept new music releases as well as filter out pirated copies of music.

The Phase I screen will be used to look for an embedded watermark, or data signal, in the music. This watermark will not be incorporated until the new Phase II technology is available. Until then, all music compatible with a particular device will be playable, regardless of whether the music is in a protected or unprotected format. When Phase II technology is ready, detection of the watermark will let consumers know that their software can be upgraded to play new music releases.

"With the ARIS system as part of the SDMI requirements, the music and recording industries will have a simple and efficient means to notify consumers that Phase II technology is available so they can upgrade their devices," said David Leibowitz, president of ARIS

—CONTINUED ON PAGE 16

### AHMET ERTEGUN, LES PAUL HEAD LINEUP OF TEC AWARDS PRESENTERS

The Mix Foundation for Excellence in Audio has announced the presenters for the 15th Annual Technical Excellence & Creativity Awards, to be held Saturday, September 25, at the Marriot Marquis in New York City.

Led by the ever-popular master of ceremonies Father Guido Sarducci, confirmed presenters as of press time include Nashville producer/engineer Chuck Ainlay, producer/engineer Jimmy Douglass, engineer Frank Filipetti, producer Phil Ramone, bass players David Santos and T.M. Stevens and producer Tony Visconti.

Ahmet Ertegun will present the Hall of Fame award to Tom Dowd, and Sting will receive the Les Paul Award from Les Paul.

For ticket information, call Karen Dunn at 925/939-6149. ■



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# INDUSTRY NOTES

Twenty-seven-year industry veteran **Piers Plaskitt** was appointed vice president of worldwide sales and marketing at **Euphonix Inc.** (Palo Alto, CA). Best known for helping to establish a worldwide presence for Solid State Logic, Plaskitt returned to the manufacturing side after a stint at New York Media Group, where he served as vice president. Plaskitt began his audio career at Apple Studios, and later served as an engineer and studio manager in Nashville and New York City before joining SSL in 1983....**Solid State Logic** (Oxford, UK) announced the appointment of **Micheal Descoteau** as VP Broadcast Sales, U.S. Eastern Region. Descoteau previously served as an audio equipment consultant for six Olympic Games and worked as a manufacturer representative and in regional management and distribution...**Bradley J. Tabor** was appointed national sales manager at **Hafler** (Tempe, AZ). Previously, Tabor worked as a product specialist for Groove Tubes/GT Electronics...**Jeff Laity** was named digital products manager at Burbank, CA-based **Amek**. Laity, who previously served as signal processing marketing manager at Alesis, will be responsible for the DMS Series and for new product specification...Northridge, CA-based **JBL Professional** promoted **Tom Weeber** to senior director of sales, United States. Weeber, a 25-year veteran of the pro audio industry, joined JBL in 1993 and was appointed director of sales in 1995. Prior to joining JBL he worked for Yamaha Corporation...Lou **Vlahos** was brought onboard as director of marketing communications at **EVI Audio** (Buchanan, MI). Vlahos has worked in the marketing, media relations and advertising fields for nearly 20 years. In related news, **Telex Communications Inc.** announced that all corporate functions within Buchanan, MI-based EVI Audio will be relocated to Telex Communications headquarters in Minneapolis during the year 2000. The company is planning to move to larger offices to accommodate the shift...**Otari Corporation** (Canoga Park, CA) relocated of its Southeast regional offices to Nashville's Music Row. The new offices are located at 1214 17th Ave. South and feature a state-of-the-art demonstration facility...Another Nashville émigré is **Spirit By Soundcraft**. The company has relocated its U.S. operations in Rocklin, CA, to the Harman Pro North America facility at 1449 Donelson Pike, Nashville, TN 37217; phone 615/360-0445...**Bobby Frasier** joined **Alesis** (Santa Monica, CA) as sales training manager, and **Brad Carr** was named Western sales manager...**THAT Corporation** (Milford, MA) tapped **James J. Girouard** as VP of manufacturing. Previously Girouard served as operations manager at NorthStar Technologies...Melbourne, Fla-based **Harris Corporation** has acquired **Pacific Research & Engineering Corporation**...**Event Electronics** (Santa Barbara, CA) announced two new additions: **David Miller** was hired as digital design engineer and **David Pollard** was brought onboard as analog circuit design engineer...**Graham-Patten Systems Inc.** has a new mailing address: 13366 Grass Valley Avenue, Grass Valley, CA 95945...San Francisco-based **Rocket Network** announced new roles for two members of its executive team. **Pam Miller** was named president and chief executive officer, and co-founder **Willy Henshall** will serve as chairman of the company's board of directors...**Soundtube** (Park City, Utah) hired **Jill Levine** as administrative assistant. The company also recently expanded its manufacturing facility to more than double its size...**Bag End** (Barrington, Il) announced that **Samuel K. MacDonald Inc.** represents the company in Delaware, Maryland, The District of Columbia, eastern Pennsylvania, southern New Jersey and Virginia. ■

*—FROM PAGE 12, CURRENT*

Technologies. If the consumer chooses not to upgrade, the device will continue to play all of the music it could play before, including music from existing CDs.

## UPCOMING SHOWS

The 141st SMPTE technical conference and exhibition is fast approaching. The show takes place November 19-22 at New York City's Marriott Marquis. Technical sessions include Audio Post Production for DTV, Format Conversion, Networking for Production and many more. To register online visit www.smpte.org.

The Broadcast India '99 Exhibition takes place October 21-23 at the World Trade Center, Mumbai, India. The exhibition is preceded by a one-day symposium on October 20. The show attracts over 160 local and international exhibitors, and attendance is expected to number over 16,000. Visit www.saicom.com/broadcastindia for more information.

Canadian Music Week (CMW2000) happens March 1-5 in Toronto. Held at the Westin Harbour Castle Convention Center and Hotel, the conference includes seminars, debates, keynote speakers and The Music Show, Canada's largest consumer and trade music expo. Visit www.cmw.net for registration info.

The National Association for Music Education will hold its 57th National Biennial Conference in Washington, D.C., March 8-11, 2000. Over 200 symposium workshops, clinics and performances will be devoted to a wide range of music education issues, including early childhood music education and new technologies. For more information, call 800/828-0229.

## CORRECTIONS

In the August issue we ran an incorrect phone number for Dunlavy Audio Labs. The correct number is 719/592-1159. We regret the error.

In our Audio Education Directory (August), the e-mail address for the Institute of Audio Research was misprinted. The correct address is iarny@aol.com. Also, the Audio Recording Technology Institute at 4525 Vineland Road, #201B, Orlando, FL (888/543-ARTI) was not included. Our apologies. ■

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# NEW FROM EVENT!

# PS5 Biamplified Direct Field Monitors

Not everyone has the space for full-size direct field monitors. But everyone has the need for monitors that provide pure, accurate, detailed sound—regardless of their size. And that's exactly what the PS5 delivers: wide range, non-fatiguing, reference monitoring in a compact, small profile format. Oh, yes, and sound that's just plain fun to listen to.

We get that sound through the use of custom drivers, crossover components, and amplifiers. That's right, amplifiers—one for the woofer, and one for the tweeter. Giving each driver its own amplifier means the amps can be far more efficient, since each one is dedicated to a specific frequency range.

The result: Increased dynamic range. Higher SPL. Greater transient response. Improved damping. Smoother phase response. Lower intermodulation distortion.

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"Cappella di San Gennaro" by Giacinto Gigante, Museo Nazionale di Capodimonte, Naples, Italy

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# AND 1,000 MORE EFFECTS BUILT TO THE HIGHEST STANDARD

Decades of research are embodied in our PCM algorithms and in our carefully crafted presets for real-world applications. A unique dual-DSP platform enables the PCM 81 to combine reverb with powerful, flexible effects and the PCM 91 to offer the highest quality reverberation available — making these processors an essential combination, whether you're working live or in a post-production environment.

**PCM 81** With 24-bit internal processing, a true-stereo signal path, balanced analog I/O, full AES/EBU and S/PDIF digital I/O, the ability to combine analog and digital inputs, extensive modulation capabilities and hundreds of installed presets, the PCM 81 offers more effects – and more control over them – than any processor in its class.

Each effect has an uncompromised stereo reverb with several voices of additional effects. A full complement of Pitch Shifters provides doubling, quadruple-tracking, chorus and pitch correction, and a unique set of spatial effects can be placed virtually anywhere between your loudspeakers – or beyond them. You can even locate effects dynamically, creating different spaces that change along with the music.

**PCM 91** The PCM 91 contains Lexicon's highest quality reverbs with a vast array of presets optimized for virtually any application and a wealth of programming capabilities for the sound designer. With full AES/ EBU and S/PDIF I/O and tools for ambience, post-processing, compression/ expansion, modulation and patching included with each algorithm, the PCM 91 gives you both power and versatility.

In addition to classic reverb effects like plates, halls, chambers and rooms, the PCM 91 includes superb dual and cascade-configured stereo reverbs and dynamic spatialization effects for 2-channel or surround applications.

As easy to operate as they are a joy to hear, the PCM 81 and PCM 91 have become classics in their own time – setting the standard for professional digital effects and reverberation. Experience the creative control and superlative sound of the PCM 81 and PCM 91 at your authorized Lexicon dealer and put our experience to work for you.

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# "ROCK OF AGES"

## A TRIP DOWN MEMORY LANE

Okay. I'll go first.

### THE AGE OF DISCOVERY

My first memory of music—not of the existence of music, but the first time I can remember an actual song that I enjoyed—was pretty silly. I used to sit in a huge chair while my father played "Transfusion," an ancient gag tune about a car wreck. I would sing along, and when the actual wreck part came, I would act it out—screaming and flailing about until I was out of the chair and on the floor—when the next verse (the transfusion itself) would take place, with clever lines like, "Slip me the juice, Bruce" and "Give me some blood, Bud." This intellectual process would then be repeated, and repeated, until my father would finally take the 45 back to its hiding place in boredom and despair. I was about 6.

Now I like Weird Al.

### THE DAWN OF FEAR

The next music I remember was a few years later, when I was living in one of those horrid two-story apartment complex clichés in some forgotten town in New Mexico, Arizona or maybe Texas, where every ground floor door opened directly onto the pool. My father had been replaced with a new alcoholic stepfather who was also an Air Force test pilot (back then you didn't have to be able to walk to fly). He used to come home every night and play some damned *Butterfield 8* album while he got even more drunk than he had managed to get on the base. Every night, same album. Lots of moody horns. Thirty-five minutes later, the album would end, and he would begin beating the hell out of the most convenient victim.

Now I can only listen to horns for about 25 minutes before I get real antsy, which means that I totally missed out on Chicago and Little Feat. But every time I jump into my pool I smile inside because I know Dick—his name really was Dick—won't follow me in, his recent death notwithstanding.

### THE ADVENT OF AWARENESS

Then I moved to Phoenix and became an apprentice motorhead wannabe. My Western Auto bicycle had balloons in its spokes, not the cheap, hokey playing cards the other kids had. While they merely crackled and flapped their pathetic way down the streets until their mothers called them in, I rumbled along with my groundshaking big-bore bike as late into the night as I wished. I learned that there were choices, alternatives. Playing cards lasted days, but sounded wimpy. Balloons lasted minutes, but sounded incredible—*much* more bottom end.

Just as the concept of choice was revealing itself to me, I got my first transistor radio—an AM gem from GE with no speaker, just a POS earphone. It would work for about four days on a battery, and it took me about seven days to earn enough for a new one (I had other overhead). This meant that for three days a week I went without music. Ah, but those other four days were unbelievable.

This was the first time in my life that I was in control of what music I heard. It only took a short time for me to discover two types of music that I felt were *mine*: instrumentals like "Red River Rock," "Ghost Riders In The Sky" and "Apache" and any Surf, with a capital "S."

These instrumentals called to me from the open desert, from American Indian reservations and purple mountains on the horizon. They called to me so strongly that I followed. I couldn't get very far on my bicycle, even with the balloons, but I went as far as I could, as often as I could. I slept out on the open desert—alone, at least two nights a week, for years.

Today when I hear "Apache," or the others, I see the Milky Way stretching from horizon to horizon, the black silhouettes of cactus and brush against a backdrop of multicolored stars and creamy, light clouds. And on those rare nights when I can look up and actually see stars, the music floats down over me like a warm desert breeze.

And the Surf music? I began to feel it even more than the instrumentals. I became an "Arizona Surfer," a desert kid who lives, breathes and sleeps surfing even though he has never even seen a beach. I saw the dream with a clarity that proved uncanny when I finally made it to California lifetimes later. I saw it through the music. Valhalla painted in detail by my little GE radio. Imagine, visions from music. And music that only existed between 1 and 4 kHz at that!

Now the only place I want to be in the world is Laguna Beach.

—CONTINUED ON PAGE 306

I saw the dream with a clarity that proved uncanny when I finally made it to California lifetimes later. I saw it through the music.

BY STEPHEN ST.CROIX



World Radio History

# Why use Digital Performer's effects automation?

MOTU

1. **Beat/tempo-based automation.**
Automate plug-in effects in perfect time with your music, from filter sweeps that land on downbeats to multitap delays that echo in triplet 8ths. Your beat-based effects always stay in rhythm, even through meter and tempo changes. You'll never waste time wondering things like, "how many milliseconds is a 16th note at 126 bpm, anyway?" Rhythmic effects are now just a few clicks away.

2. **Sample-accurate ramp automation.**
Digital Performer's plug-in automation isn't a kludge — it calculates true ramps in 32-bit floating point glory. And it's sample-accurate, not quantized to buffer boundaries, so you'll never hear weird artifacts or zipper noise in your audio. Instead, your moves will be as smooth as silk...

3. **Discrete events and stair-step automation.**
Some effect changes are discrete events, like changing an LFO from a sine wave to a square wave. Others require a stair-step approach. Digital Performer has all three: ramps, events and steps.

4. **Graphic editing.**
View all automation data directly on the audio waveform. Work fast with descriptive icons and convenient control points.

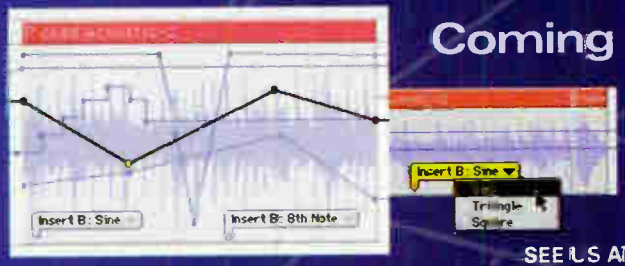
5. **View all automation data at one time.**
Clearly view all automation data at one time. Easily control the interaction of multiple FX parameters.

6. **Units of measurement that actually make sense.**
Digital Performer's automation data is always displayed in the correct unit (like milliseconds or percent), instead of arbitrary number ranges like other programs. (0-127, yipee!)

7. **Five advanced automation modes.**
Tweak your heart out with advanced automation modes like Touch, Latch, Overwrite, Trim Touch and Trim Latch. Want to bypass the effect? You can automate that, too.

8. **Mackie™ HUI™ support**
Tweak FX parameters in real time with real knobs. Record your moves. Feel the power.

*Digital Performer includes more than 50 automatable MIDI and audio plug-in effects.*

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# NEW MIDSIZE

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**12x2x1 · 4 XDR™ preamps** • 4 mono & 4 stereo chs. • 3-band EQ @ 12kHz, 2.5kHz & 80Hz ± 18dB/oct.@ 75Hz low cut filter • 2 aux sends per ch. • Constant Loudness pan controls • 2 aux returns • RCA tape inputs & outputs • 4 channel inserts • XLR & TRS balanced outputs • switchable +4/mic level output • ALT 3-4 stereo bus • Control Room matrix with Assign to Main Mix & separate outputs • Ctl Rm/Phone level control • 12-LED metering plus RUDE Solo light • Aux 1 Pre/Post • EFX to Monitor • sealed rotary controls • built-in power supply • steel chassis

NEW!

**1402-VLZ PRO**

**14x2x1 · 6 XDR™ preamps** • 60mm faders • 6 mono & 4 stereo chs. • 3-band EQ @ 12kHz, 2.5kHz & 80Hz ± 18dB/oct.@ 75Hz low cut • 2 aux sends per ch. • Constant Loudness pan controls • 2 aux returns • RCA tape inputs & outputs • 6 channel inserts • XLR & TRS balanced outputs • switchable +4/mic level output • ALT 3-4 stereo bus • Switchable AFL/PFL Solo • Control Room matrix with Assign to Main Mix & separate outputs • Ctl Rm/Phone level control • 12-LED metering plus Level Set LED & RUDE Solo light • Aux 1 Pre/Post • EFX to Monitor • sealed rotary controls • built-in power supply • steel chassis

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**1604-VLZ PRO**

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**BEST RF REJECTION OF ANY MIXER AVAILABLE**

No matter how much you spend on a microphone, its ultimate performance depends on how it interacts with the preamp it's plugged into. For years, high-end outboard mic preamps have provided fidelity that just hasn't been possible with the "stock" mic preamps built into mixing consoles. Until now. Introducing Xtended Dynamic Range discrete mic preamplifiers. The first in-mixer preamps that can effortlessly amplify the most subtle of sonic nuances, creating an aural panorama that's breathtakingly realistic, excitingly vivid and truly 3-dimensional in scope. The first built-in mic preamps that are impedance independent and designed with full protection from hot-patching and dead shorts. The first compact mixer with mic preamps that really do sound like $500 to $2000-per-channel esoteric preamps.

It took us two years and a quarter of a million dollars. And you probably won't believe it until you actually audition the XDR™ circuitry with a high quality condenser mic. But it's true: Verifiable with your ears. Verifiable on the lab bench.

XDR's Controlled Interface Input Impedance system accepts an enormous range of impedances without compromising frequency response. Whether the mic/cable load is 50 ohms, 150 ohms or 600 ohms, XDR™ mic preamp frequency response is down less than one tenth of a dB at 20Hz and 20kHz!

Many mixers that tout low E.I.N. specs can't deliver that

**10 XDR™ mic preamplifiers** with the finest sound quality (and specifications) ever on a mixer of any size. 0dB to 60dB gain range.

**10 mono mic inputs** (Chs. 1-10) and **8 mono line inputs** (Chs. 1-8), with +15dB to −45dB gain range.

**Inserts** on the first eight 1642-VLZ™PRO channels.

**75Hz low cut filters** on all 10 mic channels. Sharp 18dB/oct., phase accurate circuitry cuts infrasonics caused by room and stage rumble, wind noise, mic clunks, P-pops and other crud.

NEW!

**Sweepable midrange EQ** on Chs. 1-8. Incredibly wide 100Hz-8kHz sweep range lets you use this control as a second HF or LF control, too! Fixed shelving HF EQ at 12kHZ. Shelving LF at 80Hz.

**Overload** and ultra-sensitive, hyper-twitchy −20dB **Signal Present LEDs** on every channel.

**4 aux sends per channel.** 15dB of gain above Unity to drive wimpy effects processors. Auxes 1 & 2 are pre/post switchable; Auxes 3&4 are fixed post-fader.

**60mm logarithmic taper faders** with ultra-long-life resistance elements provide linear volume change from full-on to ∞.

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# LUXURY VLZ PRO MIXER!

## 10 XDR mic preamp channels and 4 stereo line channels, channel, sweepable mid EQ and more for just $999*

**4 stereo line inputs** (on Chs. 9-16) with +15dB to −45dB gain range.

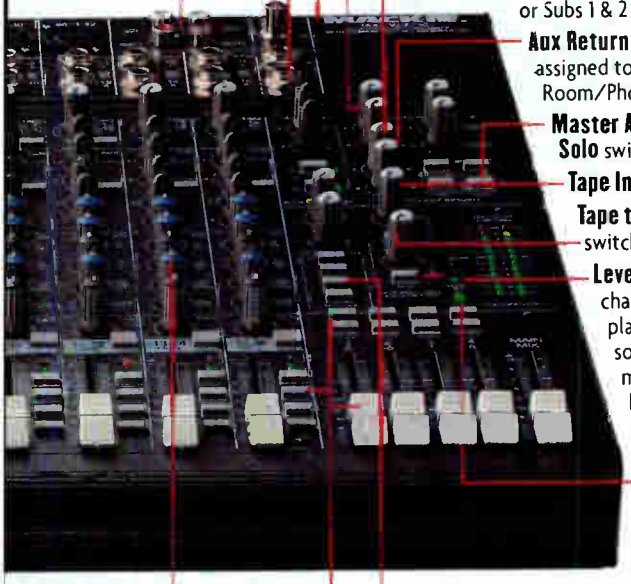
**Dual headphone ouputs.**

**RCA inputs and outputs** with tape input level control.

**On the back:** Direct outs (Chs. 1-8, bal./unbal.). TRS mono main output with level control, XLR stereo main outputs with recessed mic/+4 line level switch.

**Effects to Monitor** controls on Aux Returns 1 & 2 let you fold EFX back into stage monitor mixes independent of main PA.

**Aux Return 3** can be assigned to Main Mix or Subs 1 & 2 or 3 & 4.



**Aux Return 4** can be assigned to Control Room/Phones only.

**Master Aux Return Solo** switch.

**Tape Input Level.**

**Tape to Main Mix** switch.

**Level-set** LED + channel strip in-place stereo solo buttons make initial level setting fast and accurate.

**RUDE solo LED** in bright ecologially-correct green.

**4-band EQ** on Chs. 9-16. With 12kHz HF, 3K Hi-Mid, 800Hz Low-Mid and 80HZ LF.

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# THE PLAY'S THE THING—IF YOU CAN HEAR IT

## SOME THOUGHTS ON THEATER SOUND

ILLUSTRATION GEORGE SCHILL

The other night I went to the opening of a production of a very hip Broadway musical, put on by the students at the school where I teach. It was a "workshop" performance, since they didn't have the rights to do the whole show, but except for a few missing numbers, it was all tricked out to be the real thing. It represented a massive effort on the part of a lot of people, especially considering it was only going to run two nights.

The set was attractive and very clever, putting together industrial bits and pieces into a well-functioning environment, and it was particularly impressive considering the students built it (and everything else) with practically no money. The costumes were convincing. The lighting was professional (albeit the cues were sometimes a bit tardy, and the follow-spots a bit shaky). The band was hot, and the acting, singing and dancing ranged from "not too bad" to "truly great"—which, for a student performance in a school without a drama department, is definitely high praise. The sound, which was handled by one of my own students, sucked.

After the show I went over to the mixing board, and my student looked up at me sheepishly and said, "What are you doing tomorrow night?" I hope, for his sake, it was better the second night. If not, I wouldn't have blamed the cast for a moment if they'd thrown a rope around that well-functioning, cheaply made, post-industrial set and hanged him.

I don't really blame my poor student—he was in way over his head. I knew that was going to be the case much earlier in the semester when he first started describing to me how things were going to be set up. Although this was not an academic production, I had agreed to let him use the show as his "term project" in my advanced computer-audio seminar. Besides designing and running the house sound, he had also put many of the music tracks together using sequencers and a hard disk recording system;

BY PAUL D. LEHRMAN



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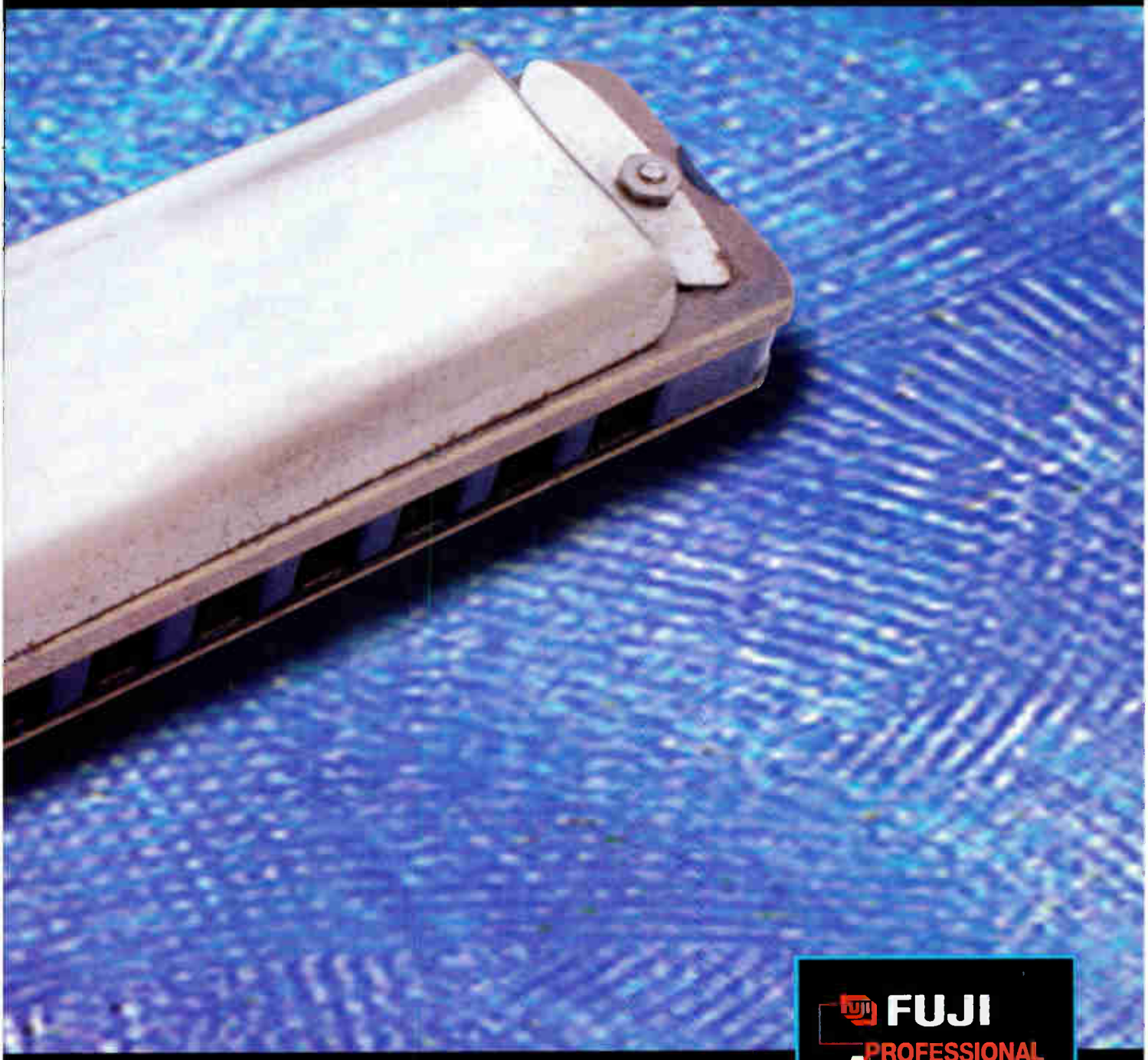

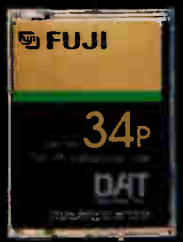


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worked out a clever (if, as he found out opening night, not entirely foolproof) way of synchronizing the singers, the recorded tracks and the live band; and procured, on a very limited budget, all the equipment.

And what equipment! Eight body mics, six spot mics, another half-dozen mics on the band, a huge FOH system, a separate monitor system with half a dozen wedges at all levels of the stage, and everything, including multiple feeds from the hard disk system, going through a 32-input board, and simultaneously being routed to a rack of three ADATs for recording. It was a complex, elegant, thoroughly competently designed and outfitted system that would have done justice to the touring company of many a Broadway show. But it still sucked.

"All right, Mr. Insider," I hear several of you readers snarling, "what the heck do you know about theater sound?" Well, I haven't done much theater recently, so I don't pretend to be an expert on the latest equipment or techniques, but I happen to know a lot about what works with audiences, since I was involved very heavily in live theater for a lot of years.

I started (indulge me here) in junior high school, acting in a bill of two short plays, in which I played the murderer—in both. Soon I was alternating between the stage and the pit band (and in at least one production, managed to handle both), and by college I was musically directing some pretty wonderful productions. I even got out of a course my senior year (one reason why I was so sympathetic to my student this year) when my faculty advisor allowed me to get academic credit for working on a production of *Marat/Sade* (the short version of the title of that landmark '60s musical starring a cast of 19th-century lunatics, which, in theatrical circles, is notorious for literally driving its actors crazy). Our production was no exception: one of the cast members, rumor had it, had to be hospitalized after they found him wandering around naked on an airport runway one night after the show. But the production was stunning, and the experience unforgettable. I was in love with the theater.

When I set out into the real world, in parallel with my various careers as journalist, session musician, and recording engineer and producer, I continued to work in the theater as a musical director. I did some off-Broadway in New York (including a production of *Marat/Sade* which was so bad it nearly had me running naked around JFK), some road shows (including some I wrote) in New Jersey and Ontario, and then when I migrated to Boston, productions of Brecht, Brel, Rodgers & Hammerstein, industrial shows and children's theater in venues ranging from musty downtown playhouses to suburban synagogues to sleazy hotel dinner theaters. Often I ran sound along with conducting or playing, since many of the productions were too small to afford a sound crew. One show I was particularly happy with, which got good reviews but mediocre audiences, was supposed to move into a prestigious small theater after the show that was in there finished its run. Unfortunately, the show that we were scheduled to come in after, a rather stupid "audience-participation comedy-murder-mystery," is still running—in fact, 18 years later, it's the longest-running show in the city's history.

**Perhaps it's simply because people are used to being deafened when they go out for an evening's entertainment—but the era of the unadorned human voice using script and song to present a story to a live audience is about over.**

Over the years, I moved away from live theater and took that energy into the world of film and television music, where you tend to get paid whether the audience shows up or not, and as an added bonus, you only have to deal with one screaming maniac at a time, not a whole cast of them. These days, the only time I appear on a theater stage is when I'm backing up my wife, a storyteller, in her more avant-garde endeavors.

The theater has changed radically since I left it, and like every other aspect of the arts, technology has become a major part of it. At any level—from second-grade talent shows to community productions of *Guys and Dolls* to the full-blown fog-and-helicopter, neon-roller-skating extravaganzas that line Broadway—it's almost impossible to find a musical theater production today that doesn't make use of an elaborate sound system. Perhaps it's because audiences are used to seeing things on movie screens and television, where the sound is perfectly balanced. Perhaps it's because shows now have to play bigger halls to make money, and the voices of mere human beings are not strong enough to fill those halls. Or perhaps it's simply because people are used to being deafened when they go out for an evening's entertainment—but the era of the unadorned human voice using script and song to present a story to a live audience is about over.

Like much of entertainment technology, theater sound (and understand I'm talking here about miking the actors, not playing recorded sound effects or background music) got off to a rocky start. A lot of early experiments, even at the professional level, were horrible, and there were fierce debates in the arts sections of newspapers everywhere about how the aural pollution we were all suddenly forced to deal with meant The Death of The Theatre. I recall a painful production in the mid-'70s, at the small Vivian Beaumont Theater in Lincoln Center, of *The Threepenny Opera*, one of my favorite shows of all time, and one of the hardest shows in the repertory to pull off (I know, I've tried more than once). The size of the theater didn't really require a sound system, but there it was. One of the leads, a television actor who probably had no Broadway musical experience, wore a body mic while the other cast members (including the late Raul Julia) sang into fixed mics or no mics at all. The difference in sound was, to put it mildly, grotesque. Even though he couldn't sing, the TV actor's voice overpowered everyone else's, and yet it had that distinct squashed quality you get when you bury a small-diaphragm mic underneath several layers of clothing.

But the bugs got ironed out, and especially as small mics got better and wireless mics became more practical, theater sound has steadily improved and become more dependable. Cos-



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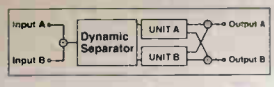


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tume designers and sound designers work closely (if not always happily) together to make sure that both visual and audio goals are being served. And although there are still plenty of examples of execrable use of the technology, when it's used well, sound reinforcement can contribute significantly to an audience's enjoyment of a production. For people with hearing impairments (which is pretty soon going to be a lot more of us than you think, but that's another column), a good sound mix through infrared-powered headphones can be a godsend.

(And speaking of which, once upon a time, I loved the idea of going to the theater with someone who had a hearing problem. My Aunt Peppy used to take me to Broadway shows when I was a kid, and because she was hard of hearing, she always got seats as close as possible to the stage. That was how I got to see Woody Allen in *Play It Again, Sam* from the third row. Thanks, Pep! But that's not a solution for everyone, especially with Broadway tickets now going for upwards of 100 bucks.)

This relationship between art and technology has, not surprisingly, become symbiotic. As sound systems have improved, productions have become much more dependent on the sound. Today many aspects of performance that used to cause directors to pull their hair out—like where an actor stands on stage relative to a mic, or how he or she can sing to an upstage character while at the same time facing the audience, or even whether the orchestra's too loud—are now of concern only to the sound mixer, and directors can get away with staging and blocking that wouldn't work at all without electronic assistance.

But as all of us who use technology for artistic purposes know, the best tools won't do you a damn bit of good if you don't use them right. As much as, and perhaps more than in any other audio/visual medium, theatrical performances depend on sound technicians' performances to be absolutely perfect, in terms of which buttons to push and when. If a TV weatherperson's first words are lost as he or she starts to talk about the next snowstorm, he or she can repeat them, or let the pictures tell the story. If a film actor's lines aren't picked up very well, the director can ask for another take, or schedule a looping session. Audiences will even forgive not being able to hear a lead singer in a band through a line or two. But in theater, if a singer opens his or her mouth and nothing comes out, it disrupts the story, stops the show, embarrasses the actor and breaks down the illusion of reality. There are no second chances or alternate takes in the theater.

Preparing mic usage, monitor feeds, the timing of cues, and how the cast and the band are going to hear each other at every juncture in the script is crucial. If the director wants to have the lead actor lean down over the audience in the middle of his big death scene, the monitor mixer has to make sure that monitor three inches from his head is turned off—or the lead actor won't make it to the next performance. When an actress finishes a big romantic scene and then goes off stage and starts yelling at the crew about her leading man's breath, the FOH operator had better turn her mic down—unless said operator doesn't want to make it to the next performance!

**In theater, if a singer opens his or her mouth and nothing comes out, it disrupts the story, stops the show, embarrasses the actor and breaks down the illusion of reality. There are no second chances or alternate takes in the theater.**

Which is one reason why automation is the theater-sound mixer's best friend. Trying to keep track of which mics are on when, and which feeds they need to go to, by using a chart or china-marking pencils (as my hapless student tried to do) is just loony. Almost as loony, however, is using an automation system without backup. Remember that production of *Marat/Sade* I mentioned earlier that was so glorious? Opening night was delayed an hour and a half, thanks to the school's brand-new, state-of-the-art, prototype (the term "Beta site" hadn't been coined yet) automated lighting board. That afternoon, the crew was running the board through its cues one last time, when suddenly the beast literally took off, ran through the whole show in the space of about two minutes, and then shut itself down, dumping its core memory (or whatever the heck it used) in the process. Three hundred some-odd cues, totally wiped from the face of the earth, now had to be re-entered by hand, from the scribbles the lighting designer had made on a clipboard. Why didn't they back the cues up? Because there was no medium available to do so—the disk drive for the system was an optional extra that cost several thousand dollars, and besides, it hadn't been manufactured yet. Today, a sound technician—equipped with a MIDI-compatible board that can easily communicate with and store its contents on a laptop, or that even has its own disk drive—has no such excuse.

And of course, every system has to be thoroughly tested and re-tested, and backup measures developed in case of failure. It's kind of fun to see a roadie run out on stage in the middle of the Rolling Stones' set and fiddle with some cable, but you can't get away with that in *Les Miz* or *The King and I*. In my student's production, a pair in a snake failed, and the cue/click tracks from the hard disk recorder, which were supposed to synchronize the band and the singers, disappeared from the stage monitors. So instead of a seamless start to every musical number, the audience was treated to the sound of the drummer (who still had the click in his headphones) counting off—as if life, as portrayed in this show, had suddenly become a recording session.

Despite the awful problems with the sound, I have to admit that this production was enjoyable—but it could have been so much better. It was certainly an educational experience for all. As in any classroom, you have those who are ahead and those who are behind, and in this classroom, the dancing, singing, playing and set design were way ahead. The dummy of the class, the sound system, was holding everybody back. The saying goes that you don't leave the theater singing the scenery, but if you can't hear the songs, you don't leave the theater singing anything. ■

*Paul D. Lehrman is back from an interesting month in France, but is way too busy to talk about it just yet.*



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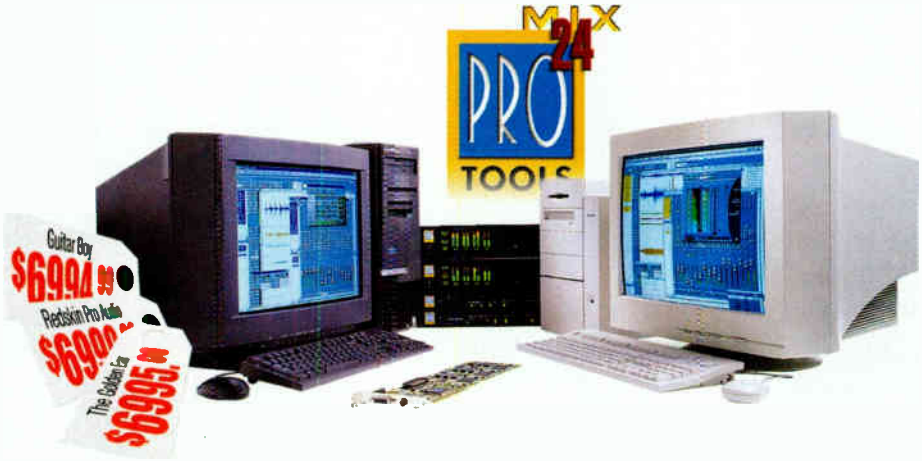
# Looking for the lowest price?



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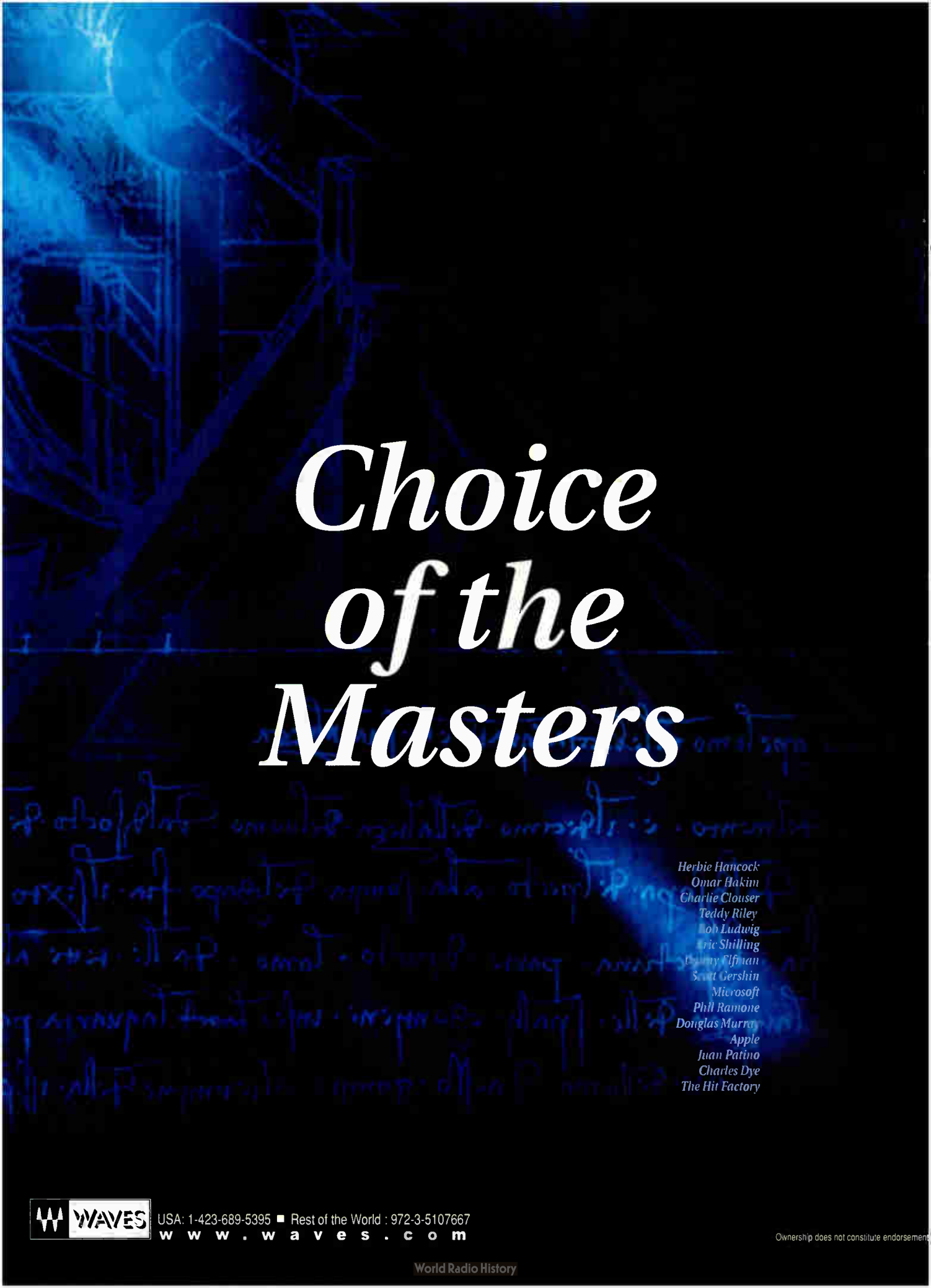


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In 1947 it was called predominantly "race," and it was either race or jazz.

***Were you a jazz fan?***

Yes. I [worked] with Dizzy Gillespie, Charlie Parker, Lester Young, Lennie Tristano, George Shearing, Max Roach, those people. That was 1947. There was a major strike in 1948 by the musicians. Put a big hole in things for a while. But that helped us. Then, by the end of '48, beginning of '49, they introduced tape machines to the studio, and that was another world. Then there was a new generation of engineers that could make wonderful tapes but couldn't put the damn tape on a record, [laughs] because of the parameters of forgiveness on the tape that don't exist when you transfer to disc.

*The early days at Atlantic Records—Ahmet Ertegun, Miriam Abramson and Jerry Wexler*

***Was there anything in your personality that you had to adjust to get used to working with musicians? Working with Dizzy Gillespie and working with Charlie Parker are probably two different things.***

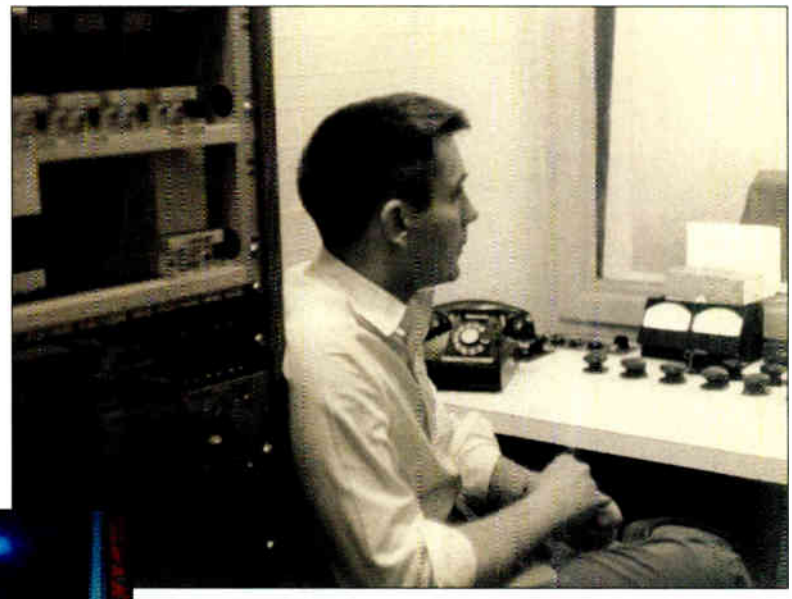
No. I'd listen to records. I used to do all kinds of things for fun. If I had the opportunity, I'd go down 52nd Street. I'd go down to the Village, I'd go up to the Apollo and watch the amateur hour. And all of a sudden I'm recording them, saying, "Hey, that's the guy who plays in so-and-so's band." Or, "I know who that is!" I was making contact with these people, one on one, for the first time.

***And how did they strike you as a breed?***

Boy, they were wild! [Laughs.]

***You didn't really have a military head, as they say, did you?***

Oh, no. Not at all. And the musicians knew nothing of my background.



*First 2-track mono console, 1956*

***The less said the better, probably.***

Yeah. Probably all they knew was, "Oh, the kid knows what he's doing. Hey, man, he put a microphone on the bass? He's crazy!"

***Had that not been done?***

See, we were using hand-me-down radio equipment. And I'd sit there and listen to a quintet or something like that, and I'd say, "Man, I need a mic by the piano—he's got a solo." And I'll put this mic up for the horns. And ask them to step in and out when they're going to solo. I got a bass player and a guitarist and a guitar—put a mic between the two of them and then adjust their dynamic. And all of a sudden, when we played back the first acetate, they're looking at each other and saying, "Hey man, that's cool." I got along famously with them. There was little or no dialog that was like, "Man, what the hell are you doing?" It was, "Hey, man, can you do this?" Or, "What's this you're doing?" And I'd say, "Well, I'm trying to do this or that." And they'd say, "Okay, fine."

***Were you aware of the accepted models of the day? Columbia had a certain way of recording. Rudy Van Gelder wasn't really happening then yet, right?***

No. There were several things that I finally became more sensitive to. Columbia and RCA were radio stations. And the people who were doing all the recording were generally the engineers who they would send out on the nighttime gigs, for the dance bands at so-and-so. So when it came to recording, those were the guys. And what do they do? They put up one microphone for the band and one microphone for the vocal. "All right, this is it."

***Hope for the best.***

And of course, don't let the meter go into the red. Well, by now I'm thinking there's no high sound that goes into the

*Dowd mastering an LP in 1956*

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red that's going to hurt the record. The only things I have to worry about are the low frequencies. So I'm taking advantage of what more I can get on the record that you're not accustomed to hearing by using more than one mic.

***And what are the prevalent mics of the day? This is pre-Neumann, obviously, right?***

No, we didn't have Neumann. We had [RCA] 44s, 77s, 639As; Western Electric 639s. Salt shakers. Turners. That was about the best variety you could have.

Studios were mostly abandoned radio-station rooms or something. [Laughs.]

***With that lovely acoustic tile.***

When I started working for Atlantic, I thought of all the different rooms I'd been in New York over the years, and I thought, "Man, that room sounds good, but that wall sucks." So all of a sudden, I'm adjusting my thinking. If I have an opportunity, I don't want to do this and that. Some things I love, and there are other things I hate, and there are some things that I realized I can just use a pinch of, not a teaspoonful.

***When you started working for Atlantic, did you know at the time that you'd be helping them build a studio?***

No. It was evolution. As Atlantic became more and more successful, some of the productions called for more space. The staff was no longer three or four people; it was like maybe ten or 11, and they were sitting on top of each other. Heretofore, it had been that the accountant would come by once a week and look at the books. It was a mom-and-pop operation. We used the office in the front of the building as the studio. As it got bigger, they went and found space at 157 West 57th Street. And they said, "All right, Dowd, you got the rest of the top floor. Make the studio bigger." Well, there was just so far that I could make the studio bigger because of the dimensions of the building in the first place. But I did make it bigger, and that's when I scrapped the little portable stuff we were using to make records and built a console. I started expanding a little bit. Once in a while we'd get into where we're going to use ten strings. Well, I couldn't record a full rhythm section and ten strings in that space if I stood on my head. So we'd be using Capitol, we'd be using this room, that room. Still going outside to record. And whenever we did that, I'd always have to go along to either operate the controls or, at one point, I got very sneaky. I would come along with our portable stereo machine and record whatever it was we were doing in stereo, while the studio they were using was doing it in mono.

***That's funny. What kind of machine were you using?***

I had a Magnacord and a pile of toys that went with it. I could put up six or eight microphones, and so forth. So I was recording a lot of things in 2-track. This is '52, '53, '54, '55, while the studios were still recording the mono.

***And how many inputs did that first console you built have?***

The first console that we made our records on at Atlantic from 1950 until 1954 had four inputs. That was the whole nine yards, four inputs. People used to say to me, "How the hell do you get that drum sound? What mic do you use?" And I'd say, "I don't have a mic within ten feet of the drums." I couldn't afford one—the damn drums were leaking in every place else I got. I didn't have any control on what the drums were doing. [Laughs.] But people would try and emulate that and they've got 17 mics on the drums!

**In the early '50s, there were people who, when you'd say, "Use tape, it's better," they'd say, "All right, yeah, but cut a disc at the same time." And you'd play the tape back, and they'd say, "That's great. Use the disc."**

***What was your title at Atlantic?***

I was the engineer. They'd call me up and say, "We need to master something," or, "We're going to record tomorrow. Can you make it?" And I'd show up in the office, and we'd move the desks back, and we'd record something.

***And we're on tape at this point, right?***

By now, Atlantic was on tape. We were on quarter-inch mono.

***Were there people who didn't like tape when it first came in, just like the way people haven't liked every other new medium?***

There were people who, when you'd say, "Use tape, it's better," they'd say, "All right, yeah, but cut a disc at the same time." And you'd play the tape back, and they'd say, "That's great. Use the disc." [Laughs.]

***It's like the people running analog and digital together.***

Precisely. You hit it on the head. But it was kind of a mixed-up situation. There were people who did have a preference for, or stuck to the tradition of disc—they didn't trust tape.

***Don't you feel, though, that even the earliest tape had more dynamic range than disc?***

Absolutely. I still have—and I use them in demos once in a while—two Tito Puente selections on tape that go back to 1951, 1952; mono, on-the-fly mix. And they're brilliant; they sing. I played them to somebody off of the original 7-1/2-inch [IPS] tape copy that I made when I made the album, and people say, "My God! When was that done?" Tape was incredible in those days.

***Do you think it's fair to say that what happened in those early days in New York could only have happened in New York? Partially because of the greater racial acceptance?***

Well, New York was a breeding ground, but there were two or three other places that were not as dynamic, but were also breeding grounds—Chicago, Los Angeles, San Francisco. They were hot.

Of course, Los Angeles, with the film industry overseeing things, it kind of gave a different slant to anything they did. As opposed to New York with all the Broadway shows and the Philharmonic and the opera—there was a different air about recording in New York than in California. Chicago had its own germ going, as did San Francisco.

***You were an early proponent of stereo, and you always seemed to be tracks ahead of your contemporaries, going to 8-track early...***

I remember when talk of 8-track first came up. I said, "It would be great if we had 8-track because then we could do this and that and that." And they said, "Find out how much it'll cost." So I got a quote on the phone, and they said, "Well, go ahead." So all of a sudden, here it is the fall of 1957 and I've ordered an 8-track machine. As I'm thinking about it, I realize I've got to now design or convert the damn console I have to fit 8-track. I couldn't order one if my life depended on it because nobody knew what the hell I was talking about!

***"Eight-track—you're insane, Dowd!"***



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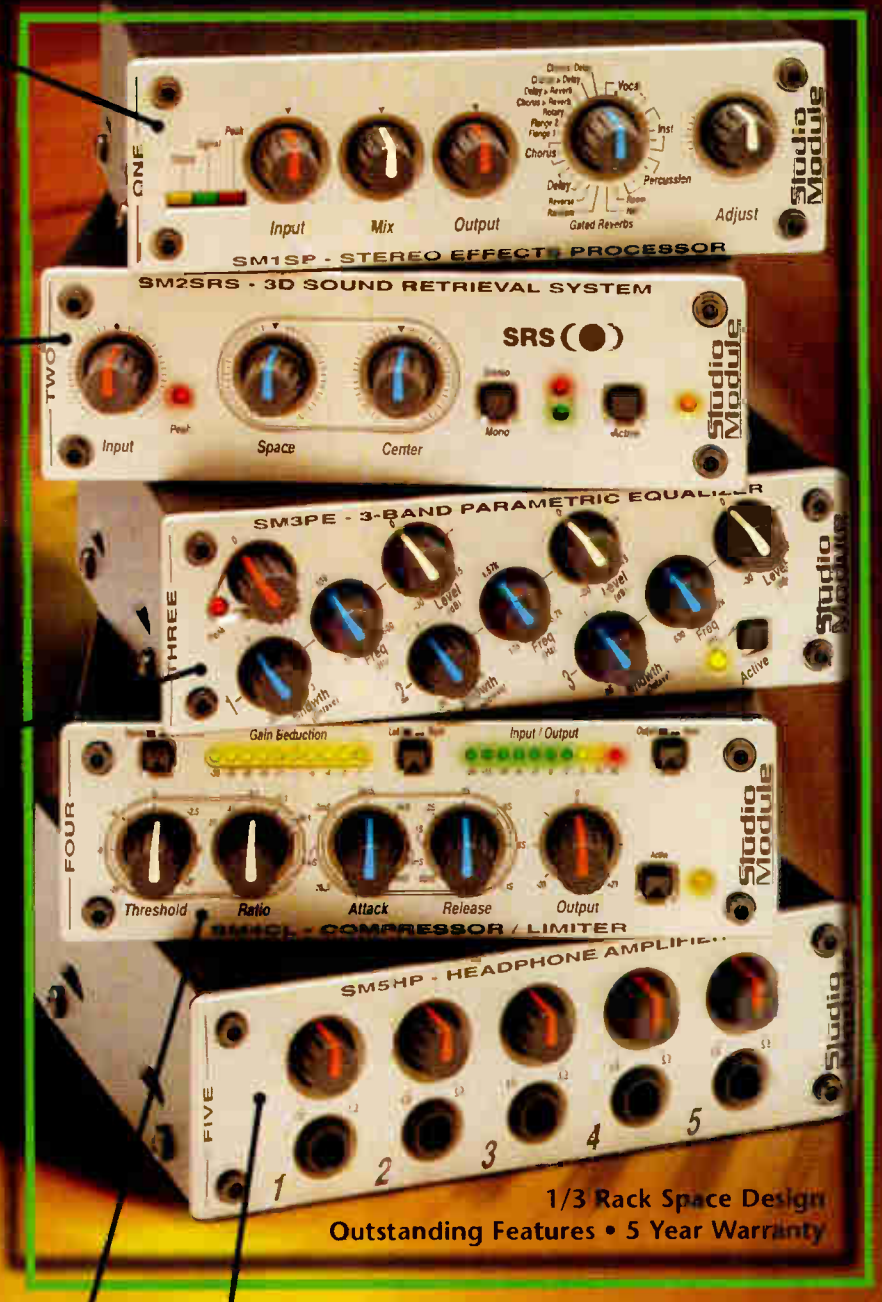


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So I have to build the damn console, or convert what I have. By January of '58 the new machine rolls in the door. A week later I have it connected and I'm recording. There is no difference in our approach to recording, except I'm storing it differently. When they ask for something to be played back, I'm still playing it back mono, mixing it on-the-fly. Or somebody says, "Hey, what was that?" and I'd stop the tape and back it up and listen to *one* instrument and everybody goes, "What's he doing?" It scared them all to death. [Laughs.]

***Did Atlantic have live chambers?***

I had a space in the back. Phil Ihele [another Atlantic engineer/tech] and I did everything scavenger style. There was a lot of remodeling going on in that area of Manhattan, and there were bathrooms and kitchens being remodeled once a week in the neighborhood. Phil and I would go around to the different places that were doing the refurbishing and, "You got any odd lots of tiles left over?" If they're throwing them in the garbage, and we're paying them five dollars a pound or something, and we're picking up discards and chips—we don't want them regular, that's the last thing we want. We want them all cracked and fractured and screwed up. Because of limitations in the building we were in, we built the most irregular-shaped space you could ever imagine. [Laughs.] And that served as an echo chamber. It was not a deep echo reverberance or anything ideal, but it was voluminous, and gave things a little rounder waveform than you'd be accustomed to hearing. We used that on some recordings sometimes, but everything was tempered because it was not ideal.

***In the late '50s, you're doing these different kinds of sessions, it seems like—you're doing jazz, you're doing The Coasters, you're doing pop like Bobby Darin...***

In February of '58, the first session on 8-track was Laverne Baker. Within the next 90 days, I went through Bobby Darin, The Coasters, Charlie Mingus, Ray Charles. I went through artists like you wouldn't believe. And everything turned out gold, thank God. Everything we touched was right. The 8-track contributed to it. I would be sitting in the studio doing The Coasters at 2 o'clock in the afternoon with Mike [Leiber] and Jerry [Stoller], and then Ahmet would call me up and say, "Ten o'clock tonight we're going to do Mingus." You want culture shock? Go from The Coasters to Charlie Mingus in ten hours.

***Obviously, you're going for a completely different thing, right?***

Yeah. This is like living in a submarine for a week and now you're walking on the moon. It's like, "Whoa, what am I doing here?"

***What was Mingus like? He had a reputation for being crusty, shall we say?***

Mingus was a taskmaster. And a very, very serious musician. Completely spiritual. They could rehearse this and that and so forth and so on, and there was never a dictated, "That's the part you've got to play." It was never that. A line might be notated but that's about it.

**I would be sitting in the studio doing The Coasters at 2 o'clock in the afternoon, and Ahmet would call me up and say, "Tonight we're going to do Mingus." You want culture shock? Go from The Coasters to Charlie Mingus in ten hours.**

Everything else was by the seat of the trousers. And while we were recording, he might walk from behind wherever I had him screened off around the room to get closer to some other musician to give him an elbow while he was playing, and shake his head "yes" or shake "no" or something. [Laughs.]

***Gotta communicate, I guess.***

Exactly. A lot of these people are playing with their heads down, engrossed in what they're doing. Charlie, if he couldn't get their attention, he'd just pick up the instrument and walk across the room while he's playing! And I'm going, "Oh, God."

***You're thinking, "Where's my follow mic?"***

Right. The sound is changing, and the drums are louder all of a sudden. There's nothing you can do. You're just like, "Okay, he did it. What am I going to do, go out and yell at him?"

***What did you do with Bobby Darin?***

I guess I did his first five or six singles. "Splish Splash," "Early in the Morning," "Clementine." I did "Mack the Knife."

***What was that session like?***

He'd been playing that in-between crowd—he was playing to that new teenage audience and to adults, too. It was a potpourri. He was playing Town and Country and clubs that a different audience was going to. And this was on the strength of records like "Dream Lover," "Queen of the Hop," "Splish Splash." One day he came in and said, "I want to make a big band album." And they look at him and say, "You're out of your..." Nobody's in his camp.

And he says, "Dammit, it's my money. I can do what I want. I'm going to make this." So they figure, all right, and then they do everything they can to aid and abet him. They're not going to have him throw his money away. It's their money, too! By God, we got into the first session, which was the strings and the horns. And we didn't have our own room going then, so I had to do it at Fulton on West 40th Street. Later it was called Coastal. I brought equipment into that studio, gave it to two or three other guys, set up the mics, and let them operate the stereo machine while I went back upstairs and did the initial mix recording because I knew the room like the palm of my hand. At the time, of course, they only released the mono version.

We did "Mack the Knife" and "La Mer" [Charles Trenet's French hit recorded in English as "Somewhere Beyond the Sea"]. That whole series of four songs, we did in three hours. We were going by union scale, and we were employing 35 or 40 men, and everything was three hours with two five-minute breaks on the hour. The whole damn album was cut in three sessions.

***I love that version of "La Mer."***

It's a wonderful version. I argued about which was the best take of "Mack the Knife." I always used to tease Ahmet and say we put out the wrong version. He says, "Yeah, but the wrong version sold 6 million records. Shut up!" [Laughs.]

***Did you know it was going to be a hit?***

Oh, man, your bones just kind of shook when we did the damn thing. Everything about it was incredible.

This was another world. When we started so many dates outside, and couldn't tote the 8-track machine every place we went, the next gun to the

—CONTINUED ON PAGE 329



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# MASTER PRESERVATION

## Practical Tips for Long-Lived Recordings

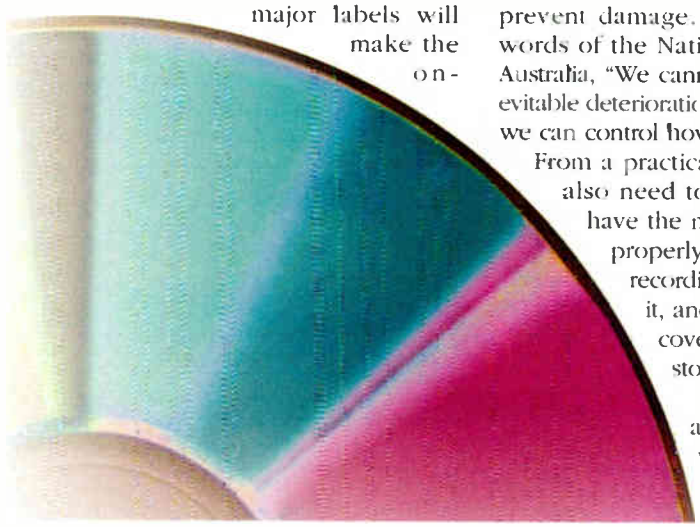
BY PHILIP DE LANCIE

The mainstream record industry traditionally has lived very much in the present, with the value of a recording only as high as its current chart position. But the crucial role that replacement sales played in the success of the CD proved that there is a significant market for music that is no longer on the charts (and perhaps never was). The reissue boom also brought to light how little attention had been paid to proper cataloging and preservation of recordings. It's because past recordings are now seen as a source of future profits—not because of nostalgia or a duty to preserve cultural heritage—that there is some hope that major labels will make the ongoing investment required to preserve yesterday's music for tomorrow's listeners.

Major labels, however, are only part of the story. Since the advent of "artist power" in the late '60s, control of more and more masters has either been retained by or reverted to individual artists and producers. No hard facts are available about the steps these individuals have taken to preserve the recordings in their care. But anyone who has been around the industry for a while would suspect that many (if not most) of these tapes are being stored in less than ideal conditions.

The basic purpose of preservation is to retard deterioration and/or to prevent damage. In the immortal words of the National Archives of Australia, "We cannot control the inevitable deterioration of materials, but we can control how fast it happens." From a practical standpoint, we also need to ensure that we have the means to find and properly identify a stored recording when we need it, and the ability to recover or play back the stored audio.

Most individuals—or the studios where they leave



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# MASTER PRESERVATION

their tapes—lack the resources of the major labels, and thus may not be in a position to follow through on an ideal preservation regime. Even so, many of the factors that influence the life span of a recording boil down to reasonable care and common sense, not just in storage but in how the materials are handled throughout the production process. So taking the time to raise your awareness of the issues involved, and acting on what you learn, can definitely improve the chances that your recordings will live long, productive lives.

**Taking the time to raise your awareness of the issues involved, and acting on what you learn, can definitely improve the chances that your recordings will live long, productive lives.**

For better or worse, long-term durability is rarely the guiding criteria when it comes to choosing a format. Factors such as sound, compatibility, convenience and cost tend to be the dominant priorities. But while the choice of formats has exploded—and their relative durability is hotly debated—it turns out that the enemies they face fall mostly into the same few categories. According to "The Care and Handling of Recorded Sound Materials" by Gilles St-Laurent of the National Library of Canada, "There are essentially only three concerns to consider when handling and storing sound recordings: that they be kept free of any foreign matter deposits; that they be kept free of any pressure that might cause deformations; and that they be stored in a stable, controlled environment." We'll look at each of these in turn, considering first the general case and then concerns related to specific formats.

## KEEP IT CLEAN

Keeping a tape free of "foreign matter deposits" sounds simple enough. But in the rush of daily work, professional practices sometimes fall by the wayside. So it's useful to remember that ignoring the basics—things like "wash your hands before handling tape," or "don't leave a tape out of the box when not in use"—can have detrimental consequences down the road. That's because surface deposits diminish the longevity of whatever medium you work in, be it analog or digital, tape or optical.

The biggest concerns in this regard are dust, smoke and grease. Your work area should be vacuumed regularly to combat dust build-up, and preferably be a smoke-free environment as well. Eating or drinking in the area in which recordings are handled should be discouraged. Tapes or discs should be returned to their closed boxes or cases when not in use. To avoid graphite dust, use markers rather than pencil for labeling the media and its box. If the box is dusty, vacuum it before opening, using a vacuum cleaner with a hose to minimize the risk of magnetic field exposure from the cleaner's motor. And, of course, the room's air conditioning system should be equipped with dust filtering equipment.

For formats using a cassette or cartridge (DAT, PCM-1630, ADAT, DA-88), there's no need for physical contact with the actual recording surface. But extra precautions must be taken with both CD-Rs and reel-to-reel tape because direct contact is common. Wash your hands before handling. CD-Rs obviously should be held by the edges only. Wearing lintless cotton gloves for editing reel-to-reel tapes, as some archival experts suggest, can be cumbersome, but it's wise, at a minimum, to clean the machine and edit block before starting, and to keep hands free of grease and sweat. Certain types of markers, such as the Staedtler Lumocolor Non-Permanent AV (available at art supply stores), are preferable to grease pencils. And whether your tape is in a cassette or reel-to-reel, it's critical to keep the entire tape path clean, reducing the possibility of build-up that can come off onto the tape.

For cleaning already "soiled" media, use a photographer's compressed air blower to eliminate simple dust. If you are dealing with grease—from fingerprints, for instance—St-Laurent says the Canadian Conservation Institute recommends the use of "nonionic, ethylene oxide condensates surfactants" for cleaning. One such cleaner, Tergitol, is available from New York City's Technical Library Service (212/465-8722). For CDs and CD-Rs, the Library of Congress recommends use of a very soft, clean lint-free cloth. The fog from your breath may be the only "cleaner" needed; otherwise use a commercially available CD cleaning solution, or a photographic lens cleaning solution and lens tissue. Wipe in a radial motion from the center to the edge (perpendicular to the tracks), rather than in a circular motion around the disc.

## KEEP IT IN SHAPE

For most media, the keys to avoiding physical deformation are pretty simple. Store tapes (reel-to-reel and in-cassette) and discs vertically, rather than stacked horizontally or leaned diagonally, and don't stack anything on top of the box or case.

For tapes, add to the above directives the absolute necessity of "packing off" before shipping or storing. Play the tape from beginning to end in one continuous pass, and store it "tails out." It may be a hassle to remember (and a drag to tie up a machine), but poor tape pack is the leading cause of tape deformation. The damage can take the form of bending or folding of edges that stick up beyond the main pack, of "scalloped" or wavy edges, or of tapes that shift up and down as they move across the head (wreaking havoc on phase coherence). These problems are common in older reel-to-reel tapes. But just because you can't see the tape pack as easily when the tape is enclosed in a cassette, there's no reason to believe that the same problems won't eventually affect poorly packed DATs, ADATs, etc.

Even tapes that are correctly packed



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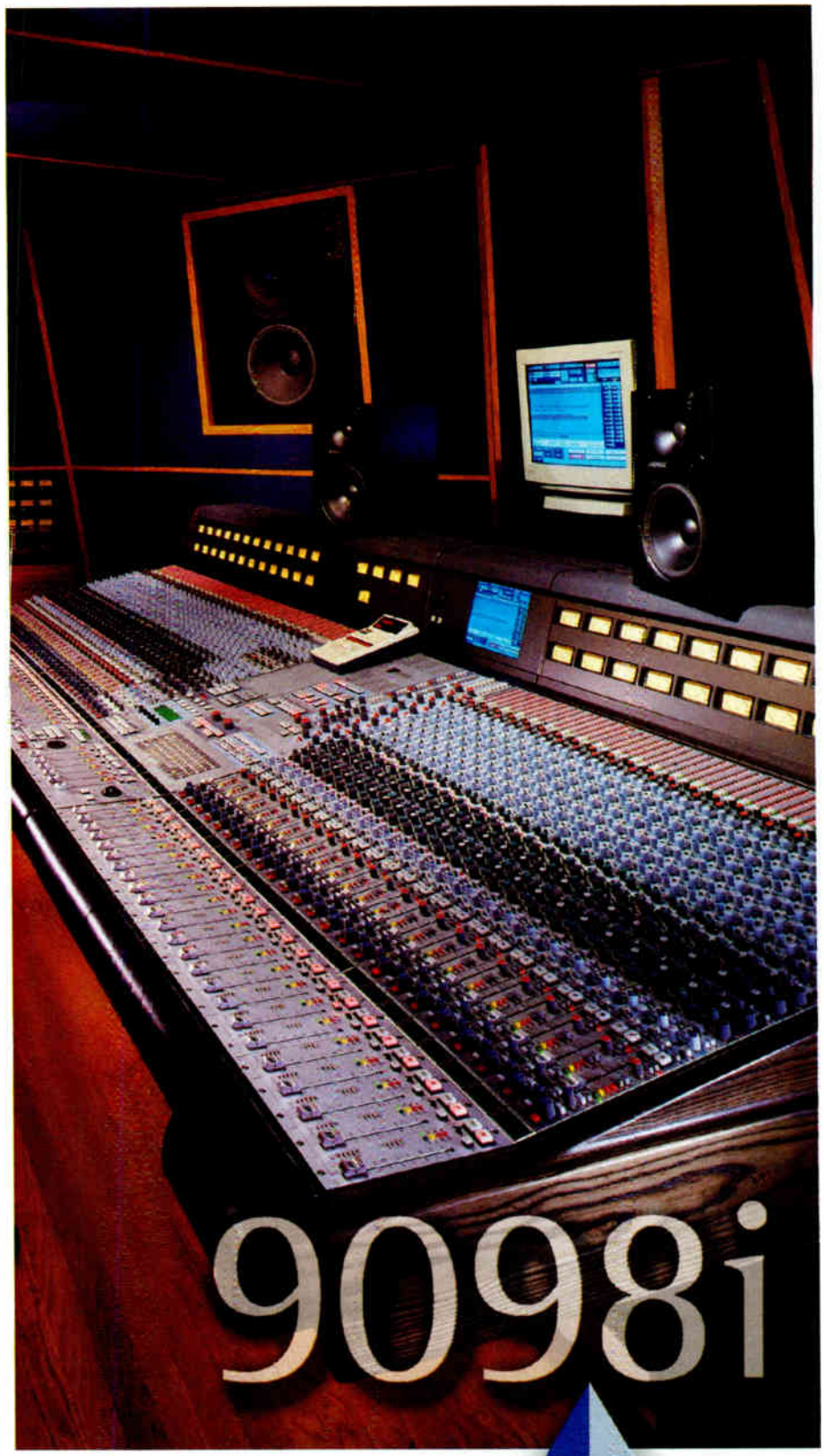


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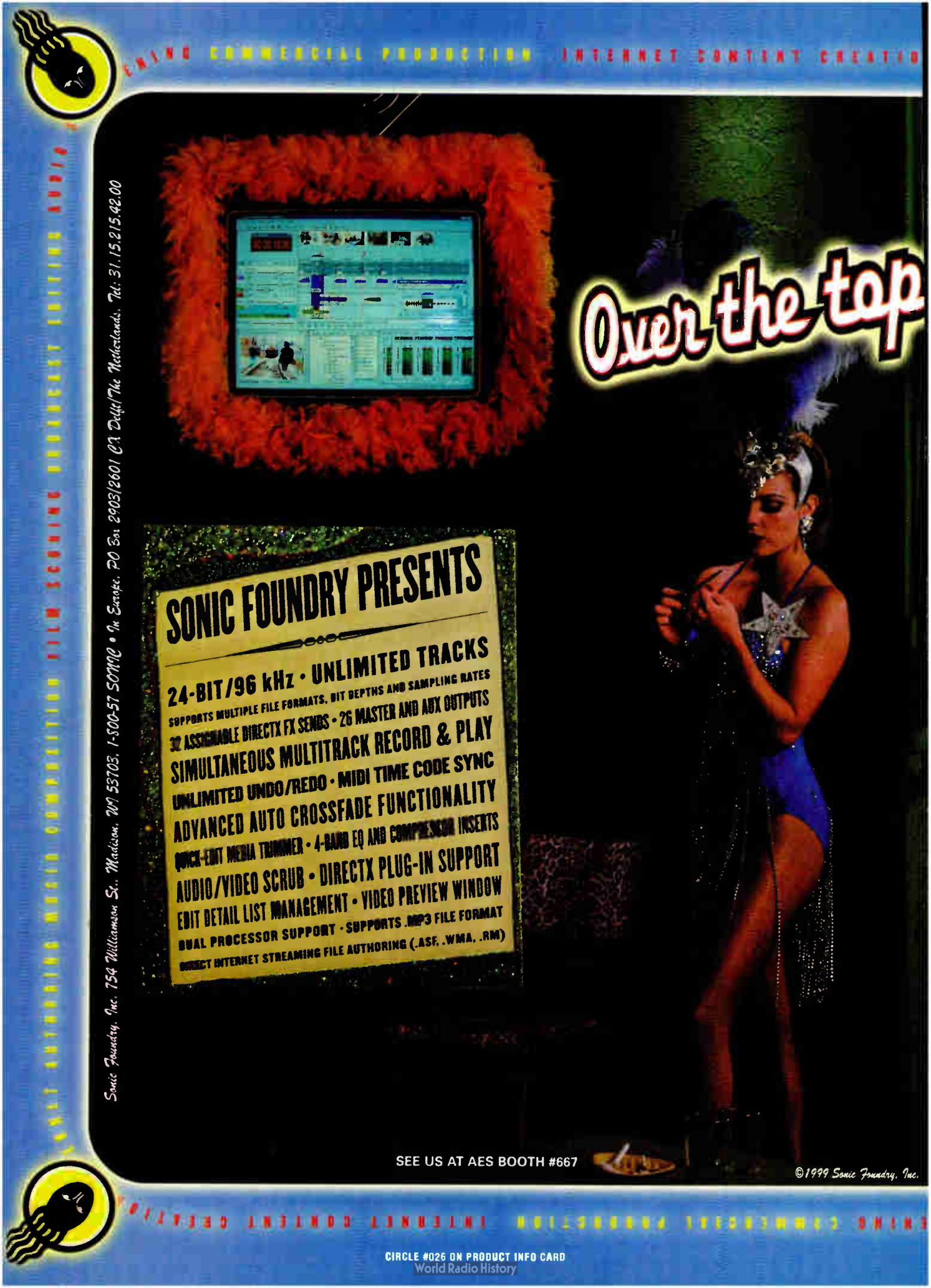

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when initially stored may lose their pack over time, particularly where temperature fluctuations cause expansion and contraction of base materials. The National Archives of Australia notes that "some tape manufacturers recommend the 'exercising' of tapes at least every three years to reduce the build up of stresses that cause problems such as 'wrinkling' or 'cinching.' Exercising, which involves winding the tape through its entire length at playback speed, may also reduce the danger of print-through. Tapes which are to be exercised in a different environment from that in which they are stored should first be allowed to acclimatize for 24 hours."

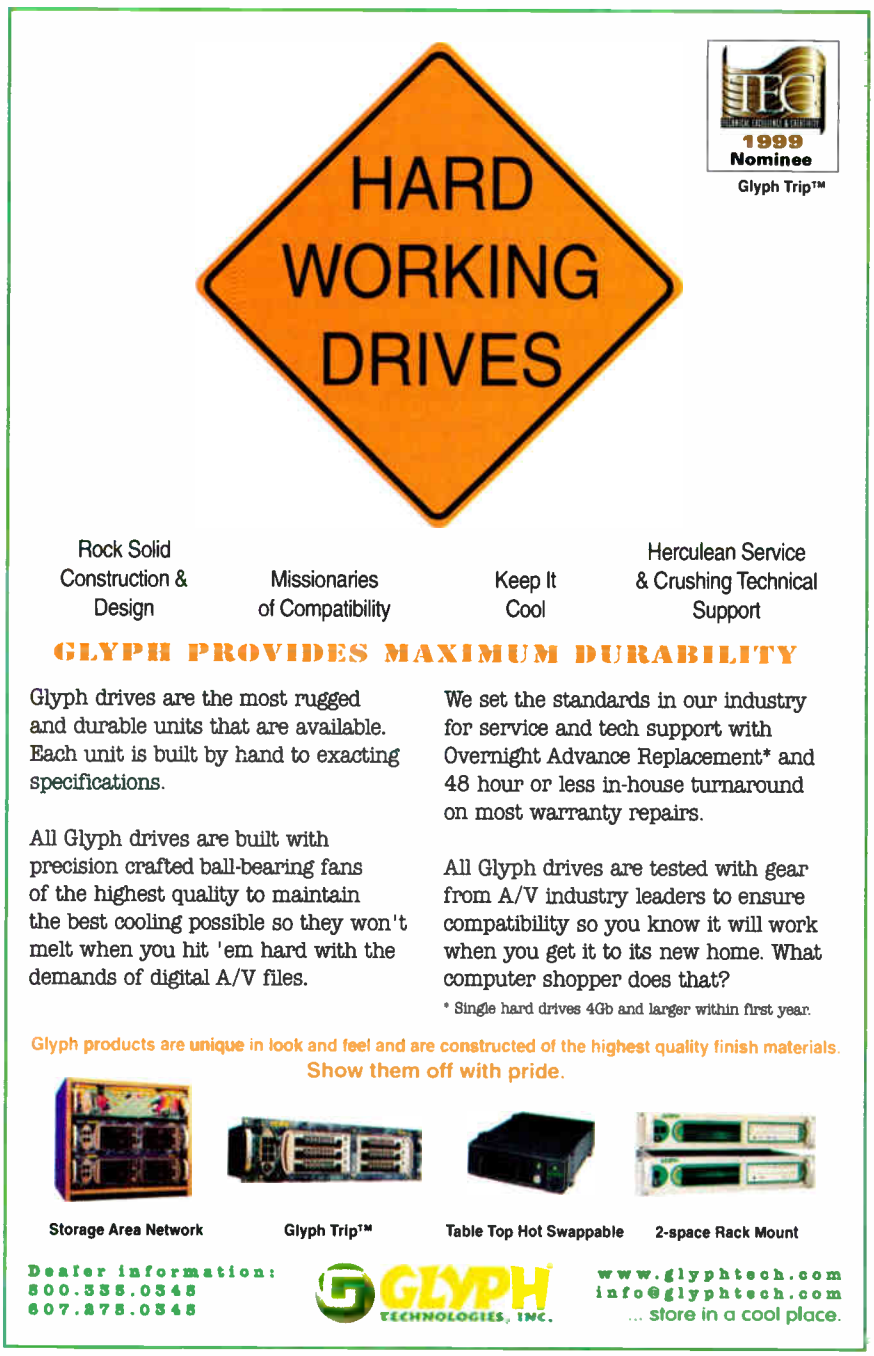
One of the biggest concerns when dealing with reel-to-reel tapes that haven't been played in some time is the condition of edits. In some cases, the editing tape adhesive dries out over time, and the edits simply fall apart as the tape is rewound or played, frequently where the tape is edited to paper leader. Worse yet is the problem of editing tape adhesive that has turned gooey. It can stick to the oxide of the adjacent layer of tape, in some cases pulling it off of the binder. It can also seep through the crack of the edit and stick the edited segment to the back of the next layer, creating a potential loss of oxide.

Remastering engineers and archival specialists who deal with older tapes all the time each develop their own techniques for cleaning up adhesive and reassembling deteriorated edits. But in terms of avoiding such problems down the road with tapes you are working on now, the best defense is clean, precise editing technique. That means no gaps or overlaps at the edit point, and no sloppy overhang of edit tape beyond the edge of the audio tape. Use high quality editing tape with a newer adhesive formulation. And make a backup copy (without physical edits) of the edited master.

One other physical hazard—tapes falling off their hubs—is found mostly with recordings made when it was common to store tapes on hubs alone rather than on complete reels. Tape purchased on hubs may be cheaper, and perhaps more compact to store, but it's much more likely to end up in a tangled mess 30 years down the road.

If you are dealing with older tapes, particularly if the boxes seem fairly light, be careful to open the box with the tape horizontal. If the tape is stored hub-only, don't immediately pick it up from the box. First check that the adhesive tape holding the end of the wind is intact. If not, and the wind is loose, tighten the wind by holding the exposed end of the tape with one hand and gently turning the hub with the other. Then re-tape the end. To take the tape out of the box, lay a flange (take apart a reel if necessary) on top of the tape and turn the whole box over with the tape supported by the flange the entire time. Then put the other flange on top and turn over again. After placing the tape (now between the two flanges) on the machine, remove the adhesive tape holding the end, rewind the tape all the way off the old hub, and replace the hub with a full reel.

If your tape is in a cassette rather than on a reel, remember that most of the stress on the tape comes during threading as it is loaded in and out of the machine. To keep your program material safe from this stress, never take out the tape unless it is wound all the

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# MASTER PRESERVATION

way to the head or tail. And never start recording right at the head: one minute is a convenient amount of blank space to leave before the downbeat of the first selection. Also, if you have created a master by assembly editing (transferring song by song to a recording machine), it's smart to immediately make a copy of the assembled master transferred in one complete, uninterrupted pass.

### KEEP IT COOL AND DRY

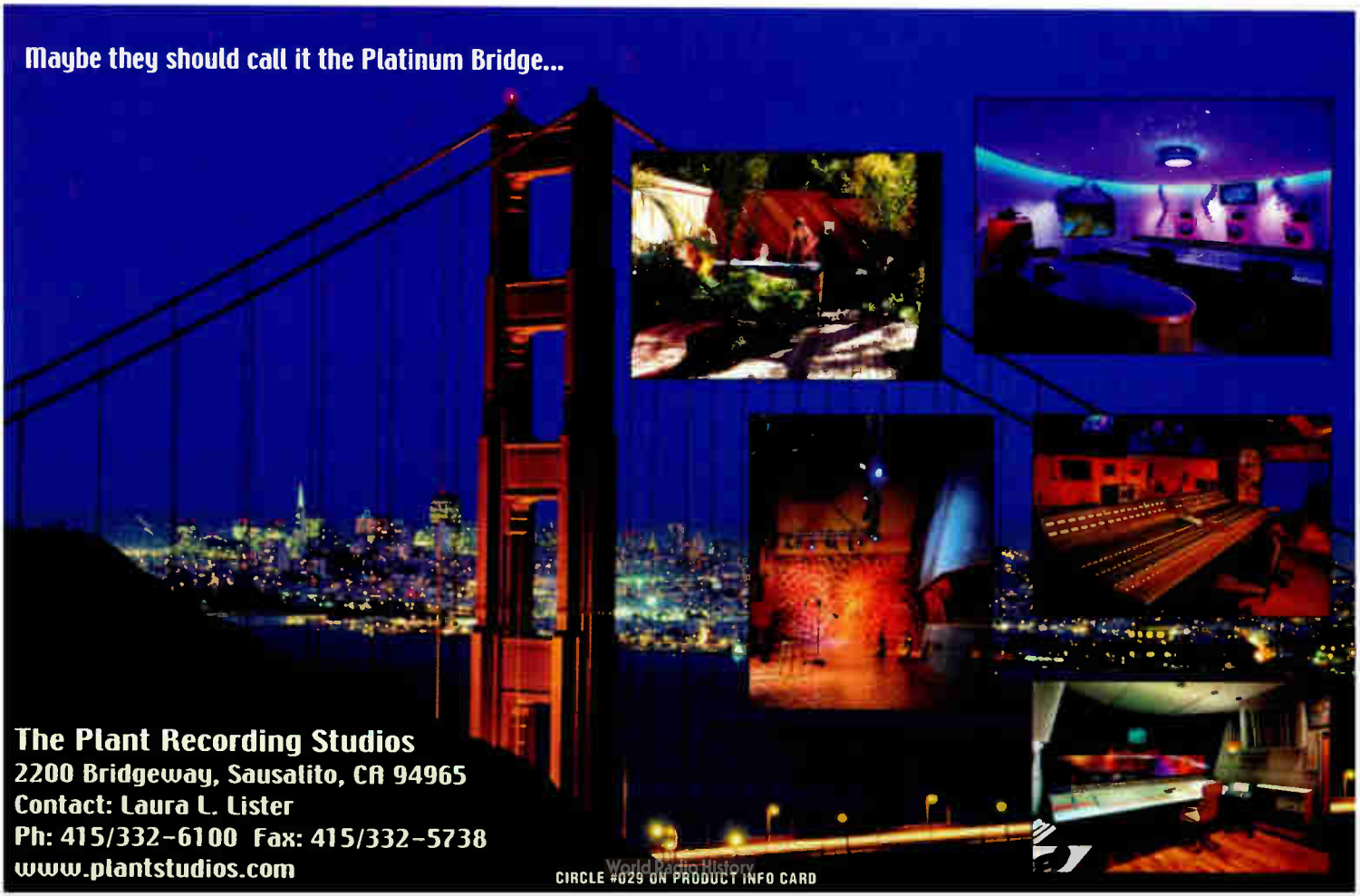
Perhaps the toughest challenge for long-term master preservation, even when your master has been prepared and handled with exemplary care throughout production, is maintaining appropriate conditions in the storage environment. The biggest concerns are temperature and humidity, clean air (covered above), and light. Depending on prevailing conditions in your region, your financial resources and the space you have available for storage, your best bet may be to leave your valuables in a professionally designed and maintained media storage facility. If that's not an option, however, you can try to create your own storage environment.

Heat and humidity together present the biggest threat to material stored for the long term. The most widespread problem is hydrolysis, which is the absorption by the tape binder (it holds the oxide particles in the coating to the base film) of moisture in the air. This causes polyurethane in the binder to migrate to the surface, where it forms a sticky shed that scrapes off onto tape guides and can stop a tape in its tracks after just a few minutes of playing. Among professional tapes, Ampex stock manufactured from the mid-'70s to early '80s seems most susceptible to this phenomenon. Luckily, most of these tapes can be "dried out" temporarily with a gentle dehydration process, and transferred to another medium. See "Sticky Shed Syndrome" in the May 1991 issue of *Mix*, or contact Quantegy (770/486-2803) for more information.

Everyone agrees that to combat problems like hydrolysis materials should be stored in a cool, dry place. But recommendations vary regarding the preferred parameters. At Hollywood Vaults (a storage facility profiled in *Mix*, January 1999), the air temperature is a constant 45° Fahrenheit and the relative humidity (RH) is maintained at 25%. St-Laurent suggests temperatures between 59° and 68° F, with a maximum fluctuation of 3.6° F, and RH of 25% to 45% (varying not more than 5%). The National Archives of Australia recommends temperatures between 64° and 68° F, with RH between 35% and 40% for magnetic media and between 45% and 50% for optical media. Maxell suggests that CD-Rs be stored between 59° and 77° F and between 0 and 40% RH.

Perhaps some of the variations result from differing expectations of the period the materials are to be stored. The Library of Congress defines two sets of conditions: medium-term storage (materials to be preserved for a minimum of 10 years) and long-term storage (materials having permanent value). Their recommendation for medium-term is 65° to 70° F and 45% to 50% RH. For long-term, the suggested temperature range is 46° to 50° F (colder temperatures may cause lubrication separation from tape binder). Suggested RH is 20% to 30% for magnet-

*—CONTINUED ON PAGE 307*

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CIRCLE #030 ON PRODUCT INFO CARD

# THE CARE AND FEEDING OF

# Classic Gear

## Keeping Your Mics and Connections Up to Spec

BY JOHN MONFORTE

Sound recording is unusual among the technical arts in that today's artists and technicians often combine current, state-of-the-art technology with equipment and techniques that are positively anachronistic. Does any modern filmmaker use a hand-cranked camera? Would any graphic artist willingly choose wax and an Exacto knife over a desktop publishing program? Probably not. Yet, recording engineers frequently use microphones, reverbs or tape machines from a previous, pre-digital generation.

Without going into the reasons for the appeal of vintage microphones and tube gear, there clearly is a growing demand for those who can maintain and repair such devices. Many popular vintage products are more than 40 years old, parts are hard to find and knowledgeable service people are even more scarce. With that in mind, I'd like to offer some advice on evaluating classic mics and other vintage gear, and provide some suggestions for improving their performance.



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ILLUSTRATION: KAY MARSHALL

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Bob Whyley, Director of Audio for the "Tonight Show" quotes: "the 4060s provide such a smooth, natural sound and exhibit far more gain before feedback than other products. They are also much more forgiving in situations with multiple guests in close proximity. Previously, I really had to struggle against comb filtering and phase artifacts with multiple lavs on the talk set; now dealing with a number of lavs open all at once is a snap! The overall sound of the show has improved greatly since we began using the DPA4060 Microphones."
*Bob Whyley*

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CIRCLE #031 ON PRODUCT INFO CARD

I have restored, repaired or evaluated numerous vacuum tube or ribbon microphones and have yet to encounter one that was totally free of problems. Admittedly, many of the mics came to me for repairs, but more than a few were considered operational and had been used regularly for recording.

My suggestions here are meant to extract the highest performance from vintage equipment, while maintaining "stock" condition. Some people may decide to go further by adding modern, higher-performance parts, changing capsules/diaphragms, or embellishing the design with modern circuitry, such as adding regulation.

## POLARITY, CAPSULES AND RIBBONS

Be sure to check the polarity of the mic. Without using any test equipment, you can establish polarity by comparing the mic you want to check with another mic whose polarity is known (preferably a mic similar in pattern and type to the unknown one). Stand them as close as possible to each other, a few feet in front of a loudspeaker fed with pink noise or between-station FM radio noise. At the console, send both microphone signals to the same output. Using a polarity switch (or "phase reverse," as it is more commonly and incorrectly called), find the polarity that nearly eliminates the output signal of the console. This is the inverted polarity state. Correct (or mark) your unknown mic as necessary.

If the wiring/polarity is okay and your condenser mic lacks bass, a new capsule may be needed. This problem affects some condensers when the capsule becomes so dirty that the polarizing charge leaks off. You might be able to get the mic capsule cleaned, but repair or replacement will be necessary. On the other hand, noise or crackling from a condenser mic does not necessarily indicate a bad capsule—aging parts at the front end of the preamp may be the cause. Fortunately, this is much easier to fix, even if you still need outside help, and even the lowest-level noise that is not simple hiss is entirely removable.

Older ribbon mics have their own special problems. These mics are extraordinarily delicate—the force of wind generated by a person speaking at close range can destroy a ribbon mic—and surprisingly low output levels are normal. RCA ribbon mics originally included a cloth bag that was meant to be kept on the mic until the moment it was to be used. The implication is that a ribbon can be damaged by simply moving it uncovered across the studio. Don't even think about using one in a kick drum. Also, checking the output connector with an ohm meter can destroy the ribbon.

When it comes to repairing or evaluating a ribbon mic, there is really no substitute for looking inside. But remember, these mics have powerful magnets—hold on to your screwdriver! Inside, the "ribbon" is a thin strip of lightly corrugated aluminum foil deep in the magnetic gap. A good ribbon will be centered, both front to back and left to right. A twisted, bent or broken ribbon will need to be replaced—a job for an expert. Also, ferric dust trapped in the gap between the ribbon and the magnet can cause distortion and altered response.

Some RCA ribbons suffer from what appears to be poor quality control (or a rash of clumsy repairs). On some of the mics I've seen, the windscreen cloth was attached with so much adhesive that it was almost airtight. The cloth is easy to replace. Just get a similar-weave cotton at the fabric store and cut it using the old cloth as a pattern. Put Duco cement on the metal part and not the fabric. The difference in the mics on which I've performed this "repair" has been astounding. I expected improved treble, but I also noticed reduced midrange resonance.

## OUTPUT IMPEDANCE, PREAMPS

Another issue that affects microphone performance is the output impedance. Standards varied greatly in the past, and, for this reason, manufacturers often put multiple windings or tapped windings on the output transformer. Today's equipment prefers an impedance of about 150 to 250 ohms. If you don't have a tap for this, your preamp may not get the best out of your mic. Transformer-coupled preamps are most sensitive to this. If your mic can't get to that impedance, you could use a matching transformer, or start looking for an old preamp that is optimized for that mic.



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CIRCLE #032 ON PRODUCT INFO CARD

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This brings us to another sticky issue regarding older gear. We have learned that transducers (such as microphones) do not work well in a terminated circuit, so all modern preamps place a gentle load of a few kilohms to improve performance. This principle was not always observed in older preamps. Though all mics will drop in level when terminated, this will also cause dramatic frequency response changes in some microphones.

At first glance, the persistence of this problem might seem a bit strange, but remember that most mic manufacturers were in the mixer business, too. The products were optimized for each other. This resulted in difficulties when mics and consoles were mixed among manufacturers.

For example, RCA, manufacturer of low-output ribbon mics, built mixers with high-gain preamps. When American engineers tried out European condensers in their studios, the mics distorted in their consoles. In those days, gain trims were not used in preamps. The U.S. importer of Neumann recommended attenuators that were fitted in the power supplies. By the time the U67 was introduced, the attenuator was installed at the factory. Modern preamps are designed to accept a wider range of input levels, so those attenuators can be considered vestigial. Removing them will only serve to improve your dynamic range.

## TUBES AND VOLTAGES

Concern about tube wear is not always justified. Power tubes and rectifier tubes (which also handle power) do have a short lifespan, but some tubes can last indefinitely when given the proper circuit to live in (I have a tube that is at least 60 years old, and it works just fine).

The simplest test of a tube is visual—examine the tube while it is operating in the circuit for which it is designed. A burned-out filament or shorts between the electrodes indicates failure. A tube tester will confirm this condition, and will also identify a "gassy" tube while in its early stages. Since air leaks only get worse, the filament will eventually give out because it burns in the air. A white powdery appearance inside the bottle is evidence of leakage—throw the tube out!

Finding replacement tubes is not as hard as you might think. Of course, old used tubes can be worn out, and even old, unused NOS (new old stock) tubes can be poor in quality. However, the art of good tube manufacture was never lost in Russia or China, and modern tubes from those countries, including new versions of some of the old tube model numbers, are in every way superior to the old tubes.

A tube checker is useful, but has limitations. For example, a tube checker uses a single generic circuit for testing tubes that can be used in many different ways. So, although you can use a tube tester to track tube's gain over time to see if it is wearing out, some tubes will exhibit more gain than others in the tube-tester's circuit. What's best for you is what works best in your circuit.

Also note that a tube tester does not test for microphonics, the result of mechanical vibration in the tube shaking the internal electrodes to the point that there is an audible signal. Depending on the tube's position in the circuit, microphonics may be an extremely important parameter. Preamp tubes are the most affected by microphonics. The best test for microphonics is to listen to the unit with no input. Tap on each tube one at a time, and, if you have a batch of tubes with the same part number, swap them out and grade them for microphonics. Save the good ones for those applications where they are important. The others will be usable elsewhere.

Line voltage sensitivity is another problem in older tube circuits. Some circuit designs are more susceptible to voltage fluctuations than others, and I have heard of mics that will not operate if the AC voltage is 10% low. Modern tube designs often use solid-state regulation, but performance may change with line voltage fluctuations.

## TERMINATIONS

Many recording standards have changed over the years, and classic equipment may require a special interface to conform to the modern standards. The old standard used 600-ohm terminated connections for all line-level equipment. By 600 ohms terminated, I mean that the output of one stage had 600 ohms in its output (which makes its output level sensitive to loading) and the next item in the chain was designated to provide a 600-ohm load, effectively reducing the output voltage in half once the connection was made. Don't go looking for resistors to rip out. Often that impedance was developed as a virtual element formed by the circuit topology. These aspects are designed in, and even older solid-state gear may be looking for a terminated studio environment. Check your manual.

Today's equipment can be built with a vanishingly small output impedance, which allows it to drive long cables without much signal loss. We ask that the subsequent devices draw only tiny amounts of current, which is to say it has a high input impedance. Now we can "Y" an output with abandon. We call this method "bridging" as opposed to termination. Despite the appearance of incompatibility, we can use terminated gear in a bridging environment with all participants happy about their sources and loads. The best way to deal with this is to connect a 620-ohm resistor across the output terminals of the older device. Any subsequent load will only bring the net impedance closer into line. Failure to do this properly will definitely alter the gain of the unit and will in most cases affect high-frequency response, too. As far as the other end is concerned, a modern device will usually have enough power to drive any older-style load without difficulty, but probably not two of them at once.

Sometimes there is a real input load resistor that can be removed. Actually, the preferred method is to change it to a much higher value of, say, 10 to 50 kilohms. This helps keep the unit from picking up buzzes or radio stations when nothing is plugged into it.

Meanwhile, don't expect the older units to be comfortable driving a long output line no matter what standard is being used. A finite (non-zero) output impedance will lose high frequencies when faced with cabling capacitance. Also, it will be more susceptible to noise and hum pickup. Keep those runs under 25 to 30 meters and you should be all right. For all the same reasons, it is with this equipment where you will probably notice how much benefit a premium cable can give to the sound, especially in terms of interference and cross talk reduction. You probably spent some serious money on that unit. Cabling is no place to start cutting corners. ■

---

*When not busy pushing the frontiers of multimedia into the next century, John Monforte works at the new Media Union at the University of Michigan.*



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CIRCLE #033 ON PRODUCT INFO CARD

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# JIMMY DOUGLASS

## FROM CLASSIC ROCK TO HIP HOP, THE VETERAN ENGINEER STAYS IN SYNC WITH THE TIMES

Jimmy Douglass seems too young to have done so much. His past credits include work on sessions with icons such as the Rolling Stones, Led Zeppelin, Foreigner, Emerson, Lake & Palmer, Aretha Franklin, Stevie Wonder and Hall & Oates; groundbreaking records with Slave; and current Platinum projects with Timbaland, Ginuwine, Aaliyah, Lenny Kravitz and Missy "Misdemeanor" Elliott. The explanation? Obviously, when you start off working at Atlantic Records' New York studios while still in high school you get a jump on the business. And maybe having two personas makes a difference—Douglass is credited on Elliott's *Da Real World* as two people: engineer "Senator Jimmy D" and mixer "Jimmy Douglass"—if you're two people you can get twice as much done in half the time, right?

In person Douglass is a winning combination of very cool and very warm. Although he's not a native New Yorker, he has spent most of his life there and it shows in his fast-talking, East Coast style. Besides the aforementioned artists, his recording career includes work on pop/electronic projects like The System's "Don't Disturb This Groove"; jazz recordings by George Duke, Alfonso Johnson and Stanley Clarke; projects by musical wild cards like Frank Black, Vernon Reid and Willy DeVille; and chart-topping R&B tracks by Jodeci, Jay-Z and SWV.

*Mix* caught up with Douglass for a series of conversations that took place at his New York recording domicile, Manhattan Center Studios, on breaks from working the night shift on a collaboration between Fred Durst of Limp Bizkit, rapper Jay-Z and producer Timbalaud.

PHOTO: MICHAEL BENABIB

***You were literally just a kid when you started in this business.***

**BY MAUREEN DRONEY**

I started out in high school. I was a musician, and I wanted to be a producer, but I didn't know what a producer was. I happened to know some people who happened to know some people at Atlantic Records, and it was someone's good idea that I could work at Atlantic's studios. The concept was that I could work in the evenings making tape copies—dubs for foreign countries, things like that. Put the tape on, copy the tape, pack it up, and, while the copies were running, I could be doing my homework. It was a good idea on paper, but the part of the building I was working in was two doors down from the main Atlantic Studios where you'd have Aretha recording with Tom Dowd. You'd have Dusty Springfield, the Young Rascals, Cream. So I never did get to do any homework—I'd put the tape on and run down the hall. The length of the tape was half a side, about 20 minutes, so for 20 minutes or a half-hour, I wasn't there.

***Could you sit in on recording sessions?***

Oh yeah. This was in the early '70s, and it was a whole different world. For instance, Tom Dowd didn't have assistants. It was, you just did what you did, and whoever was there was there.

***So you kept working for Atlantic and kept moving up.***

Absolutely. I started working with Tom at night, when nobody else was there. I was just kind of watching and trying to figure out what he was doing until it got to where I was able to help him. And to where he insisted that I was probably pretty good at doing other things besides tape copies and that they should move me along the ranks—at least as much as they



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The **DirectEQ** is a programmable parametric room equalizer and format selector system which can be used in conjunction with the Director.

Adgil systems are available in a wide variety of configurations. **Director** systems can be configured with up to 300+ matrix inputs, with 8 preset system memories. **Director LC** systems are limited to a maximum of 32 matrix inputs and 4 preset system memories. **Prices start at U.S.$2,995 for complete systems**, including the 9840 Remote and 9814 Downmix card which provides an LCRS and Stereo down mix from 5.1 or 7.1.

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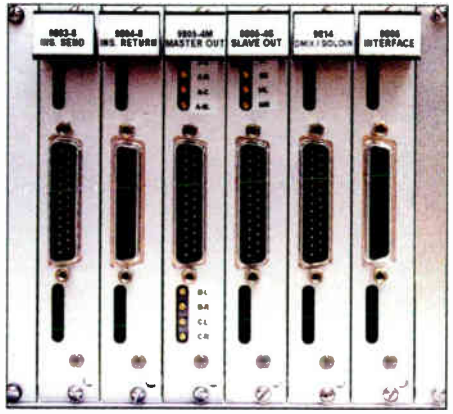

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George Petersen - **Mix Magazine** - April 1999

"The Director can be powered up or down without producing large thumps in the monitors. Further, it wakes up with the cut key active. I think this should be kindergarten stuff on professional equipment, but sadly it is not always the case. The audio performance is subjectively excellent--transparent and silent. The Format selector is a matrix, that maps any of eight inputs to any of ten outputs with a total of three subwoofer outs. Mappings can be stored as presets with up to four on dedicated keys. Equalizer boards may be added that function as 5-band parametrics or subwoofer crossovers. The Director feels right--which is half the battle with this type of unit--and I enjoyed using it."

Rob James - **Studio Sound Magazine** - March 1999

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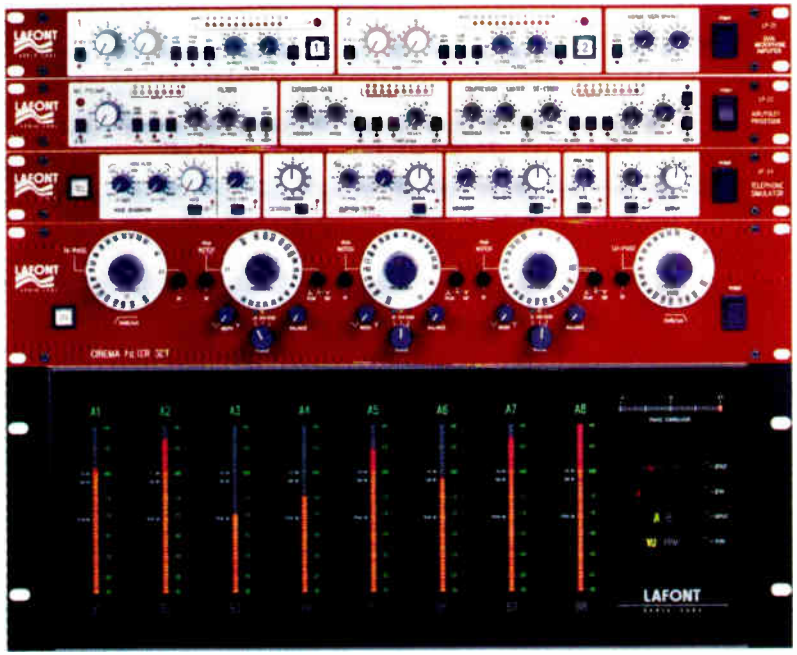
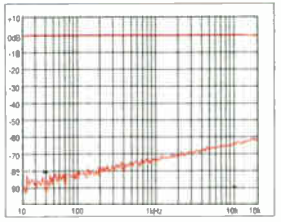



## LP-21 Dual Mic Preamp

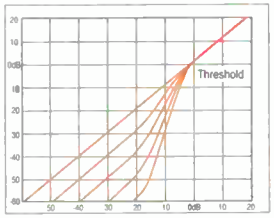
■ High gain structure with low distortion, ideal for Foley and other specialized applications ■ Accurate gain adjustable from 0dB to 75dB via 2 separate "Coarse" and "Fine" rotary pots ■ MS (middle / side) mode provides discrete Left, Center and Right outputs ■ Left / Right width and Center relative level controls are provided ■ 11 LED bargraph provides PPM metering of mic output stage ■ Overload indicator at +18dBu which is approximately 9dB before clip (user adjustable) ■ Low-pass and High-pass filters with overlapping frequencies cover entire audio range ■ Filters "In / Out" bypass switch on front panel ■ A soft clean mute switch (with no click or thump) which can be operated from the front panel, or remote control with internal opto-coupler for door opening automute, fader start, or automation control ■ +48 volt phantom power and phase reverse



Mic preamp residual noise @ 75dB gain

## LP-22 ADR / Foley Processor

■ 0 to 75dB gain in 2 stages ■ Line input accepts up to +25dB without clipping ■ 20dB pad with constant impedance ■ Phantom power and phase reverse ■ Common mode inductive filter protects against RF interference ■ 7 LED bargraph provides PPM metering of mic output stage ■ Overload indicator at +18dBu which is approximately 9dB before clip (user adjustable) ■ Low-pass and High-pass filters with overlapping frequencies cover entire audio range ■ Insert point with bypass for external device insertion and independent use of mic preamp and dynamics sections in a mixing console via patch bay insertion ■ Dynamics section combines Compression, Limiting, De-essing, Expanding and a Noise Gate with independent side chain ■ Fully variable Threshold, Range and Release times ■ Threshold adjustable from -20dB to +10dB ■ De-esser switch inserts a custom slope high pass filter in compressor side chain ■ De-esser frequency control sweeps the band from 2kHz to 18kHz ■ VCA controlled side chain provides transparent fades to silence ■ Program dependent Attack time (unless "fast attack" switch is engaged) ■ Bargraph meter displays gain reduction from 0dB to -20dB



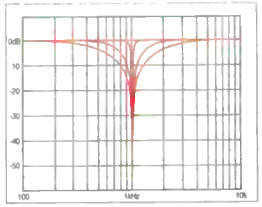

Expansion Range

## LP-23 Telephone Simulator

■ Band-pass filter with sweep frequency and a variable Q ■ Boost control up to 15dB ■ Distortion generator with variable harmonics ■ Noise generator with dedicated filters ■ Noise signal can be used alone to simulate wind effects ■ Pink noise is running continuously and is available on a separate jack socket for external process or sound level measurement purposes ■ Voice-over circuit reduces noise level when speech signal is present ■ Adjustable attenuation depth ■ Gate threshold controlled by squelch potentiometer ■ Independent in / out control on each function ■ Output stage gain control to compensate for signal loss caused by narrow bandwidth ■ Squelch circuit functions like a sharp noise gate cutting both signal & background noise ■ Change-over switch toggles between telephone signal and direct clean signal

## LP-24 Cinema Filter Set

■ Five separate, continuously tunable cascaded filters ■ 24dB per octave Hi-pass filter tunable from 18Hz to 200Hz ■ 24dB per octave Lo-pass filter tunable from 1.8kHz to 20kHz ■ Three band-pass / bandreject filters, each continuously tunable from 18Hz to 20kHz with variable width and 60dB rejection ■ Bypass switch with silent operation to remove all filters from the audio path



LP-24 rejection filter

## LP-25 Bargraph Meter

■ Includes eight high resolution bargraphs and a phase correlation meter and is intended for tape machine and mixing console monitoring ■ Applications include multitrack recording, film & television post production, broadcast, transfer and mastering ■ Formats include 8 channel discrete, LCRS, 5.1, DTS, SRD, 7.1 and SDDS ■ Dynamic response is switchable between VU and PPM modes ■ Each bargraph has two inputs and each input is paralleled to an output connector for easy insertion of the unit in an existing chain ■ All inputs and outputs are balanced ■ A master switch toggles between inputs for bus/tape, A/B monitoring and the unit can accommodate input signals ranging from -6dBu to +10dBu ■ The bargraph scale is four inches long, ranging from -30dB to +10dB. Level indicators are illuminated in green ■ Both VU and PPM modes use the same scale. Input signal amplitude is displayed in orange below 0dB and in red above 0dB ■ Brightness is adjustable

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could with my schooling still going on. Tom also encouraged me to try stuff. Like, I'd drive into the city in the morning before school, take old tapes and put them on the machines, and figure out how to work things. Stuff like that—nobody minded.

Because it was Atlantic's studio, it wasn't like the studios were really there to make money. They were there to service Atlantic artists. It was Jerry Wexler, Ahmet Ertegun and Arif Mardin. I was there in this great arena with all those legends who were doing it for the love of music—something you don't really see that much anymore. And it was a simpler time. They had the power to make decisions. There weren't as many people who you had to go through to decide if something was all right.

So, what happened was, eventually, I got better, and they started trusting me more, and I started doing more.

***It seems much harder now to get started—the field has narrowed.***

Well, technology has changed the whole thing, and I have a perspective because I was there then and I'm here now. Back in the late '70s, people would come to me specifically for what I did. They knew I had a certain talent and I could do things to sound, but they had no clue how I did it. Really, they had no idea. Oh, maybe every once in a while, you'd get a wiseass who'd say, "Why don't you put some 5k on that?" and you'd look at this guy and say, "Okay, what engineer did you hear that from?" Because they didn't know what they were talking about—it was just something to say.

But today, somebody with a couple of dollars can go to Sam Ash or Guitar Center—for $3,000 to $10,000 you can have a pretty technically amazing studio. Musicians can play with the buttons and knobs and get a basic flow going and a general idea of how it all works. So now, when a guy comes and sits next to me, I have to look at him and think, "You know, this isn't magic to him." I have to look at him a little differently, and my role becomes a little different. I have to respect him more and include him in the process of what I do.

Of course there are still guys who spend the money and don't know what they're doing! But I have to have a very open approach to everybody. I believe everybody has something to contribute in this process, hopefully! And I treat them like they do until they prove the other way around.

***How do you maintain that open attitude? When you've been at it a long time it's difficult to avoid becoming closed and cynical.***

I've noticed that gets you nowhere in life. There are so many ideas out there on this planet, and you never know what will work. One thing about me, even when I'm producing a record, I was never one of those people who would have to say, "That was my idea, therefore it's good."

I don't care where the idea comes from. To me, the process of making a record is the best ideas are put forward. Some get thrown out, and some we try even though we know from experience that may not be the way to go. That's always a hard call. Sometimes you know that you're going to go a long way to get maybe another five percent; and maybe that's not what you want to do that day, budget-wise, etc. But every now and then, somebody will jump up and down and say, "This is really important to me," and I'll say, "Okay, I'm going to spend this extra three, four hours." And you know what, sometimes I get 50 percent. That's the part that you never know, and that's part of the attitude to being open.

***Would you say you have a certain sound?***

Definitely. I don't know if I can describe it, but you can hear it in all my records. It's solid, and I've always liked vocals up front. To me, they sell the song. Some engineers forget that when they make mixes.

I've always looked at records like movies: the record producer is the director, and the engineer is a great cinematographer. And I've looked at the song as a script, and the instruments I look at basically as sets. I don't mean I look at it that way all the time, but when I sit back it's like, that bass is so loud it's obscuring the vision of the actor. We've got to push the set back a bit and tone the color down, that kind of stuff.

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***You work at Manhattan Center Studios a lot.***

Yeah, it happens to be one of those anachronisms in the middle of Manhattan. Growing up in a house studio like Atlantic, I got very used to being able to leave stuff set up, and to have more freedom with scheduling. You go to the big boys, every two minutes, they're like, "What are you doing tomorrow; what are you doing now; when are you doing this?" At Manhattan Center, they allow us the kind of flexibility to not have to know every exact thing that we're doing and if we miss a beat they won't kill us.

They have two great rooms. I work mostly in Studio 4, which has a [Neve] VR. My preference is definitely the Flying Faders system; I think I've mastered Flying Faders.

***You like to record and mix on the same board.***

If I can. If I'm really lucky, I'm able to go from soup to nuts. It makes life a lot easier.

Especially in hip hop, they do a lot of building in the studio, as opposed to thinking about it before they come in. They build the tracks and the ideas and the parts of the song there. It used to be, on a lot of records, people would use their imagination to know that things would be right later, and they didn't have to hear everything to do their part. But in hip hop, they can't go on unless everything is there—they can't create the next idea. So as you're building, if you're fortunate enough to be building in automation, when it comes time to mix, the mix really isn't the greatest deal in the world. We build the sound that they want as we go, and all you have to do is just embellish it a little bit.

***You've been working with Timbaland a lot the past couple of years. How did you two hook up?***

It was a side effect. I was invited to do Jodeci's last album by this studio upstate. I had done some work for them previously—kind of bailed them out on a three-day marathon where people came up, about five acts and three sets of producers. I did all the sessions, and they were kind of impressed with me. So when Jodeci booked in and they didn't really have an engineer, the studio called me. The side effect was that Timbaland was in the crew with Missy, Ginuwine, Playa—they were all just kind of up there. I took a liking to Timbaland and what he was doing. It was very innovative and different, and he was very free—free of worry about where it was going. So, there were two studios, and he and I ended up spending most of our nights after Jodeci was done just working on more stuff.

***Do you two rent a lot of gear or are you self-contained?***

Between my outboard EQ and effects and everything, his equipment, and MIDI equipment that we share, we have six to eight roadcases, and wherever we go we set up shop. All we need is a VR.

***What is the main composing tool when you're working together?***

He uses various sequencers—he uses the Ensoniq ASR a lot, and I have an array of MIDI sound modules.

***What are some pieces in your rack?***

I use an Akai S3000 for vocal flying—that's my sequencer—and of course I have the ASR10X, which I like for the effects and the resampling ability. All the sync boxes are mine. That's my area—I'm Mr. Sync Man.

***How do you lock everything up?***

We'll stripe some SMPTE. I steal whatever tempos he's dealing with, and I become the master tempo man, and I let all the sequencers slave to mine. Every-

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thing slaves to my SMPTE, to my master sync box.

***Is a Lynx the main sync box?***

Yes, actually, I'm still in the old days. I bring my own two Lynxes wherever I go because some studios don't have them. They have these new things that they need for video capability. But the Lynxes are so simple. I don't need the video stuff. I just need to simply offset things.

***So was* Da Real World *written all in the studio?***

Missy could be one of the fastest writers that I've ever worked with, and Timbaland is one of the fastest track/beatmakers. Between the two of them, they can do a song in half an hour.

***So they come in with just an idea?***

[Laughs] They'll just come in.

***Okay, then they're laying parts down and you're bringing feeds up on the console and making it sound the way you all think it should...***

Temporarily. Then she'll write a song around it, and then we'll go back and rethink the track and then redo it, and she'll rethink it. It's a give and take. "Oh, you did that. Well, I'm gonna do this! Oh, you did this. I'm gonna do that!"

PHOTO: JIMMY DOUGLASS

*Jimmy Douglass at the Neve VR in Manhattan Center, with Mike Daddy and Timbaland in the background.*

***So, first the crew will be just composing and you're getting sounds, and after a while, you roll the tape and record some sort of basic track.***

Yeah, like a "glop track," I call it. There it is, a glop of it, so something can be written around it. Then I do the vocals.

***There are a lot of vocal tracks. How do you combine parts?***

I try when I can to keep them totally spread. I try not to comp them. I've found that leaving all those doubles and quadruples open instead of just comping them and making them one stereo pair gives me this amazing ability to have extra space when I'm mixing. It's a

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track killer, but when I can have it, it makes things a lot easier.

***What mic do you use on Missy?***

Usually an 87—mostly for consistency because I end up recording her so many different places and because she does things so on the spur of the moment. She doesn't have the time to wait for some special setup. Really, she's very quick; when her mind is moving, it's moving, and all you have to do is capture it. She'll switch three songs on you in two seconds, and she'll want to punch in. This way I can always find my way back to where it was.

***So you probably don't EQ much to tape.***

I try not to EQ—except, of course, for those telephone voices she does. I do those right to tape. She insists on hearing it that way then and there. She can't get the vibe if it isn't that way.

***What format do you record to?***

I like to do the tracks analog, and when we can afford it or I'm in a place where it's available, I do the vocals digital on the 3348. I also have a DA-88 set up that I use for flying vocals if I don't have the luxury of the 48. If I just want to fly eight tracks of the vocals and use them for the hook or something, it helps to keep the autonomy of the tracks and still fly them.

***You're not recording to hard disk?***

I sometimes use the hard disk stuff to fly parts around. I usually have Pro Tools sitting in the room that I lock up when I need to. I'll just fly to the Pro Tools and fly back. I do that a lot, especially to create the clean versions that we have to do a lot of these days—to get the curse words out or flip them around or whatever.

**I've always looked at records like movies: the record producer is the director, and the engineer is a great cinematographer.**

***Personality-wise you're an interesting combination of speedy and relaxed. Even though a lot of the people you work with can be very fast about writing, there still must be hours of working out parts where there's not so much to do and you have to just kick back and let things happen.***

Absolutely. That's part of the phenomenon of the way R&B and rap is often done these days. A few years ago, I had some training in this area. I started working with some people, and they'd say, "Tomorrow at one o'clock." I'd come at one and nobody would be there, and nobody would do anything for three, four, six hours. And after a while, I'd start saying, "Hey, this is ridiculous, let's get moving!" And they'd go, "Jimmy, just chill." And we wouldn't get rolling till seven, eight, nine and get out at three or four in the morning. But after a while I realized nobody was in a hurry but me! So it was calm down, just relax and let it happen because it is what it is, and that's the only way it's going to happen.

***What do you do for those hours in the bang?***

Take care of whatever business you can. You do whatever writing you need to do—I have a little sequencer set up and a couple of modules, so sometimes I'll be writing. And of course, you get to really learn your equipment! That's one way I got to learn the VR so well. I was sitting there many, many days, and I'd read the manual over and over. I found stuff that people didn't realize was in there.

***What are some of your strengths?***

I really enjoy depth in records, space in records. Even when it's crowded, there's still a way to get space in there somehow.

***What do you do to create that depth?***

One of the things I try to do is to look at left, right and center and not to get too hung up on places in between. It's something Tom Dowd told me years ago: "There's a left, a right and a center—the rest of it is all crap." [Laughs] So I try to work with that instead of spending time putting things in every little space across the spectrum. And I try to create depth by putting delays that send stuff back into the speakers, making it more concave from my perspective instead of left and right.

***The quiet parts of your tracks are really quiet. How do you achieve that dynamic range, hot levels?***

Yeah, I'm a squasher. Everything is slamming. I record at plus nine, and I hit the tape really hard. It's a holdover from my rock 'n' roll days—I like the sound of it. And I try to punch in only when I need to. I don't leave mics open and tracks in record. That's probably a

## JIMMY DOUGLASS: A SELECTED DISCOGRAPHY

Aretha Franklin
*Young, Gifted & Black*
engineer

The Rolling Stones
*Love You Live*, (1977) remixer

Foreigner, *Records*
(1982) engineer

*Atlantic Rhythm & Blues 1947-1974*
(1991) digital transfer mastering engineer

Cassandra Wilson
*Blue Light 'Til Dawn*
(1993) engineer/mixer

Stanley Turrentine
*If I Could*, (1993) engineer

Jodeci, *Show, The After Party, The Hotel*, (1995) engineer/mixer

Roxy Music
*Thrill of It All*
(1995) engineer

Ginuwine
*The Bachelor*
(1996) engineer/mixer
*100% Ginuwine*
(1999) engineer/mixer

Aaliyah, *One in a Million*
(1996) engineer/mixer
*Are You That Somebody?*
(1998) engineer/mixer

Jay-Z, *Vol. 2: Hard Knock Life*
(1998) engineer/mixer

Timbaland
*Timbaland and Magoo*
(1998) mixer

Playa, *Cheers 2 U*
(1998) engineer/mixer

Missy Elliott
*Supa Dupa Fly*
(1997) engineer/mixer
*Da Real World*
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big part of it, too.

***How long does it take you to mix a track?***

If I'm lucky enough to be doing soup to nuts, I've already been mixing as we've been going along so all I basically have to do is recall from where I left off. That's a method Tim and I developed in Rochester, because we were doing so many songs every night for so many different people. He'd have to take 'em up and put 'em back, take 'em up and put 'em back, and I had no assistant! So one of the things I learned how to do was to minimize my effects because to document them all by myself and then to change the tape over was a bit overwhelming.

And, living in the same room a lot, I was able to have everything always lined up the same way, so I developed a method of storing the recall right in the actual mix, without a big deal.

***So you don't have to try a lot of things in the mix.***

No. I sit and play with the vocals and really get them nice and put effects on them and work on the spatial differences and the spread. Then we do the drops.

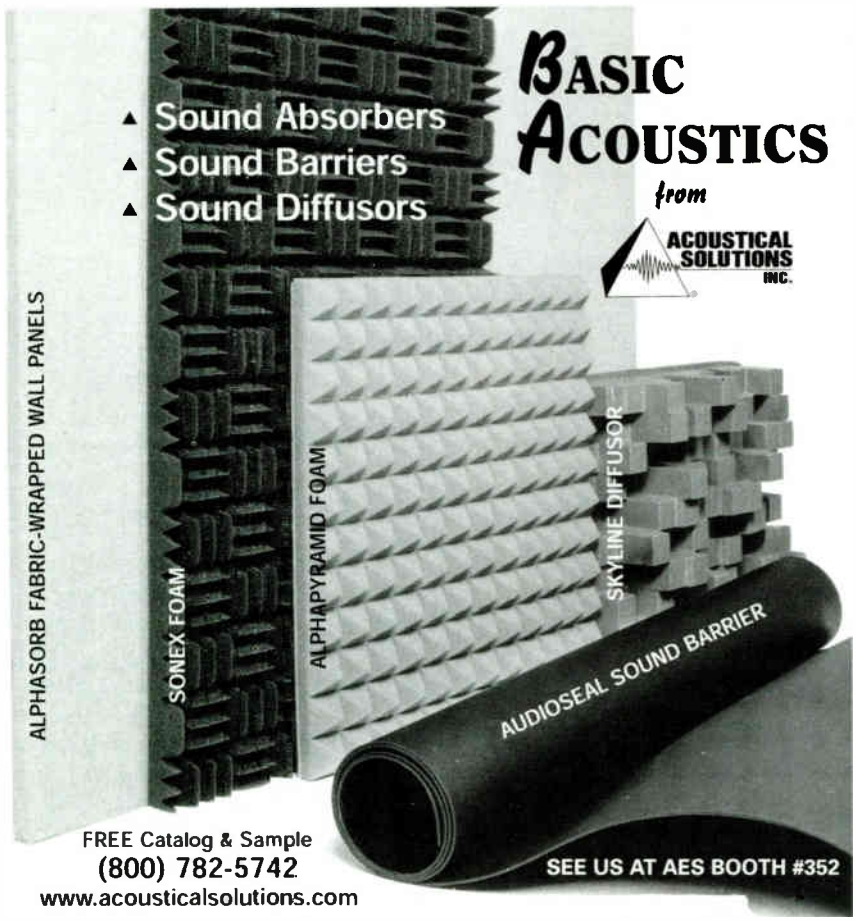
***You mean like cuts, muting parts and creating arrangements.***

Right.

***You've had ups and downs in your career—have you developed some kind of general philosophy about the business?***

I really believe if you're any good at this, you're going to continue to be good at it. It's not about the million dollars you might make today because, in my experience, the money has always come after the love. If you're really digging what you're doing and you really put your heart into it and you are doing the best job you can, you may not have that hit today, but eventually you are going to have that hit, and the money will come. Maybe I'm a bit of a romantic about that.

We don't always hit a home run. There are albums I made with people that didn't happen, but we made a really fine, quality product. They didn't sell like they should have, for whatever reason, the record company, the management, yada. But the point is these people I worked with I know for life, and I love them for life because we experienced something together, a creative bonding that's irreplaceable. And that's as important to me as the successes I've had. ■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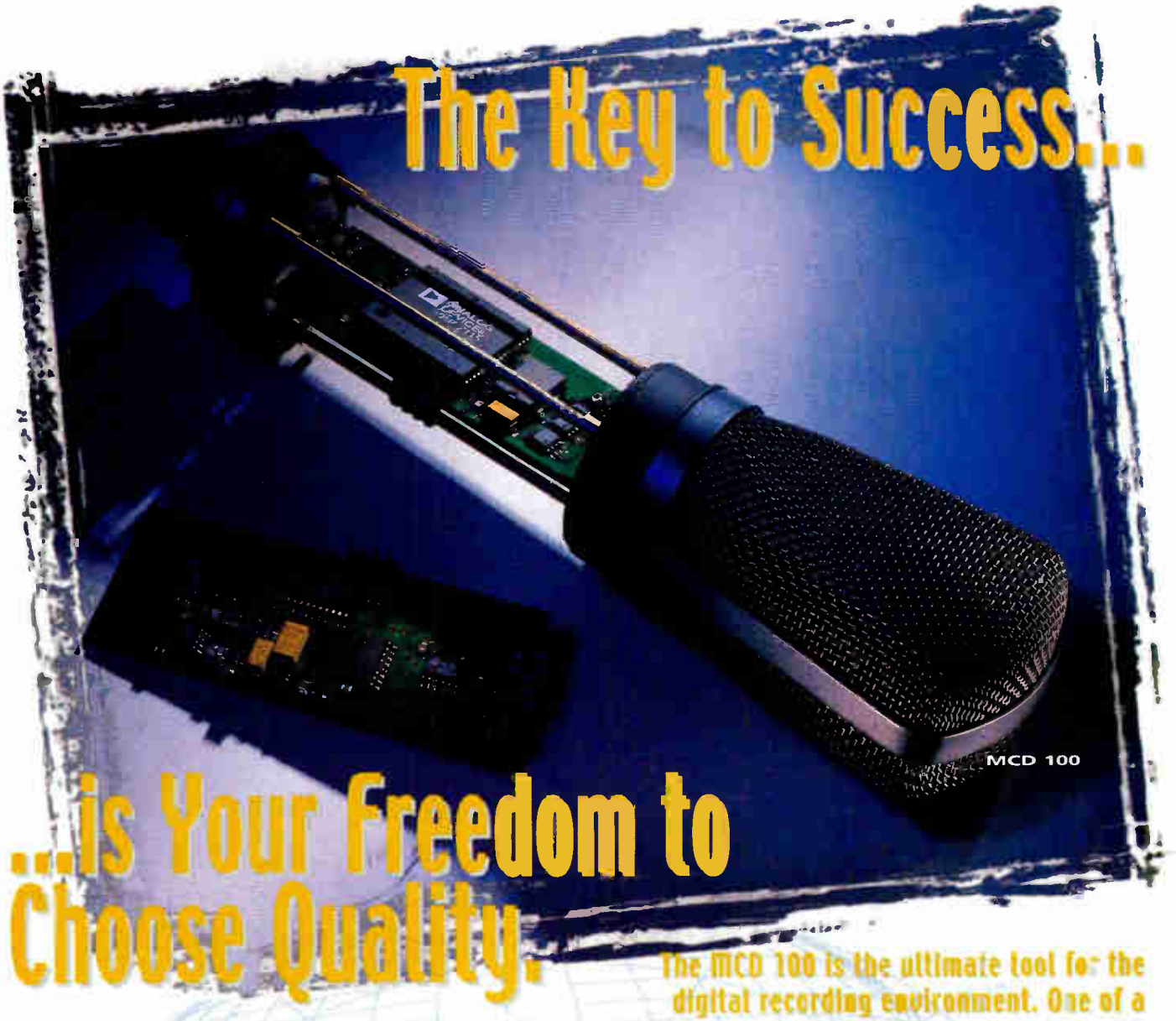


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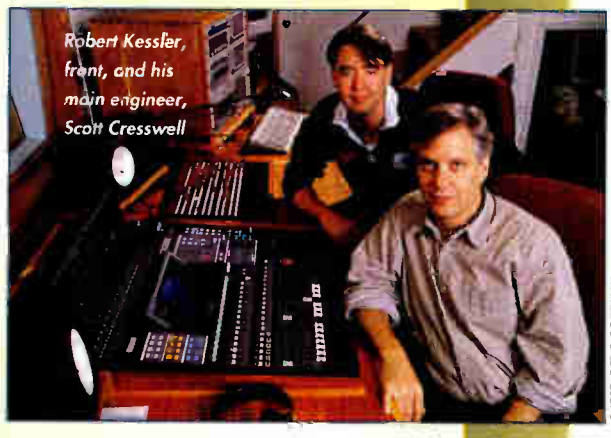
# A Tale Of Two Voices

## AUDIO PRODUCTION FOR SPOKEN WORD

With prerecorded music sales essentially stagnant over the past several years, and many music-oriented productions moving from commercial studios to garages or spare bedrooms, professional audio facilities are constantly on the lookout for new opportunities. Many over the past decade have expanded into "sound-for-picture," raising the profile of these activities within the audio community. But another audio segment that has grown tremendously remains largely ignored by the rest of the business. Perhaps because of its lack of glamour, or its seemingly simple production process, most production for audio books takes place well outside the spotlight. Nonetheless, spoken word is a growing market, with annual revenues at retail reportedly up 10% to $2 billion in 1998—a real opportunity for the publishing-savvy audio facility.

John Chominsky in his home studio, Atlantis



Robert Kessler, front, and his main engineer, Scott Cresswell

PHOTO: DOUG GOODMAN

The core of the spoken-word market is the recorded book, which began as a service to the vision-impaired and expanded as com-

BY PHILIP DE LANCIE



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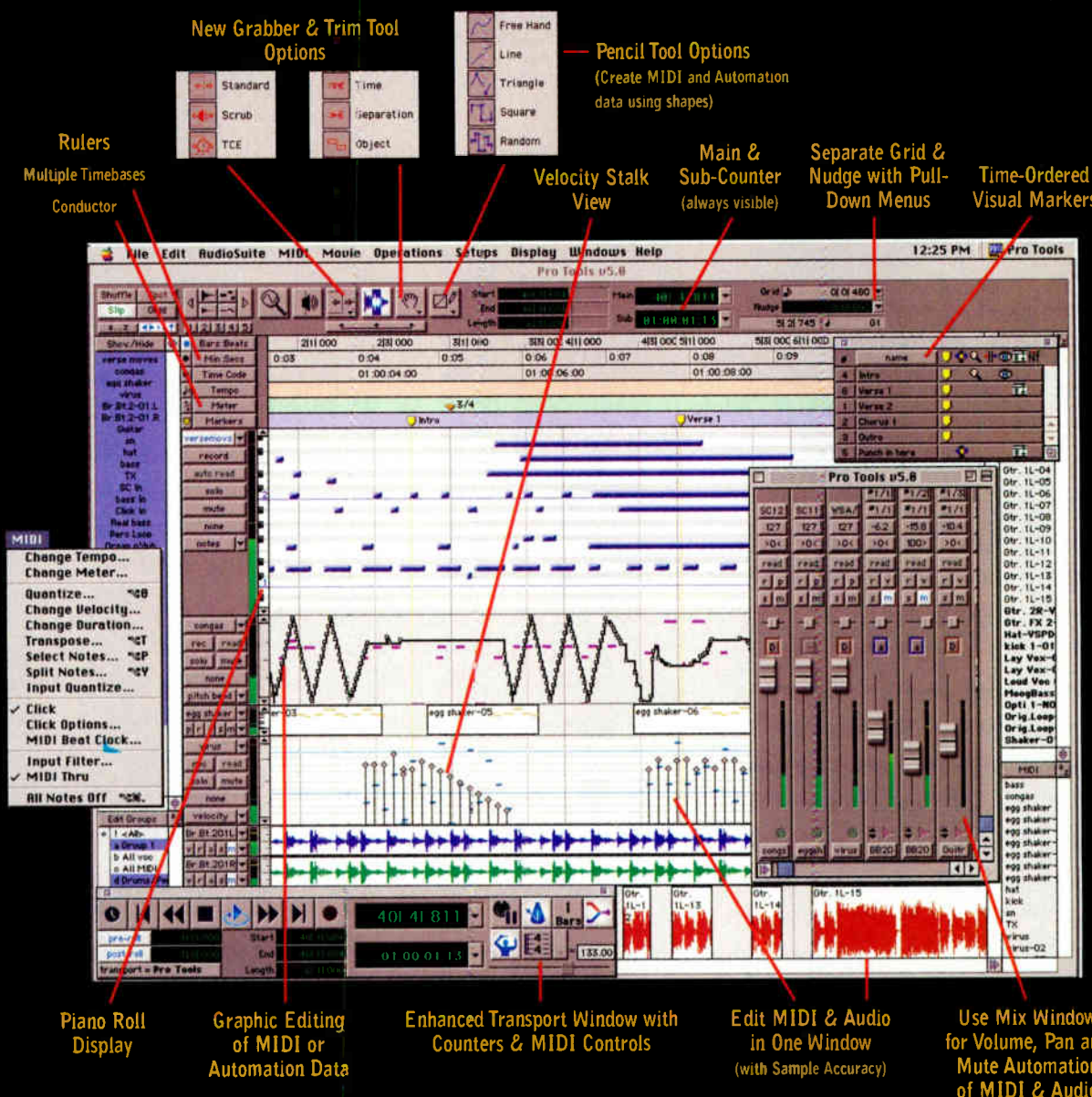


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muters sought relief from the tedium of daily automotive incarceration. "Each project is different," says Robert Kessler of Kessler Media Productions, "but the bulk of the books involve a single reader." Working for publishing giants such as Random House, Bantam Doubleday Dell, Time Warner and HarperCollins, Kessler's company has produced over 500 such audio books in the last ten years. Working with engineer Scott Cresswell, Kessler's production of the Christopher Reeve title *Still Me* won this year's Grammy for Best Spoken Word. (He also did the sound for the Oscar-winning short animation feature, *Bunny*.) Kessler's home base is a studio in Katonah, N.Y., that features four Pro Tools systems, a Yamaha 02R digital console, API mic preamps and Genelec 1031A monitors.

Kessler with veteran book reader Stephen Lang

At the other end of the spectrum are titles rooted in the tradition of radio dramas. Alien Voices, for instance, is a company formed by Star Trek alumni Leonard Nimoy (Mr. Spock on the original series) and John de Lancie (Q on the *Next Generation* series) to bring classic science fiction to life in new media. The company has released five titles adapted for a two-hour audio drama format, delivered on both cassettes and CDs. Four of those productions—*Journey to the Center of the Earth, The Time Machine, The Invisible Man* and *First Men in the Moon*—were engineered by John Chominsky of Waves Sound Recorders in Hollywood, Calif., with post-production supervision by Jeff Howell. Their work on *The Invisible Man* won a Communicator Award for Best Use of Sound.

In some respects, Kessler's productions have little in common with the Alien Voices projects, with their ensemble casts, full sound effects and music. But they share the same target playback environment—mainly cars (with their high ambient noise) and headphones—and the primacy of the human voice, with an emphasis on intelligibility that is not always evident in the music biz.

## NO PLACE TO HIDE

"The hardest thing is a solo person and a microphone, because there is so much that can go wrong," Kessler says. "It's totally exposed, so there's no place to hide."

With a background in music composing—including films and television documentaries, along with scores for audio books—Kessler is no stranger to full production. "I love it when we do more production," he says. "From a technical point of view and producer's point of view, those projects are often more interesting. And in some cases when the book or the performance is less than brilliant, production can save a project. The music can often make something exciting that otherwise would be not so interesting."

Overall, however, Kessler admits that "there are fewer added production elements going into spoken-word projects now. In many cases the power of the literature itself is what the project is about, not music or sound effects. The bulk of the work is intimate storytelling. Take the unabridged Toni Morrison read we did on *Beloved*, for instance. You're not going to produce that up. The whole thing is the intimate quality of her delivery and material, and to do anything more to it would be kind of silly."

To maintain that intimate quality, Kessler starts with careful microphone selection. "We most often use a Neumann 170R here at our studio. I find that works pretty nicely with a range of people. It can sometimes make women sound a bit sibilant if you're not careful, but it usually sounds great. It has a certain crispness that I like for spoken word, because a lot of times people are listening in their cars. If a 170R is not available, a Neumann U87 or an AKG 414 also works well."

Kessler likes to work with the mic close-in on his performers, though that often means extra editing later. "The closer you get in," he says, "the more mouth noise you pick up, and the more breath. But if you go too distant to get around all that, you don't have the intimate quality you need. So close miking is very important. If you take out all the breaths, it sounds unnatural. But it is logical to remove them as the reader makes a transition between characters. Also, sometimes when you have some noise that you just can't edit out, you can get around it by actually mixing in some breath to help mask it. But some readers are so clicky that you end up driving yourself crazy trying to deal with every noise by redrawing the waveform in Pro Tools."

With titles ranging from three to 16 hours, maintaining consistent energy and delivery throughout the performance can also be a challenge. "One reader all the way through is very demanding for the actor," Kessler says. "It takes a lot of focus and concentration." That means that the number of edits required to piece together a single book is often far higher than in typical music production, amounting


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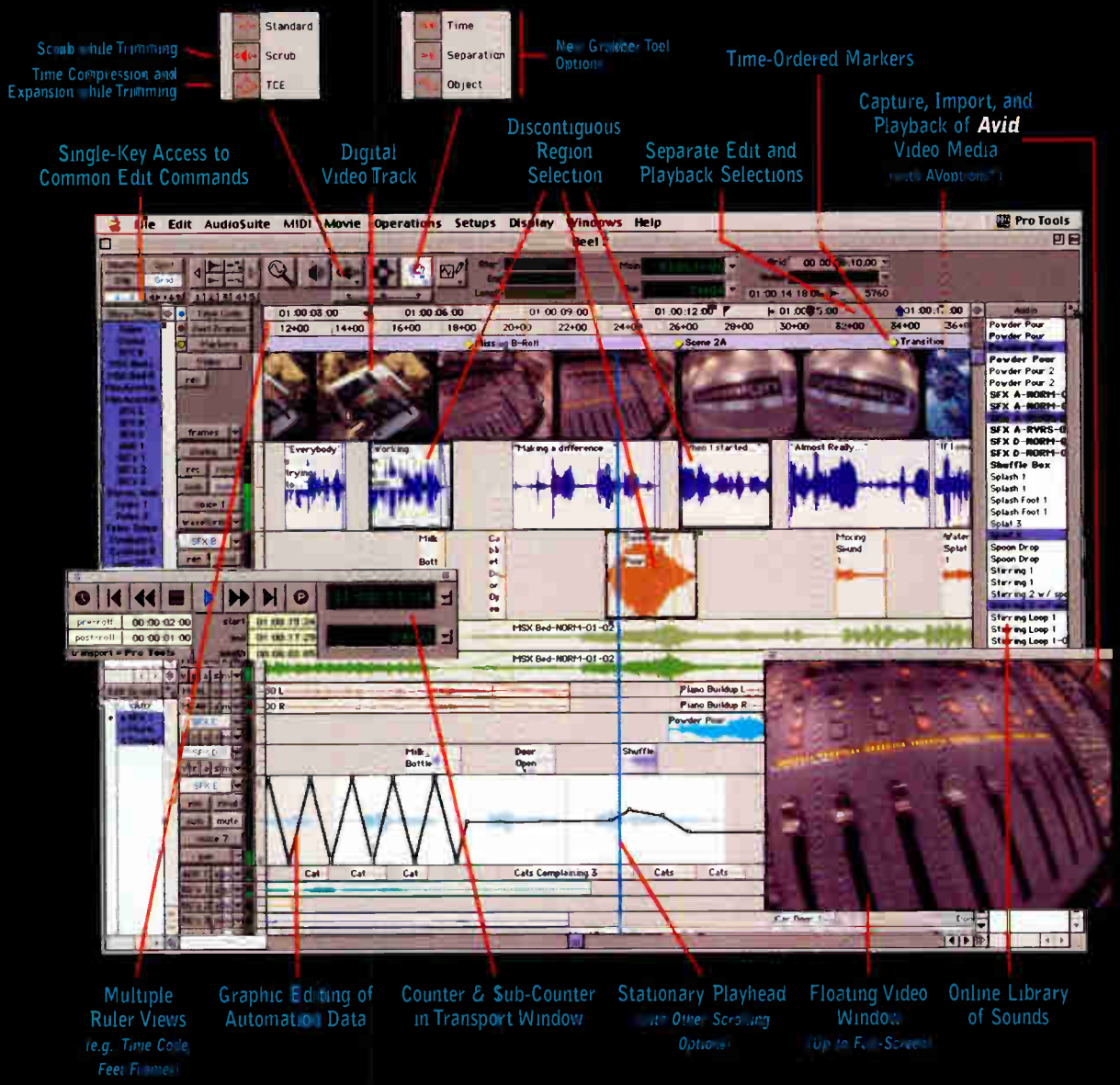


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allows us to build the performance and maintain a flow during the read," he continues. "Sometimes, to accommodate an actor's schedule, we need to be flexible about doing certain parts wild, but generally we try as much as possible to record a script starting from the top and working through to the end. We go as far with each take as we can, but we'll stop if someone stumbles, or if we do a section and there is a feeling that it can be done better. Jeff Howell keeps all the notes on the takes and re-reads, and which performances will be edited together later."

While the cast works as a group for the read, each actor is generally miked individually for his or her dialog parts. "But sometimes we'll just stick up one mic in the room for the background parts like crowd scenes," Chominsky says, "because that keeps it sounding more like a group."

Chominsky's preferred microphone for the dialog parts is a Sennheiser 416. "In addition to the dialog," he says, "all the books have a narrator part, which we record separately. Our favorite mic for the narration is an AKG C 12, a large-capsule tube model from the 1950s. It has a nice warm feel, and it's very personal, so it gives a nice differentiation between the narrator and the characters."

The ensemble performance is usually completed in a single day, with narration recorded on a separate day. "Once all the voice tracks live in the Fairlight," Chominsky says, "I can take the material to my Fairlight at home, where I do all the dialog editing. That can take quite a bit of time, because some of the parts have been done wild, and others have been re-read to get a better performance. Also, because we have everyone in the booth at the same time, with a lot of open mics, I'll go in and edit out all the open air on all the tracks. So without using noise gates, everything is discrete, without a lot of bleed. We want to create the most clean, distinct voice tracks so when people listen in a car, on the radio or on cassette with headphones, everything is as clean as possible."

After dialog editing, Chominsky edits the narration and interlays it with the dialog. "At this point," he says, "with everything mostly laid out on the timeline, I run off a DAT or a DA-88 and send it to the music composer, Peter Erskine, who starts composing, recording and mixing the music at his own home facility. He uses both electronic and acoustic instruments, and he eventually gives me back these great music mixes on DAT. And he remains very in-


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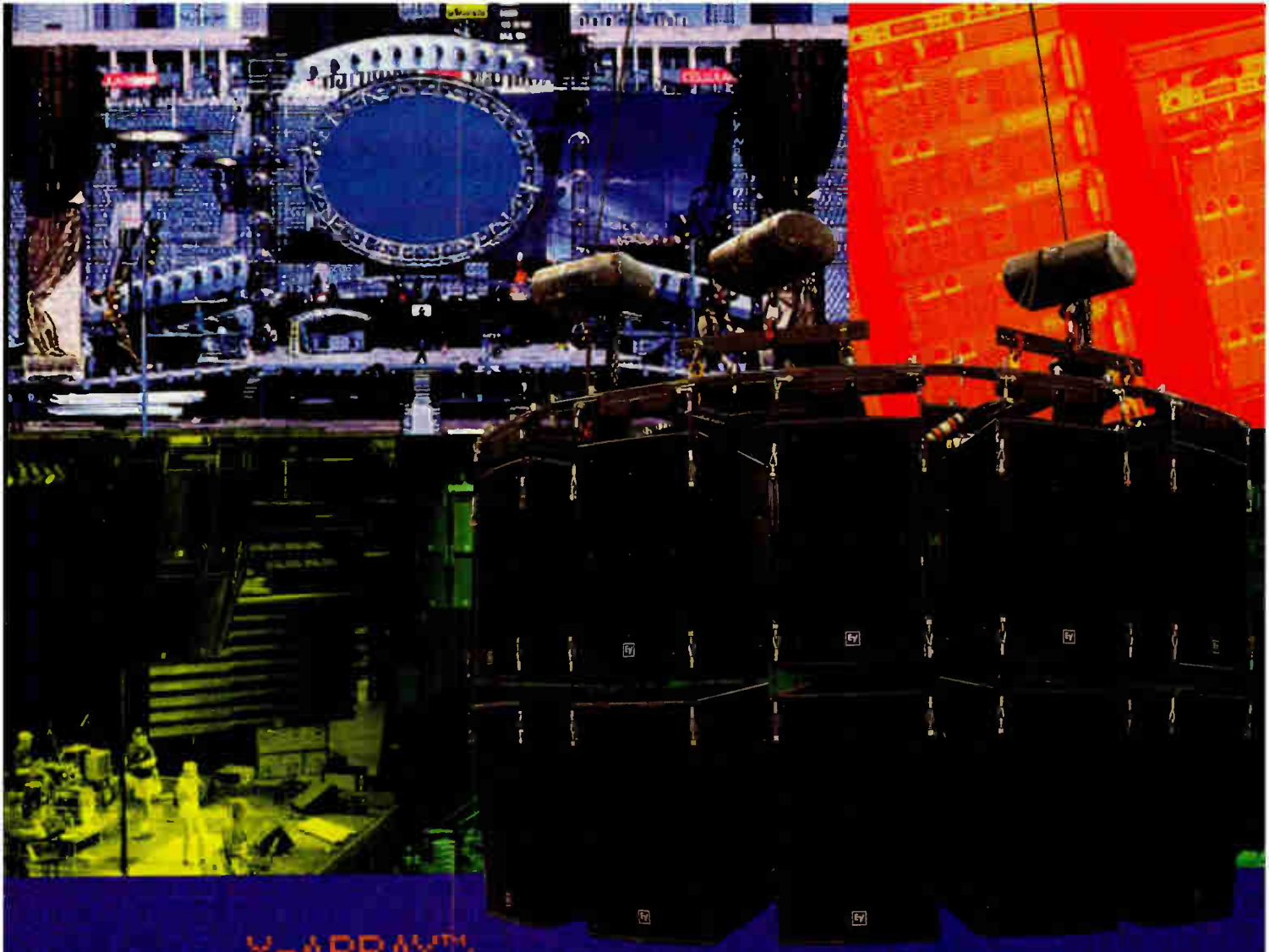

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volved in working with me to make sure that all the music is lined with the voice tracks in exactly the places that he had imagined.

"While Peter is working on the music at his place," Chominsky continues, "I start adding in the background ambience and sound effects at mine. We try to be as unique as possible with our choice of sounds. We take some effects from libraries, but we also do our own Foley and unique sound design. And we also work quite a bit with synthesizers and samplers to come up with things that haven't been used before."

As an example of the approaches he and Howell take to make the effects distinctive, Chominsky recalls the Ant People from *First Men in the Moon*. "We wanted to create a unique sound for their movement," he says. "So Jeff created a glove that had various objects attached to it, such as wire with dangling beads, and Popsicle sticks. When we recorded his fingers moving on a table, all these parts on the glove combined to create some very alien sounds."

Chominsky and Howell also work on creating ambiences that support the listener's sense of where the action is set. "The books take us to places like inside the center of the Earth, or on the moon," Chominsky says. "For every new place that we go through in the story, we create a distinct background sound effect that subliminally takes the listener to that place. In *First Men in the Moon*, they are inside a metal sphere, so we created kind of a tight, metal slapback room effect. And, of course, if they are inside a cave, we'll put reverb on them."

When the sound effects and music are completely laid in against the dialog, the project moves back to Waves for mixing. "We take advantage of the Euphonix console by automating everything: the pans, the aux sends and the faders," Chominsky explains. "We have a lot of panning going on as our characters are moving around. And we also add any EQ or additional compression that may be required at this point. We try to keep the mix as exciting as possible."

Given the importance of spoken word in the automotive environment, the biggest challenge in mixing is making the material work across a wide range of playback settings. "The Alien Voices projects are released on CD," Chominsky says, "and might be played back in a very top-notch environment. So we try to strike a balance between people who will be listening on a nice stereo system and people who will be listening to cassettes in their cars. We monitor on the main speakers, which are Genelecs, on our Yamaha NS-10 nearfields, on Auratones, on headphones, and also on television speakers, just to make sure everything still cuts through in a worst-case scenario."

Chominsky's signal path for recording the final DAT master is out of the Fairlight, through the Euphonix and into a TC Electronic Finalizer, which feeds the DAT. "We compress the whole mix," he says. "The Finalizer is one of my favorite new toys. It's been a very valuable tool enabling us to get maximum volume and intelligibility."

All in all, Chominsky finds the audio drama productions to be among his most satisfying work. "In a movie," he points out, "you have god-knows-how-many people involved in the audio process. But with these types of projects, I stay creatively involved from the tracking through the editing and sound design to the mixing. It's very fulfilling, and makes it exciting to be part of these projects." ■

*Philip De Lancie is Mix's new technologies editor. He can be reached at PDEL@compuserve.com.*


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# BACI STUDIO

## CHIELI MINUCCI'S MIDTOWN SANCTUARY

Bloodlines run deep in the music business, as Queens native Chieli Minucci readily acknowledges. His father, Ulpio, was a composer ("Domani") and arranger who worked regularly with the likes of Nat "King" Cole and Julius La Rosa. His own training began with piano and then, at the ripe old age of 8, guitar.

After graduating from Ithaca College in 1982, Minucci returned to New York City and began gigging with rock and R&B bands. His session resume now includes work with R&B heavyweights Chaka Khan and Mavis Staples, as well as current pop stars such as Celine Dion, Backstreet Boys and Jewel. When he met George Ginda, his partner in the still-going-strong band Special EFX, his interests turned toward contemporary jazz.

"My career has three components," he says. "The recording work I do with Special EFX and under my own name [currently on the Shanachie label], the music I write and record for television shows such as the *Guiding Light* and [the recently canceled] *Another World*, and my touring work."

All of Minucci's television cues—including those written for *Guiding Light*, which won him an Emmy this year—are recorded in Baci Studio, his space in midtown Manhattan. "I was trained as a performer, writer and arranger first," he says. "Operating my own project studio—and having to develop the associated engineering and computer chops—comes as a secondary issue for me. I actually have a modest studio, and I record all of my production music here, from start to finish."

Digital tracks—horn overdubs, the occasional vocal line and his omnipresent guitar work—are laid down to a single Fostex RD-8; his sequencer is MOTU's Digital Performer 2.2. "This manner of working has been fine with me, both for the work I do here and when I need to record guitar parts at my studio for some out-of-town project," he explains. "However, it's definitely time to move into the world of hard-disk recording. My friend Steve Skinner just loaned me his Korg 1212 card, and I'll be experimenting with it.

"I'm seriously considering getting a MOTU 2408 card, but I'm currently using a Power Mac running at 225 MHz, and I know that won't be fast enough to really take advantage of all that the Digital Performer/2408 combination offers," he continues. "So my choice is either spend three grand on a new computer, or put that money into Pro Tools or another card-based processing system. I recently recorded some guitar parts and contributed a tune to Jay Beckenstein's new album. He works up at Bear Tracks on an Ensoniq PARIS system, and that seems like a nice alternative to Pro Tools. I was really impressed with its sound. And yet, the integration of DP and the 2408 running on a 450MHz computer is also very attractive."

Lots of project studio owners are moving over to digital consoles, but Minucci is sticking with his 8-bus analog Mackie. "It's quiet and extremely useful in my setup," he says. "The main point for me is that all of this technology has given us the opportunity to bypass the demo studio phase and make great-sounding records in our own spaces. Knowing what tools you need is really the pivotal issue, and to me it all comes back to the grounding in music that a player and arranger has to have."

Minucci says that working as a player for great producers has helped immensely in his own work. "I recently was called by Mutt Lange to play guitars on a Backstreet Boys track over at Battery Studios on the tune 'I Need You Tonight.' The session went nine hours, and none of the time was wasted!"

How could a guitar session possibly take more time than it takes to play three big league baseball games? "Well, I had to play at least 15 electric guitar parts, plus some acoustic tracks. Jeff's a master. He had his own idea for a three-part guitar sound on the verse, which we worked on until it sounded the way he wanted it. Then we'd move on to the chorus, bridge and so on. When those tracks were complete, he let me have a go at interlocking three guitar parts throughout the tune. Then, we went back to the beginning and analyzed what we had before, constructing a map of what ideas we wanted to keep from all of the recorded tracks. Then I went back and played three more parts, the result of our editing work! It was great!" ■

BY GARY ESKOW



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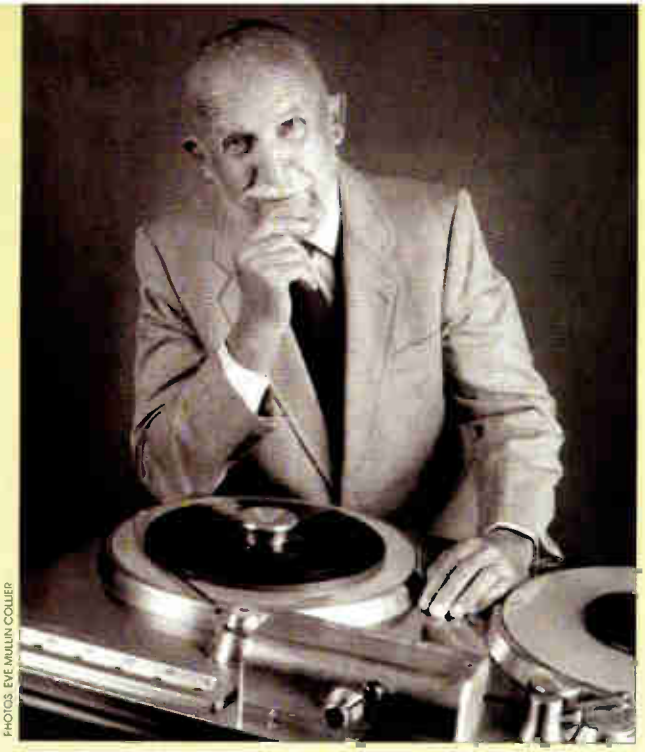

PHOTOS: EVE MULLIN COLLIER

*Jack Mullin in 1988 with an Ampex Model 200, the machine he inspired that revolutionized the entertainment and information industries.*

# John T. Mullin

## THE MAN WHO PUT BING CROSBY ON TAPE

by Peter Hammar

Audio and video engineer John T. (Jack) Mullin—who introduced America to high-fidelity magnetic tape recording, built the first prototype videotape recorder and created some of the standards for the technology—died of heart failure on June 24, 1999, at his home in Camarillo, Calif., at the age of 85. His was a life of ingenuity, discovery and absolute creativity. It's safe to say that the recording industry would not be the way it is today without his extraordinary insights and contributions.

Born in San Francisco in 1913, Jack Mullin graduated from Santa Clara University in what is now Silicon Valley with a major in electrical engineering. In 1941, Mullin entered the U.S. Army as a private, emerging at the end of the war as a major in the Signal Corps.



World Radio History

*Bing Crosby with Jack Mullin in 1951. The two are watching a video monitor displaying the playback of Mullin's "Crosby Video" longitudinal-scan VTR.*

Stationed in England from 1943 to '44, then-Lt. Mullin was assigned to help improve the performance of Allied radar and other electronics. Spending nights alone in his lab at the Royal Air Force facility in Farnborough, England, he liked to listen to good music. The BBC went off the air at midnight, and he tuned to the only classical music he could find, which was broadcast by the Germans from powerful AM transmitters inside the Reich. The performances of the Berlin Philharmonic and other groups sounded "live," with none of the telltale ticks and pops of transcription discs—16-inch diameter 33⅓ and 78 rpm records—that were the norm in American broadcasting. Mullin reasoned that even Hitler could not compel musicians to perform continuously 24 hours a day, seven days a week. The Germans, he reasoned, had to have some kind of outstanding recorder that no one knew about.

After the liberation of Paris in the summer of 1944, Mullin went to the French capital to set up an electronics lab for examining captured German electronic equipment, submitting reports to the Signal Corps and to Allied Intelligence. GIs brought in all kinds of gear, including DC-bias AEG Tonschreiber and Magnetophon tape recorders, which used 6.5mm (slightly more than ¼-inch wide) acetate and PVC tape moving at 77 cm/s (30.3 ips), with high distortion and a frequency response barely better than a telephone.

By the summer of 1945 the war was over, but Mullin and his team were still investigating German electronics advances, including frequency modulated two-way radios, which Mullin and his engineers experimented with from atop the Eiffel Tower. Unknown to the Allies, the Reichs-Rundfunk-Gesellschaft (a German radio network) had already made experimental FM music broadcasts in Berlin in 1942.

In July 1945, Mullin set out with some fellow officers on a fact-finding tour of Germany, which included an unforgettable visit to the subterranean radio and closed-circuit television studios in Hitler's bunker at his Bavarian mountaintop retreat at Berchtesgaden.

*Jack Mullin in an ABC Radio Network control room with the only two "portable" Ampex Model 200 tape machines ever built in about 1950. In the foreground, right, is an early portable Model 300 (black case). The Model 200s replaced Mullin's two well-worn modified AEG Magnetophons that put Bing Crosby on tape in 1947.*

World Radio History

Mullin also investigated the remains of a radio transmitter on Feldberg Mountain near Frankfurt. He found little there except a bare antenna tower and a large generator, but at the site Mullin met a British officer who shared his love of good music. The officer told him about the high-fidelity version of the German AEG Magnetophon audio tape recorder, a machine with unbelievable reproduction quality: It had low distortion and a frequency response almost matching human hearing. He told Mullin he could find some Magnetophons at Radio Frankfurt's satellite studio in Bad Nauheim, a small resort town north of Frankfurt.

At the studios, Mullin and his assistant were astonished by the fidelity of the studio Magnetophons. A look at the schematic drawings showed Mullin why the machines performed so well: AC bias in the record circuit. Mullin realized that those poor-sounding Magnetophons back in his lab in Paris could be modified simply by adding AC bias, using the same tape, transports, heads, power supplies, and most of the same record and reproduce electronics.

Mullin obtained permission from the Army to send home, for his own use, two AEG Magnetophon K-4 decks, some spare heads—the one component he knew he could never duplicate in his garage—and 50 reels of blank BASF and AGFA PVC Luvitherm Type-L tape. He only sent home the transports, as he could design and build his own electronics, using plentiful American parts.

## HI-FI TAPE IN AMERICA

Returning to civilian life in San Francisco in January 1946, the electrical engineer entered into a business partnership with filmmaker/16mm film sound pioneer W.A. (Bill) Palmer, who provided financial and mechanical engineering assistance. Mullin built two sets of record and reproduce electronics with a passive switching bridge between them, similar to the studio setups he'd seen at Bad Nauheim. The ¼-inch tape reels—identical to today's IEC European-spec flangeless pancakes—held 22 minutes of music at their 77cm/s tape speed. For a half-hour show, he knew he'd have to be able to switch the input and output signals between the two decks.

Mullin's redesign of the Magnetophon electronics resulted in a sonically superior tape recorder, and he and Palmer demonstrated their prototype hi-fi tape machines in May 1946, at the NBC Studios in San Francisco (now KBHK-TV) to members of the Institute of Radio Engineers (now the IEEE). The technology stunned the engineers and technicians, some of whom said they literally could not believe they were hearing a recording and not a live performance.

The audience included several people who would go on to make magnetic recording history, including Harold Lindsay, Walter Selsted, Frank Lennert and Charlie Ginsburg, all later of Ampex. Ginsburg would eventually lead the team that built the world's first commercially successful videotape recorder. The others worked on the groundbreaking Ampex Model 200, America's first professional audiotape deck.

Working with Palmer Films, Mullin designed methods for producing high-quality audio for the pre-production of 16mm films. The engineers built a third tape deck using one of the spare head stacks Mullin brought from Paris, along with their own transport and electronics. The homemade tape deck allowed them to do a final mixdown on ¼-inch tape, synched to the film for layback to an optical track—a first in the country. Meanwhile, the two modified Magnetophons were used to produce the first U.S. commercial entertainment disc professionally mastered on tape, *Songs by Merv Griffin*, in 1946.


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**HOLLYWOOD AND BING CROSBY**

In October 1946, Mullin and Palmer took their decks to Hollywood, where a demonstration at MGM Studios grabbed the town's attention with a stunningly clear recording of performances by harmonica virtuoso Larry Adler and pianist Jose Iturbi playing with the MGM Symphony Orchestra. Bing Crosby's technical producer, Murdo MacKenzie, heard about the Mullin-Palmer machines and arranged a demo for the singer, his manager and brother Everett Crosby, and the rest of the organization.

Crosby was desperate to find a high-quality audio recording method to produce his show for delayed broadcast. Though live radio was king, he hated live perfomances and loved the relaxed atmosphere of studio recording. The singer had been broadcasting his weekly NBC half-hour show live from Los Angeles during the 1944-45 season, doing each program twice, once for the East Coast feed and again three hours later for the West Coast. Live radio was an ordeal he wanted to end. When NBC refused to allow Crosby to record his shows on 16-inch "electrical transcription" discs (ETs)—the only option besides the equally dismal-sounding optical-film audio recording—he quit radio for a year.

The arrival of Mullin and Palmer's two modified AEG Magnetophons came at a perfect moment in history. Crosby and his producers decided they would produce *Philco Radio Time* on the Mullin-Palmer machines, transferring the final mix to a first-generation ET for on-air play. No one trusted tape enough to put it directly on the air, and in any event, there wasn't enough German blank tape to do that. Mullin's tapings would be backed up by ETs in the NBC recording department. Meanwhile, Ampex Corporation had begun building an American version of the Magnetophon, and a number of manufacturers, including 3M and Audio Devices, planned to make blank tape.

PHOTO: GEORGE PETERSEN

*Jack Mullin demos a 1926 vitaphone recording lathe at the 1988 AES show in L.A.*

Crosby, whose contract with ABC specified that the network provide him with the finest-available recording facilities to time-delay his show, insisted on an agreement with Palmer Films, which would be the sales agent for the Ampex tape recorders. ABC agreed, although with the stipulation that Bing Crosby Enterprises, not Palmer Films, become the exclusive sales agent for Ampex recorders. Crosby invested $50,000 in Ampex, and the deal was made.

Starting in the 1947-48 season, Mullin

—CONTINUED ON PAGE 308


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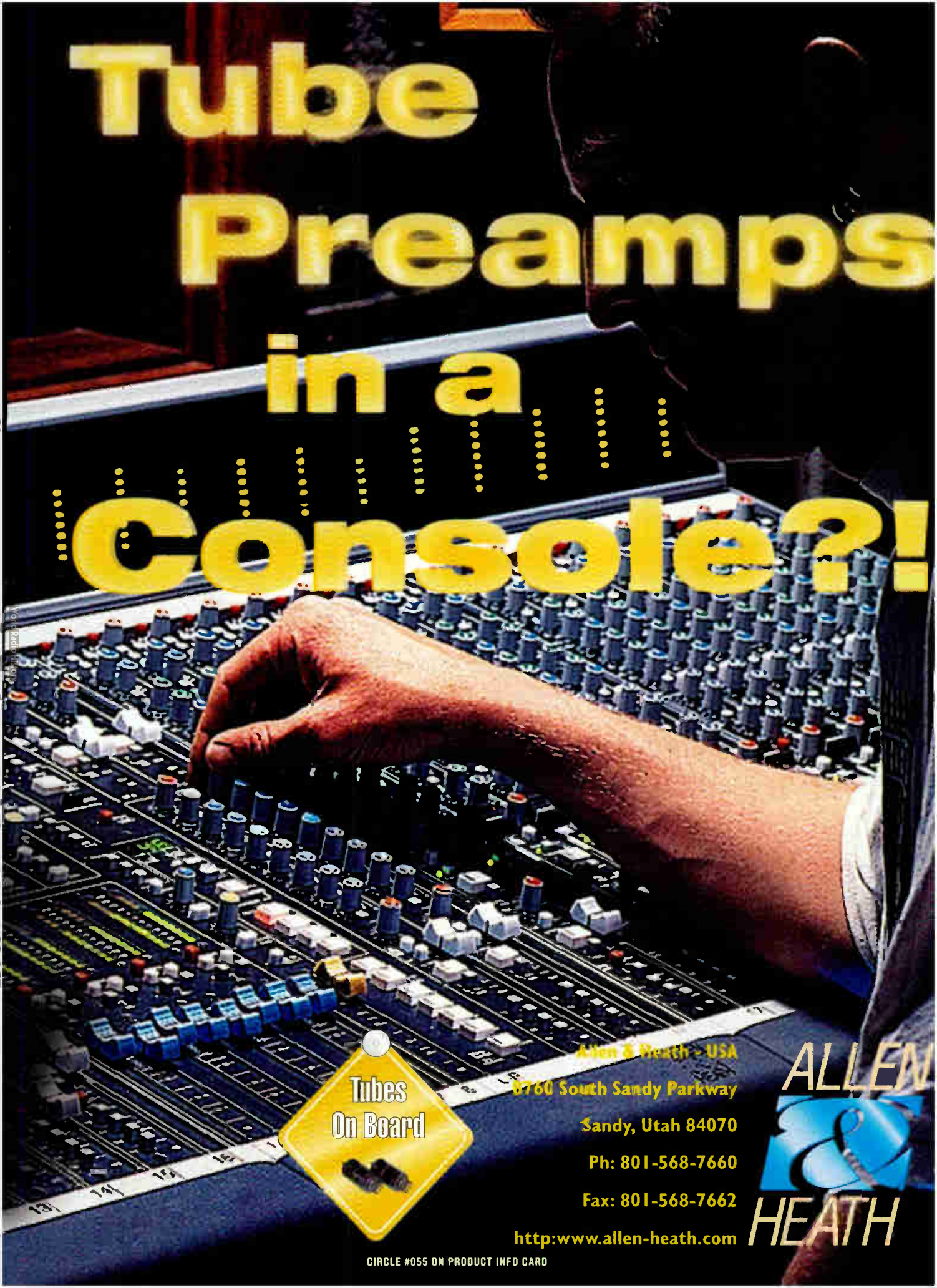
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# THE FOURTH ANNUAL Mix L.A. Open

## Presented by the Mix Foundation for Excellence in Audio

Photos and text by Maureen Droney

Mike Edwards of Audio-Technica, right, presents Charlie Meister of Soundstorm with a Taylor-made driver for winning the Longest Drive contest. Tournament director Terry Lowe looks on.

The team of heavy hitters, L to R: Ed Cherney, Jim Pace, Dave Reitzas and Al Schmitt.

Monday, June 14, dawned foggy and cool as intrepid golfers headed out, revved and ready, for an early start at the Malibu Country Club, site of the fourth annual Mix L.A. Open, presented by the Mix Foundation for Excellence in Audio. Although the Malibu fairways are universally acknowledged to be challenging, the 41 foursomes showed no fear as they breakfasted at 9:00 a.m., hit warmup balls, practiced putts and hedged their bets by purchasing mulligans at $5 a pop.

Noteworthy new sponsor Signet/Soundelux rocked the house at Hole 8 where VP/GM David Dubow and President Kim Waugh dispensed grilled wieners, Soundelux swag and good cheer. A golf shirt giveaway by The Village enlivened Hole 10, and BASF supplied much-appreciated refreshments as the teams played through Hole 17. Other stalwart hole sponsors included Alesis, Fairlight, JBL, the MPGA, Ocean Way Recording, Otari, Quantegy, Record Plant, Sony and Worldlink Digital.

The coveted first place trophies were awarded to Team JBL, who shot 13 under. Second place went to the extremely serious Otari foursome, who came in at 12 under. Sony Pro Audio took home the third place medals with 11 under.

The Otari-sponsored "Closest to the Pin" prize of an Otari CD burner was awarded to Fairlight's Tim Cuthbertson; the TSI-sponsored "Closest to the Pin" went to NARAS President Michael Greene. Sony Pro Audio's Jeremy Stoppard garnered a Schultz Golf custom putter for the BASF-sponsored "Longest Putt," and Mike Edwards of Audio-Technica awarded Soundstorm's Charlie Meister a Taylor-made Firesole driver for "Longest Drive."

"Everyone had a great time at this year's event," said Hillel Resner, president of the Mix Foundation. "Once again, we had more players and sponsors than the previous year. And, most important, the tournament generated much-needed funds for hearing conservation and other important programs. We are very grateful to the industry and our sponsors for their support."

Proceeds from the Mix L.A. Open go to Hearing Is Priceless, co-founded by *Mix* and the House Ear Institute. Special thanks to all our sponsors and participants; we'll see you all again next year. But remember to sign up early for June 2000—the tournament always sells out and the waiting list gets longer every year! ■

World Radio History

1. Team JBL took home first-place trophies. Pictured, L to R: Mix publisher Jeff Turner, Lou Wilhelm, Mike Whit, Don Polis, John Reda, Mix Foundation president Hillel Resner and tournament director Terry Lowe.

2. Second place went to the Otari team, represented by, L to R, Rob Grubb, Bob Tulloh and Tamara Rogers. Hillel Resner, center, and Terry Lowe, right, presented the trophies.

3. Sony Pro Audio came in third place. There to accept the awards from Mix publisher Jeff Turner (left) and Hillel Resner and Terry Lowe (right and far right) were Jeremy Stoppard and Bob Borbonus. Not pictured: John Jones and Richard D'Abo.

4. Dave Rosen of Worldlink Digital relaxed in the cart, surrounded by teammates (L to R) Joe Graziano, Max Chain and Raff Sanchez.

5. The Village owner Jeff Greenberg, left, was joined by Melody Malloy, Lisa Simmons and man-about-town Keith Hatschek.

6. Quantegy flew in the big guns, L to R: Steve Smith, Bill Grigs, Norman Barnett and Daryl Sepolen.

7. The Record Plant team, with blender, L to R: Eddie Delena, James Saez, Tim Goldman and Terry Bailey.

8. Team Alesis, with cell phone and soda, was made up of, L to R, Jon Levy, Brad Carr, Bob Frasier and Doug Aldrich.

9. Though Howie couldn't be there, Howard Schwartz Recording sponsored the MPGA team of, L to R, David Was, Ed "chairman" Cherney, Paul Barrere and Ken Chadney.

10. BASF, which sponsored the Longest Putt contest, was represented by, L to R, Mike Butler, Kathy Rosk Killy, Kim McKenzie and Steve Klein.

11. The QSC team of, L to R, Joe Delgado, Pete Halman, Sam Giordano and John Andrews.

12. Ocean Way Recording put up the foursome of, L to R, Dam Chouquette, Matthew Savalas, Mike Landolt and Dweezil Zappa.

13. Fairlight's two teams, L to R: Charlie Meister, Matt Ball, Tim Cuthbertson, Victor Iorillo, Jay Shilliday, Brian Fatur, John Lancken and Josh Morton.

14. Soundelux-sponsored Hole 8 turned out to be extremely popular. Pictured, L to R: Kellie Maltagliati, Kim Waugh, Ennette Nusbaum, David Dubow and Melanie Gettinger.

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World Radio History

# CRAIG STREET

## STUDIO ENVIRONMENTALIST

In his emergence as one of the most creative producers of the day, Craig Street has worked on a string of projects with artists including Cassandra Wilson, k.d. lang, Chris Whitley, Javon Jackson, Chocolate Genius, Holly Cole, Jimmy Scott, Will and Charlie Sexton and the talented young newcomer Shelby Starner. Cassandra Wilson's provocative *Blue Light 'Til Dawn* was Street's debut as a producer; it's a bold calling card that attracted much attention to the singer's incredible musical and emotional range, and to the producer's wide-open ears. When we spoke several months ago, Street was in Austin, Texas, completing work on an album by Will and Charlie Sexton. On tap were projects with Alejandro Escovedo, Susanna Baca and Me'shell Ndegeocello.

Street was born in Oakland, Calif., and moved with his family to L.A. when he was 11. They moved back to the Bay Area for Street's high school years, and he started playing guitar in bands in Berkeley at age 14. He once dreamed of designing buildings and is still drawn to architect Frank Gehry's work, which has the look of buildings still under construction—works in progress, if you will. "It's an interesting notion, one that for me really works," he says.

He worked as a photographer and did some programming for a public radio station in Berkeley. In 1981, he and some colleagues received a grant from National Public Radio to produce a four-hour documentary on Jimi Hendrix. They decided to interview producer Alan Douglas, the music curator of the Hendrix estate. Before then, Street had thought the word "production" meant the drudgery of tape and turning knobs and had nothing to do with the magic of making music. But meeting Douglas and producer Elliot Mazer changed his perception of production and became significant in pushing him in that direction.

***How did meeting Alan Douglas affect you?***

I knew Alan Douglas from records that my dad had, these amazing records like *Money Jungle* with Mingus, Ellington and Roach. He did a bunch of Eric Dolphy records that I really love, and the only Strayhorn record in existence, which is this really odd thing. He's the guy that discovered and produced The Last Poets. He did the early John McLaughlin records like *My Goals Beyond*, and then *Devotion* with Larry Young and Buddy Miles. Those were amazing records, and his approach, even though I didn't really know what production was per se, kind of sunk in.

At this interview, we took a slightly hostile point of view towards him. The attitude going in was this guy had gone in and screwed up these Hendrix records or something. [Douglas put together several posthumous Hendrix records with modern players added to Jimi's original tracks.] In fact, he's probably the sweetest guy in the world, one of the most generous people I've ever met, and over time has become a friend.

I was asking him about rumors I'd heard of tapes that were sitting around. He took me in a little room and said, "Well there's all this stuff but there's nothing here. But take these tapes, mix them, use them and then send them back to me." He wound up giving me three or four 2-inch masters. We took them back to the Bay Area to mix, and one of the people working on this radio show knew Elliot Mazer. We met with Elliot, and he agreed to work on it. So we went through these 2-inch tapes and mixed what we wanted to use on this radio program—some stuff with John McLaughlin and Hendrix and Dave Holland, and some of it was just extended jams. Elliot and I got to be very good friends.

I was playing in a band at the

**BY ROBIN TOLLESON**



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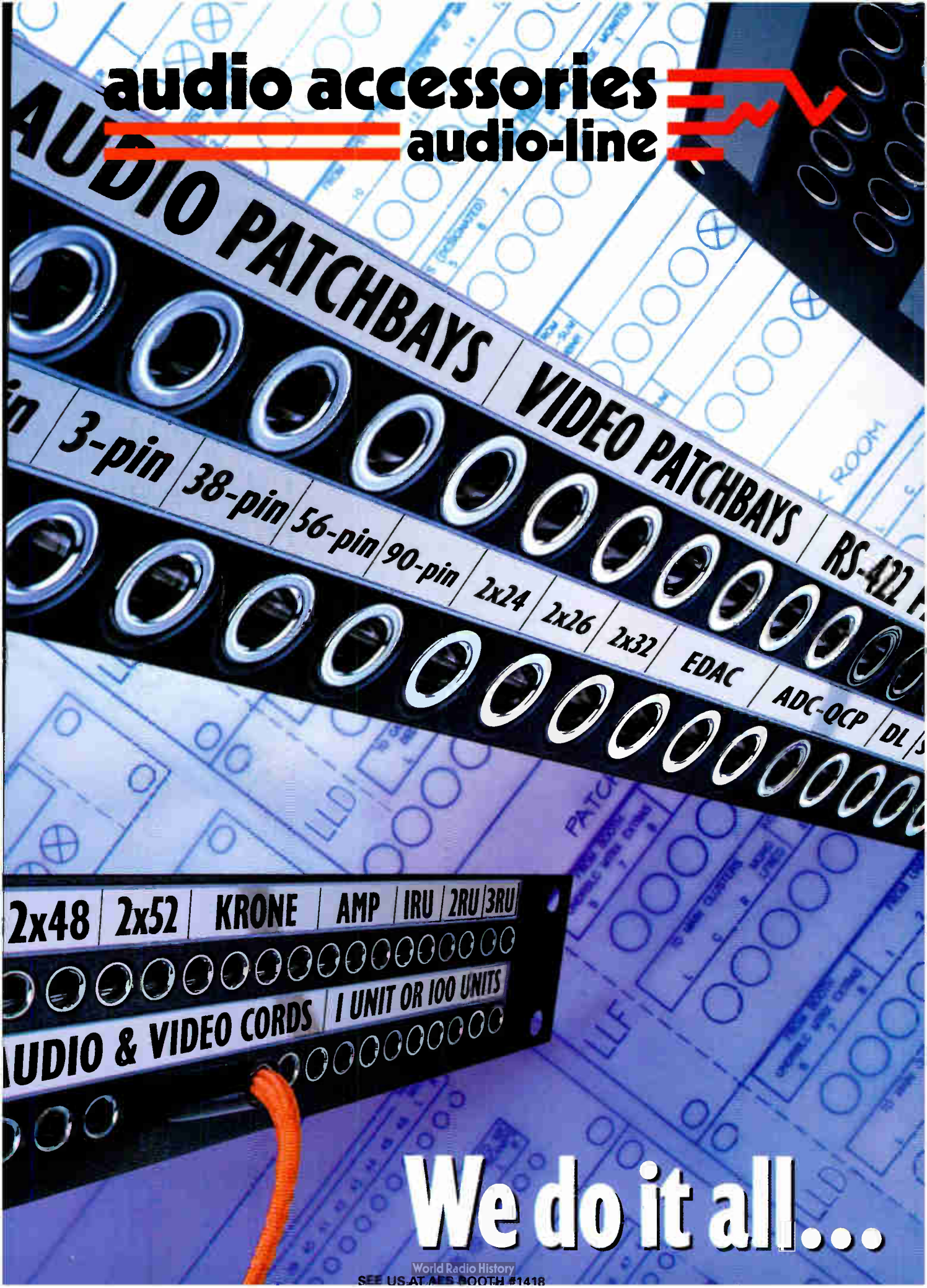


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time and was constantly telling him about bands I thought he would want to hear, and he would bring me and some of the guys I was playing with into the studio. Elliot was the first person that actually pulled me aside and said, "You should be a producer. You're not thinking like just a guitar player, you're thinking like a producer."

***Is there a certain type of artist that you're attracted to, that you look for?***

I'm interested in anybody that has an individual voice, in terms of their approach to music. I'm attracted to an aesthetic or a basic way of looking at life. A lot of it is actually based on preliminary conversations or meetings that I have with them. I don't really care what somebody did before. I'm a little more interested in what they're interested in doing right at that moment. And I have got to feel like I can be in a room with somebody for a while.

If there's any selection at all, it's just in picking people to work with that I really believe in. I can't imagine going in with somebody that I didn't believe in, going in with somebody that I had to create something around, that didn't have their own thing. It's not about that. I think that's part of why I really enjoy when something's like a co-production. In general, the artist is always the co-producer anyway, but sometimes it's formal, like in the case of k.d's record, or Will and Charlie's record, or the Patty Scialfa thing was a co-production with T-Bone Burnett. It was fabulous working with k.d. in that sense because it's easier to do it. The same with Charlie.

Making records is really fun, and making music is really fun. And I look for that. I look for somebody that's got a sense of humor, somebody that's kind of fun. I look for surprises; I don't ever want to make the same kind of records with people, and I'm not interested in just doing the same types of things over and over again. As I work with more and more people that have made records, I realize that a lot of people don't work the same way that I do.

***From a technical basis?***

Not technical. Technical is the simplest, most boring part of it. I really tend to go for performance somewhere in there, whether the end process is going to be documentation, as in the case of a one-day record, or whether it's something where it's about taking advantage of what you can do in a studio. I like things to be finished. They should be finished, and they should be well-done—I don't think you should put anything on that would embarrass them—but I'm not really very interested in polishing things to the "nth" degree.

***Do you fight that a little bit with artists?***

I don't think that I really fight with artists. I really believe that I'm just helping somebody get what they hear in their head out to tape, and eventually to a disc, and part of that can be a pushing process. Somebody's brought me in because they want an outside opinion about what they're doing, and they want somebody to push on them a little bit. At the same time, in the end it's an artist's record, so I'm not going to fight somebody on something that they really need to do. There are times when I would like to see things done in a slightly different way, or that I think somebody's being way too hard on themselves. And I'll call those kind of things. If I think somebody is really picking at something needlessly, I'll do my best to be supportive and say, "Hey, man, it's killer. Why change it?"

***Artists must like somebody that will stop them and say that.***

A lot of what I do is just create an environment that's comfortable for people to play music in. That's the majority of it. People, at this point, that are searching me out are searching for that. Some come to me because they've heard a record that I've done in the past, but that's not a very good barometer for me. Because I can't make a Cassandra Wilson record with k.d. lang, or a Javon Jackson record with Will and Charlie Sexton. All those people are completely different, and the approach is different. I get bored doing the same thing over, so I'm always wanting to change things. I think it's about environment.

***What was your first real break in terms of becoming a producer?***

One of the musicians that I'd been working with on a couple projects, and who had become a really good friend—we would always argue about music and stuff—was Cassandra Wilson. Cassandra got signed to Blue Note, and I ran into her in the lobby of the building we both lived in. She was sort of bemoaning the fact that she had to have a producer. The label wanted her to have one, and they were looking at really big names. And we got to talking about what she wanted to do and what she was thinking about and who she was looking for. And I said, "You know, I'll produce it." So she went to the label and said, "There's this guy, and I have a feeling about him—I want to take a chance." So Bruce Lundvall let us go in for what was ostensibly demo work, and basically Cassandra let me do whatever I wanted to do. She put herself in my hands, and I put whatever I wanted to hear around her voice. When the label heard it they flipped out and said, "Let this guy do the record." Cassandra was amazingly generous in allowing me to follow my instincts.

It was an interesting collaborative process on both of the records that we did together. One thing it did was really place her as an artist at a certain point, and I think it defined how people looked at me. People were suddenly calling me up and saying "Will you do this record?" Partially through Bruce Lundvall I started being able to pick and choose projects that seemed interesting.

***Were there certain producers that you particularly enjoyed before you got into production?***

Tom Wilson was on the staff at Columbia in the 1950s and was doing these radically different combinations of records—Velvet Underground, early Dylan, Simon & Garfunkel. He's probably the first person I was aware of as a producer. I was 8 or 9 and my dad bought *Bringing It Back Home*, and I remember hearing "Bob Dylan's 113th Dream" and thinking to myself that somebody had made the decision to leave this mistake at the beginning of the tune, this sort of false start, and then start the tune over again. I remember seeing the word "produced," but when you're 9 years old you don't really know what that means.

And I absolutely adore Glyn Johns. I've realized that a lot of what I'm interested in doing comes directly from guys like Elliot [Mazer] and Glyn who weren't working in traditional studios. There's kind of a rawness to what's done. I sometimes think that Cassandra's second record was just a really bad imita-



World Radio History

tion of a Glyn Johns record, because all I was listening to at the time was [The Rolling Stones'] *Exile on Main Street*. That's Glyn and Jimmy Miller, who's also fantastic. Glyn and Jimmy were like hand in hand. Glyn engineered a lot of stuff, and he'd do stuff on his own, like some of the Zeppelin stuff that was done in houses. That was part of the whole reason of going into The Barn [at Bearsville, N.Y.] and doing stuff there [on Shelby Starner's record].

***You like string sounds.***

One of the things that always appealed to me in music is the notion of orchestration, whether it's in the sense of Ellington and Gil Evans, or sounds from films—Morricone and the kind of sounds of putting different things together. When I was a teenager I played with this guy Butch Morris, a cornet player, composer and arranger. Butch has a great sense of orchestration, of putting things together, and I learned a lot from being in this large band that he had.

***I was thinking of some of the de-tuned guitar tunings that you do.***

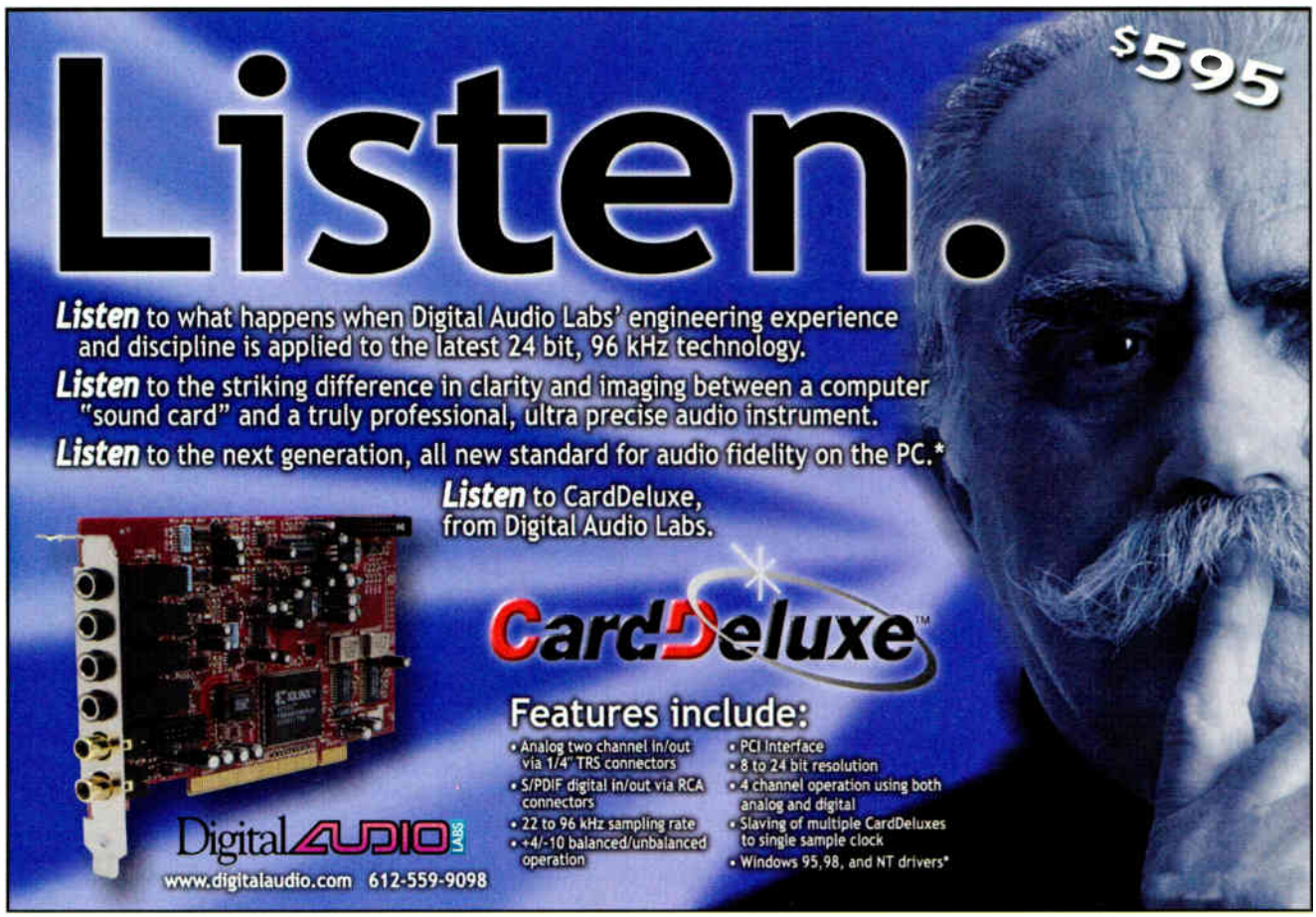
That's from other stuff, from my love of Hawaiian music, a lot of African things, and I love real raw, raggedy blues. I also think guitars sound better when they're tuned down, so I'm attracted to guitar players that tend to work in open tunings, de-tuned things. I like playing with that, especially when it's appropriate to really orchestrate. Let the orchestration be a really low-tuned guitar and maybe a VSO'd harmonium, and pedal steel, and some actual strings, and maybe a Chamberlain or mellotron, or maybe some samples or loops or something. And then you play with what sits out in front. You can really trick the air. If you have an accordion, a pedal steel and one violin, you can make it sound like a symphony by just placing the violin in front and pulling back the accordion some so the accordion-ness of it doesn't read so much. I just love what you can do with sound and tape and weird instruments. And I love the idea of pushing acoustic instruments as far as they can go, or switching the roles, like maybe the acoustic instruments are pulled up to the front and the electric instruments are pulled in the back.

If you think of some of the stuff that Teo Macero or Eno did texturally, that stuff's really inspiring. I'm just grabbing from every place. I'm the kind of person that would sit down and listen to something by Eno, then listen to some Gil Evans, then some Robert Johnson, and I can't really separate it. I hear stuff that I like, songs that I like. To me there's no difference between Monk and Son House, or Radiohead and Mary J. Blige.

***You like to have tape rolling from the time people walk in, don't you?***

I tend to like early takes, because I think people have kind of said it all. That doesn't mean that you can't go in and edit, fix things or do any of that. But there's a basic energy that's not going to get any better by doing what Brian Wilson did—doing 45 takes of something. If you haven't hit it in five takes, put it aside and come back to it another day. To me it's about an environment, it's about getting something that's alive, trying to get life onto a piece of tape, and then to this little hunk of plastic.

I can tell you in five minutes what I use or how I use it. That changes all the time. I think you gotta beat the technical up a little bit. For me that's what it's about. It's like, what you have is a drum. So why do it the way you've always done it? Why not start with the fact that they're drums, and you've got a



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great drummer, and they sound good in the room? Why not start with the room, rather than starting up close with a magnifying glass, and then add to that what you need on a tune-by-tune basis? Do you need a snare on this, a separate hat? Maybe you're not going to do the whole kit at the same time. Do it at different times so you can put it in different places, or do different things with it, change the speed or whatever.

I use a combination of things that will allow for warmth to get through. I tend to work in analog, but I don't really care. For me, analog is a happier medium, so staying there until the very last minute and then going over to digital in a specific way allows some of what you're going after to make it to the end. Digital could be more convenient in some ways, but I prefer the sound of analog. I don't care if the other stuff is old or new. I use a combination of brand-new things and really old things.

The thing that's probably most important to me is what I monitor on. For the last three years, I've been monitoring on these ProAc speakers, Studio 100s, and I'm using them in conjunction with a discreet 130-watt Audio Research power amp. With this combination, the mixes would sound great wherever I went. I don't know if I'd be happy working with anything else. I have a ton of mics, but I got a couple old 67s that I love from Walter Sear. I haven't gone anywhere for the last four years without any number of Coles microphones, 4038s. I just love them; they're great on everything, guitar amps, Nationals and dobros, strings, overheads and kick drums.

***What was the challenge of working with young vocalist Shelby Starner?***

The key to putting a band together for that project was finding people that were versatile, that could move musically through a lot of different styles. And I wanted to keep the group of musicians very intimate. I didn't want to have more than three musicians, and I looked for some kind of a connection. This needed to feel like a family. We were going up to The Barn at Bearsville to record. So I used Kevin Breit, a fantastic musician, wonderful guitarist, and he plays mandolin, banjo, whatever. His brother Gary is a keyboard player, and I wanted that sibling thing happening. And I used Abe Laboriel Jr., who also worked on k.d.'s record and on this Chocolate Genius record I did. Abe is a drummer, but since his dad is one of the best bassists in the world, Abe also plays bass. So we did the whole thing, basically with those three guys, except for one song where we wanted a string quartet. So it formed this intimate kind of family.

I felt comfortable that these guys weren't going to cop an attitude at making a record with a younger artist. And that was critical to setting up the environment. Here was somebody who had never played with a rhythm section, and I wanted to make sure that we didn't overpower her, that what was going down was something that she wanted.

***What kind of approach did you take to recording Chris Whitley's*** Dirt Floor***?***

We were going to record it in his apartment, and at the last minute me and Chris and this wonderful engineer named Danny Kadar got in a truck and decided to go up to his dad's place in Vermont. We did the record in a workshop, where there's a wood-burning stove and a lot of old motorcyle parts. It's where Chris does a lot of his writing. He was real comfortable in there. We just hung the mic up by some wire because Chris stomps his foot a lot. Well, also because we forgot the microphone stand, but it was a blessing in disguise. I used two mic pre's that were designed specifically for a ribbon mic, prototypes made by Tim DeParavicini. We used a pair of those and ran a Speiden into that. We recorded to an old Ampex 440 that the engineer had, and did backup on a little Studer CD-R that I use instead of a DAT for backup and rough mixes. I carried up the ProAcs, and an Audio Research preamp that I use in my work space to monitor with, and we used that as a 2-track select. We set up everything in the kitchen and ran wires back to the shed, and that was it. Chris sat down and played, and we did all the songs in a day. The next morning we got up and made a master reel. Greg Calbi mastered it for us. I love the contrast between that experience and the grander experience of working with Patti Scialfa with T-Bone [Burnett] where it's huge production, tons of musicians, lots of edits.

You pick the equipment that will help each project happen. I like to have people performing in the room together. Even if you eliminate everything that happened in the room except the bass, and put everything else on—new drums, guitar, vocals—there's still something for me about having a feel that came down with everybody in the room together. We use dynamic mics for vocals and send them into a really great



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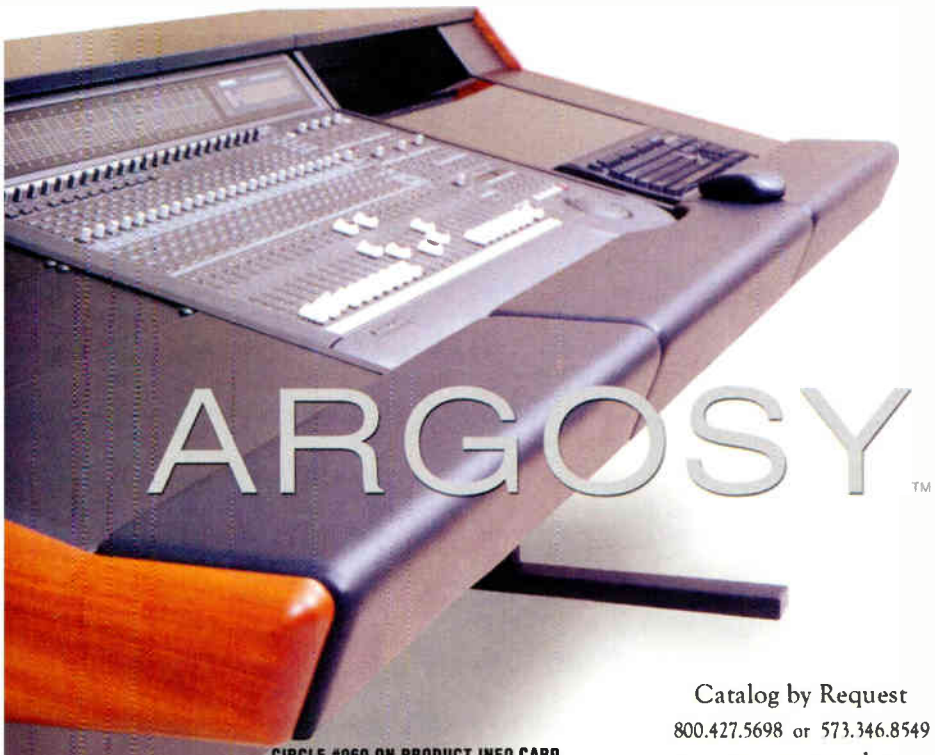


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mic pre like an Avalon, in case it's a keeper vocal. Sometimes we keep them, sometimes we don't. On Will and Charlie's thing, some of those we kept, because they were just great vocals. Sometimes you go back in and do another vocal with a different microphone.

I do a lot of stuff with outboard mic pre's, because mic pre's are kind of like microphones. Each has its own kind of color and characteristic. I know engineers find it convenient to have a board, but there's a tremendous range in terms of color that you can go to if you're careful in your selection of mics and pre's. It also means that it doesn't matter what kind of room you go into. I tend to pick rooms because I like how the room feels and not because of what kind of board it is. It doesn't matter because I'm going to bypass the board and maybe only use it in a couple of places. I'd rather get to the tape as simply as possible. Most of my stuff is done 16-track tape. If I need more room, I get two reels, but I like how 16-track sounds. I'm not crazy about tons of digital processing where I can read that that's what it is. But I like combinations of stuff, plates and springs and room sounds and tape.

The people that I've been using to mix things have similar tastes. Some of the mixers I've been working with a lot are Kevin Killen, Pat McCarthy, Roger Moutenot and John Hanlon. And I do a lot of the recording with Dan Kopelson. I just love his ability to get things on tape. I know you guys are a technical magazine, but so much of what I do is so loose. Danny is always laughing because I'll go in and pretend like I'm going to be really structured and organized and rehearse and do this or that. But he knows that I just kind of hit the ground running. I want to record before the first guitar is out of the box, and I think it's critical that we're able to do that. There should be experimentation in the studio, but part of being a producer is that you have to look at the realistic side of that. If somebody wants to do the same guitar overdub for a week straight and you have a fixed budget, then that's not something that you do. There has to be a point where something stops. But I really believe that when a musician has an idea that they'd like to try, you need to go there and find out if it's going to work. ■

*Robin Tolleson is a freelance writer and musician living in Northern California.*

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# MIXING IT UP WITH ANDY BRADFIELD

## MULTI-TASKING BRIT HAS GOT IT GOING ON

Twenty-eight-year-old engineer/mixer/producer Andy Bradfield is one of the new breed of British engineers—a busy independent who has his hands full doing an amazingly broad range of projects, from big band jazz to pop to dance tracks of every variety. His extensive credit list shows both established and up-and-coming acts, including the Spice Girls, Honeyz, Everything But the Girl, Pet Shop Boys, Maxi Priest, Catch, Neneh Cherry, Gary Moore, Kylie Minogue, Future Sound of London, Björk, The Chieftains, the Charlie Watts Quintet, Lamont Dozier and Julia Fordham. We caught up with the affable and energetic Bradfield last spring when he came to the U.S. for the Grammy Awards.

***So you were nominated for a Grammy for working on Robbie Robertson's album,* Contact From the Underworld of Redboy?**

Yes, for Best Engineered Album. Howie B. had done quite a lot of the record, and he'd mixed about half of it, some of it in L.A., and then he got tied up with U2 and was on tour with them and couldn't finish the record. He suggested that Marius de Vries get involved and that's who I ended up working with. Basically I ended up mixing almost half the record at Townhouse in London with Marius. The Grammy nomination came totally out of the blue. I'd done the work so long ago it was a real surprise to get the nomination. I was completely amazed and flattered as well.

***How did you get into this business?***

When I was about 13 or 14 I used to go around recording everything known to man. I grew up in Essex, and I had a little tape recorder and a microphone. We're talking mid to late '80s. My mom and dad saw that I was interested in this and allowed me to pursue it, which was great. I took this paid course where I went to a little studio, and though it didn't teach me bucketloads about how I do my job now, it definitely got me hooked. The studio was called Diploma, and it was very well-run, and it totally hooked me. It was a 20-week course, one night a week, from about 6 till midnight.

By the time I was 16, I was pretty well hooked, and I was working an afternoon a week, which usually stretched into the evening, of course, and my friends were all asking, "Are you sure you want to do this? The money's no good, and it's crap hours, and you'll be making tea and starting at the bottom..."

***The infamous "tea boy" role of British story and song!***

Exactly! The infamous tea boy! And I said, "Yeah, this is what I want to do." Because I thought I'd found something: "Yeah, this is me. This is my niche." I was working at this little studio, and the owner would say, "You know, you really should go into town [London] if you're serious about this." So I sent out about 60 letters to studios and heard back from four or five. I ended up in this program called YTS—Youth Training Scheme—but you might as well have called it slave labor. The bottom line is they pay you absolutely horrific money and you work quite hard. I went to a studio called Red Bus in London for about six months, but The Townhouse had also said, "We'll keep you on file." Five months later—this is September 1987—The Townhouse wrote me and said, "We're opening a new facility called Olympic Studios, and will you come in for an interview?" They offered me a job, and when I told the people at Red Bus they were amazed. To be honest, I didn't know much about Townhouse, so I was asking the people at Red Bus, "Is Townhouse good, then?" [Laughs.]

So I really landed on my feet. But it was tough work—they work you very, very hard. But it was immediately clear to me that this was a good place to be.

***And was it a tea boy position, logging tapes, etc.?***

Absolutely. Although I didn't have to log tapes or align machines,

—CONTINUED ON PAGE 107

BY BLAIR JACKSON



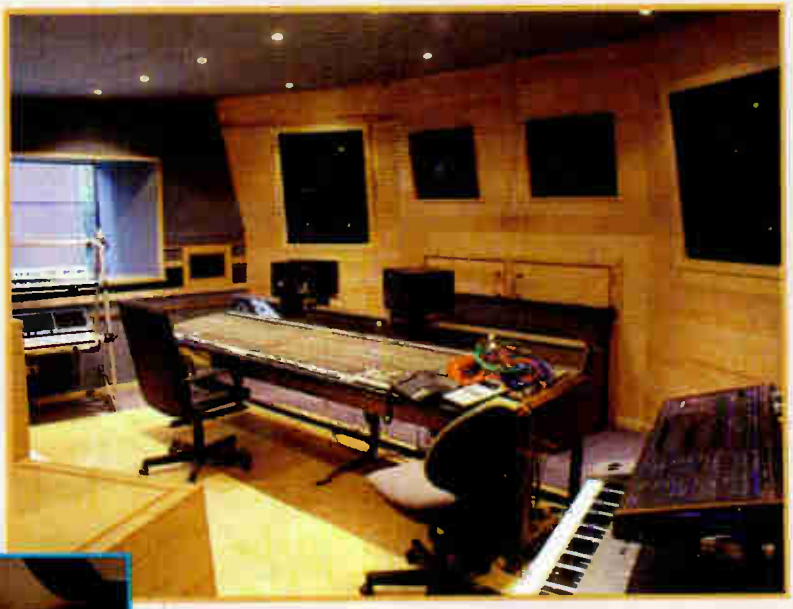
World Radio History

# GALAXY STUDIOS, BELGIUM

## *Low Noise, High Profile*

Galaxy Studios is set on a quiet lane in Mol, in Flanders in north-central Belgium. Not much happens in this bucolic suburban town. That is, except for the occasional F-16 popping a wheelie overhead, a reminder that Brussels, an hour's drive away, is the headquarters for NATO and the capital of the newly established European Union.

You'd be hard-pressed to hear anything emanating from Galaxy Studios' 8,000-plus-square-foot edifice, though; in fact, it's difficult to hear what's going on in the next room, unless you pull up a fader. Galaxy's design has achieved a benchmark in sound isolation, no mean feat when you consider that its design is not the product of any of the usual studio design gurus. Rather, it is the result of two brothers' genuinely passionate pursuit of sonic purity.



*The Amek Angela room at Galaxy*

*Galaxy includes one of the largest main recording rooms in Europe.*

The design is particularly impressive when you realize that a 100.7dB noise floor and an NC5 HVAC noise rating are consistent throughout all four main control rooms and all adjacent studio spaces, including a 1,000-square-foot main recording hall and several other music and post-production suites. If you want proof that goes beyond mathematical measurements, co-owners Wilfried and Guido Van Baelen are happy to step into one of the studios, close the airtight, concrete-filled door behind them, pull out a starter's pistol (whose report comes in around 125 dB) and fire it. And if you hadn't seen someone pull the trigger, you'd never know it happened.

BY DAN DALEY

### FLYING THE COOP

Galaxy started out in 1981 when the Van Baelens' father turned what had been a poultry coop behind the family's home into an ad hoc studio for Wilfried, a keyboard player and budding composer and producer. Guido pitched in on the effort, which began with an Otari 8-track deck and a Soundcraft Ghost console. Later, Wilfried started his own hi-fi retail business nearby, working on designs for the Wersi organ company.

After upping the technological ante with a 24-track MCI machine in 1984 and, later, a 56-input Amek Angela console, Wilfried, who was now also demonstrating organs and making recordings for Wersi while attending a music conservatory in Antwerp, wanted to start making records in his studio. It was then that he encountered noise issues for the first time. "I knew we needed to make the room quieter to make better recordings," he recalls. "I talked to professors at my school, and they explained to me how I needed mass to stop noise. But we also started thinking about isolation ideas. We found this really thick rubber compound, and we covered the whole building with it, 2 centimeters thick. We had the best-isolated



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chicken coop in the world." While Wilfried was delving deeply into direct MIDI-based recording—he was a beta tester for Cubase and owned one of the first Commodore computers in Europe—he was also peering into the mysteries of acoustic recording. "MIDI is great for a lot of things, but you don't get emotion and expression across with it," he says. "I had to learn to make good acoustic recordings."

British pop dominated most of the European charts at the time, and the Van Baelens turned to UK studios for direction. But even the staid BBC's definition of quiet wasn't sufficient for Wilfried, who decided in 1988 to build his ideal recording space. He wanted a multiroom facility, one that would allow him to continue his burgeoning production career (he produces, among others, Belgian pop songstress Dana Winner, whom he married a year ago) and could still be booked regularly by outside clients. He wanted the studio to reach world-class status and draw work from around Europe and beyond.

David Hawkins of Eastlake Audio in the UK had befriended Wilfried and advised him that 60 to 70 dB of isolation would be about the best he could attain using conventional approaches to acoustical isolation, and that other solutions to acoustical crosstalk between rooms might work but would be cost-prohibitive for a recording studio. Back in Belgium, the Van Baelens took another route to see how far they could push the envelope, enlisting help from the academic and industrial sectors, from Professor Gerrit Vermeir at the Laboratory for Building Physics at Leuven University and Eric Desart, technical manager at Gerber Industries, both of whom also consulted with Hawkins. "Getting good isolation was the first challenge," says Wilfried. "But we also had to consider how to keep an air conditioning system that could cool a building of that size inaudible, and also how to make all of this work in a friendly, creative environment."

## SOLUTIONS

Desart devised a plan in which large helical springs, each capable of supporting 3.1 tons of load and with a resonance of 3 Hz, would be grouped and placed under the floor slabs of all of the studios and control rooms, which would in turn be isolated from each other via individual slabs and designed as free-standing concrete structures, which Van Baelen refers to as "bunkers." For example, control rooms one, two and three weigh 252 tons each, and each has 78 springs supporting it. Vermeir calculated a compression of the spring of 25 millimeters initially, with another 2 mm of compression over the next 30 years from mathematically predictable metal fatigue—more than a lifetime for most recording studio enterprises.

*Helical springs are placed under the floor slabs of all of the studios and the control room.*

"A helical steel spring has the advantage of higher insulation values than viscous elastic materials, but at the same time the disadvantage of extreme[ly] low internal damping," Vermeir writes in an analysis of his recommendations. "Therefore, on the top and bottom of every spring package, an elastomer layer takes care of the natural frequency of the steel springs as well as the insulation of the high[er] frequencies." The total weight these springs hold at Galaxy is a mind-boggling 2,030 tons—more than 4 million pounds—including concrete and equipment, and they can be seen in the labyrinth of tunnels that burrow under Galaxy, also holding wiring and amplifier cages.

Similar ingenious principles abound in other aspects of the design. The Van Baelens stressed the importance of sight lines between studios and control rooms. To achieve this and maintain isolation, incredibly heavy glass panes were specially made by a German manufacturer. The panes are fabricated from layers of glass and PVB foil to avoid the green-filtering effect common to thick aquarium glass—20 centimeters of glass plus vented gaps between them in each window.

The air conditioning was another major noise issue. The Van Baelens' team devised a system of overhead venting with massive outlets in the large main recording hall and relatively large ones in all other acoustical spaces. Air is propelled by a series of large, low-pressure fans with 42 blades, augmented by large secondary baffled silencers, moving between 0.1 and 0.15 meters of air per second—slow enough to be virtually inaudible yet fast enough to recirculate the entire volume of the main recording hall completely three times per hour. The bottom line for Galaxy's HVAC system is an NC rating of 5, lower than the specifications issued by both the BBC and Germany's ARD broadcasting company.

However, each isolation solution created its own set of problems. For instance, the glass panes were so heavy—as much as a ton each—that they could not be mounted using conventional techniques. So, Guido devised a suction-based device to get around that. Overall, the implementation of the studio's plans were so complex that construction contractors refused to bid a set price for the project; instead, they charged by the hour. And considering that Wilfried estimates that the entire project's three phases took approximately 180,000 hours to complete, this understandably raised a few bank loan officers' eyebrows.

With its cutting-edge and unconventional design, Galaxy is a natural magnet for new technologies. Starting late last year, technicians from Netherlands-based Philips, which is marketing the 1-bit DSD SACD format with co-developer Sony, have done several sessions at the facility, including classical releases for Cleveland-based audiophile label Telarc, engineered by 26-time Grammy winner Tony Faulkner and produced by James Mallison. And Galaxy's technology complement puts it into the upper echelon that the Van Baelens had sought. Consoles include a Neve VR-P72 and a Capricorn, along with an SSL 9080J with a new 8-bus surround mix matrix. There is Genelec monitoring throughout. The facility also includes one of the largest main recording rooms on the continent, with flutter-free acoustics and a variable reverberation time between 1.6



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and 2.6 seconds, along with significant recording spaces for all four main control rooms; Sonic Solutions systems for editing and mastering; wiring between all studios and the central machine room; and touches like individual lounges for each studio, a fitness facility, and a kitchen/dining/bar facility. Five on-site guest rooms, with more planned, make Galaxy a residential facility as well. Recent clients have included Lauryn Hill, Joan Osborne, Mary J. Blige, Kelly Family, Joe Zawinul and Rammstein. And with 75% of the studio's business coming from outside of Belgium, the Van Baelens have also achieved the world-class status they had hoped for. Ronald Prent, who was at Galaxy doing 5.1 remixes with Rammstein, summed up a most complex facility most succinctly when he said, "Simply smashing." ■

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*—FROM PAGE 104, ANDY BRADFIELD*

which was done by the maintenance people. That varies from studio to studio in London. Almost straight away they put me to being an assistant.

***That's mic setups and cabling and breaking down sessions...***

Right, the whole deal. You're the engineer's assistant—though you do also make the tea for the session, as well. Doing all that was a tremendous education. I got to be part of some great sessions.

***What was the first session you did where you thought, "Yeah, this is why I got into this business—to be part of this"?***

It was a Joe Jackson mixing session at Olympic. I was a bit of fan: "Wow, Joe Jackson! This is fantastic." He was doing final overdubs and mixing. I was mostly just making sure the right tapes are up and available, making sure that all the slave machines are hooked up, any kind of synchronization that needs to be done, so that when the engineer walks in and hits Play, the session is up and running.

From there, I started getting more and more opportunities to do things. Once you look like you know what you're doing, engineers—particularly the kind who are engineer/producers—are happy to hand off some duties to you. It's very difficult being both an engineer and producer on a session, so they need help. This ended up being a great way to learn. So I found myself in situations where I'd semi be in charge of the engineering, but at the same time

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you still have someone to fall back on if you don't know how to do something.

I worked with some brilliant people on the way up: I used to assist a lot for Mark "Spike" Stent and wound up engineering for him, which was great but hard, because he's a phenomenal engineer himself. I also did quite a lot of work with Bob Clearmountain. He was great to work with because he's a very good teacher; he's very patient. But also, if he sees you have an aptitude for something as an assistant, he'll push you. Another one was Robin Miller, who doesn't engineer but has got an amazing pair of ears, and he's great at describing things. So those people were all influential on me.

***How did you gravitate to mixing?***

It was just one of those things that I really enjoyed. It wasn't really a conscious decision, but I found myself doing lots of mixing and enjoying it. Then I went in and did a couple of long recording sessions, and I thought, "Oh man, we're on the eighth day of doing vocals. What a drag!" What I like about mixing is you get a high turnover of work in a short space of time. You get a lot of satisfaction because you're finishing things, or attempting to finish things. I like the part of feeling slightly under the gun: "You have to mix these four tracks by the end of the week," or whatever the schedule is. You're working toward a specific end point.

***Do you have any specific aim in mind, sonically, when mixing a typical project?***

Not really. You're just aiming to make anything you work on sound good—including the songs that are really terrible! [Laughs.] And to sound good on any system. I'll walk into a shop and hear a song I worked on playing out of this awful little mono speaker, and after the intital shock wears off, I think, "Hey that still sounds pretty good!" I was taught from early on to make sure you listen in mono and on a variety of different speakers.

***Do you carry your own reference monitors?***

I do. I'm actually very fussy about what I work on. I've got a Bryston 3B amp, for which I've had a switcher box made so I can have three sets of small monitors. I have one set of Auratones, a pair of NS-10s and a pair of KRK 9000Bs, which I wouldn't be without; I love them dearly. I move around quite a lot—although I also do a fair amount at Townhouse and Olympic. I work at AIR, at SARM, all

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over. They're all pretty good rooms. But the KRKs give me the bottom end I need wherever I go. Monitoring is such a personal thing, and when I started moving around a lot, that's when I realized how important it is.

***You're an SSL man?***

Almost exclusively. I like the SSL G Series the best, even more than the 9000, which is a little clean-sounding for my taste, believe it or not, although I do mix some things on it now that I've learned how to use the automation. It's a great tracking console. But I love the G Series EQs. I get tapes in all sorts of states, shall we say. Sometimes they're not bad, sometimes they're horrible. Sometimes they're brilliant. It just depends. But I find I can sort things out best on the G Series.

***Any favorite pieces of gear at the moment?***

One of my favorite boxes at the moment is TC Fireworx. It's completely mad, that's what I like about it. It's not your run-of-the-mill reverb. I have a few bits and pieces I carry around, but they're mostly unusual things you don't find in studios. I've got an LA-3A, which is a fantastic vocal processor you find more in the U.S. than in England. I've also got an Avalon VT737 compressor/EQ, and I tend to record a lot through that. I do a lot of tracking to Pro Tools, and sometimes if you're in the middle of a mix and you need to do a quick overdub, rather than messing about and changing the desk and risk double-routing things when you're using the groups to send effects, I'll just put the mic straight into the Avalon into the back of the tape machine, and it's easier. I also have an Apogee AD800, which I use for going into Pro Tools, as the "soft limit" is fantastic for keeping those nasty peaks under control. And it sounds great.

***To what degree are you influenced to take a mixing assignment by who engineered it?***

Not much. I'll try to give something a listen to determine whether there's anything I can do with it. Unless it's something I absolutely detest, and there aren't many things of that ilk. But I'm not going to take something I don't like just because of the money. That's not fair to the project, and at the end of the day, those are the ones that end up being a nightmare for some reason—maybe because you're not committed. Sometimes you'll do something you don't like as a favor to someone, and they always end up being the most difficult jobs! [Laughs.]

***When you get a multitrack, say a 48, of a song, what's the first thing you do?***

The first thing I do is shove up all the faders and have a listen. I'll usually have a DAT or a CD-R of the rough mix or original mix or whatever it is. I'll usually have spoken to the record company and the producer and artist, and they'll have told me what they want.

***What's the range of things they'll want?***

It varies. How I started to get into producing is that record companies would send me tapes and ask my opinion and I'd say, "It's nice, but I think I'd put this section here and do this to that part and bring in that other part later..." And they'd say, "Well, do you want to sort it out, then?" And suddenly they were authorizing me bringing in backup singers and having three days instead of a day.

***Is there any one problem you can generalize about the state of the tapes you get?***

Well, I think a lot of people are overrecording. They put too much on every song; there's too much on tape. So one of the things I often end up doing is taking things out. I'll come in and look at the tapes: "Oh my God! Two analog 24-tracks *and* a RADAR! Oh, *no*!" And you put about five faders up, and it's like, "Help! I can't hear anything!" There are five drum loops going on and eight guitars. So then it becomes a trial-and-error situation: What if I take this bit

## BITS & PIECES

**Lansdowne Studios** (London) completed a major refurbishment this past summer. Part of the renovations included the installation of a new custom 72-channel AMS Neve VX-S mixing console. The board is currently the largest VX-S in London and includes Flying Faders, Recall and an 8-channel surround sound film panel. Also installed were a new ATC surround monitoring system and Pro Tools|24. Lansdowne's sister studio, **CTS**, has installed two Studer A827 24-track tape machines, bringing the studio total to four...**M2-TV** (London) purchased another Soundtracs digital console for its Camden facility. The desk is a 16-fader model with patchbay, capable of mixing 160 channels at 48k. Soundtracs also reports that a DPC-II was used for this summer's **Pavarotti and Friends** concert in Parco Novi Sad in Modena, Italy. Proceeds from the event were used to aid needy children in Guatemala and Kosovo. In addition to the headliner, performing artists included **B.B. King**, **Boyzone**, **Mariah Carey**, **Joe Cocker**, **Gloria Estefan** and others...**Concert Systems** (Altrincham, Cheshire, UK) ordered two Midas Heritage 3000 consoles...The soon-to-be-completed **Global Fusion Studios** (Monterrey, Mexico) was designed by George Newburn of **Studio 440**; owner Francisco Lobo selected an SSL 9000J console...London-based **Manor Mobiles**, which recently celebrated its 25th anniversary, purchased an Axiom-MT digital console for one of its three trucks. Manor Mobiles is part of the studio group that includes **Olympic Studios**, **Abbey Road** and **The Townhouse**, where **Rebecca Duncan** has taken over duties as studio manager from **Karen Harding**...Recent projects undertaken by Toronto, Ontario's **LiveWire** mobile include the **Young Achievement Awards** featuring a performance by **B*Witched**, **Amanda Marshall** on MuchMusic, **The Moffatts** performing for a future live album and a gospel festival featuring **Salome Bey**, **Blaxam**, the **Youth Outreach Mass Choir** and others...The **Helsinki City Theatre** purchased a Cadac J-Type console with 16x32 matrix. The board was supplied by Finish distributor Soundata Oy...London's **Rock Garden** venue took delivery of a Spirit by Soundcraft Digital 328 console. Rock Garden has hosted performances by legendary artists including U2 and the **Sex Pistols**. A 328 is also being used on tour for pop group **Cleopatra**...**Hideo Tanaka**, longtime president of **Hitokuchi-zaka Studios** (Tokyo, Japan) retired recently. **Sadatake Kikuchi** was named the new president of the facility...Klark-Teknik reports that a KT DN3600 with remote and a DN60 analyzer were used during a **Warner Classical** tenth anniversary gala that took place at the Savoy hotel in London last June. ■



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out? I'll listen to the rough mix and hear how things have moved forward or back in the mix as the song went on. If it's what I call a kitchen sink production—you want it to sound big as a house—well, the more the merrier I suppose. But usually things can be eliminated. Sometimes people have put off decisions about things because they want the mixer to decide. And I've been guilty of that—when I can't decide during the tracking which I like, I'll put it off till the mix.

It's that way with effects, too. Some things require bucketloads of effects; some almost none. It's a taste thing, really. I think some engineers feel like they have to use everything in the room because it's there. Why?

***You did two tracks on the first Spice Girls album. How did that come about?***

It was through Virgin, who I'd already done a lot with. When I got the tapes they hadn't put out a record yet. There was a little buzz about them, but not much yet. I put the tapes on—"Two Become One" and "Love Thing." They were good songs. It worked out well. They left me to my own devices pretty much, though I did have a lot of input from the record company. I'd send overnight mixes and get comments back. The girls had a few minor comments, which were fine. I went back and made all the changes in a day. Pow! Off it went.

***You recorded and mixed the Charlie Watts Quintet. That was live in the studio, wasn't it?***

That was a total breeze. They were such nice people and such phenomenally talented musicians. It's real old-school recording, and I like doing that now and again as a challenge because it really is, "Okay, go!" and then it's down to me to get it on tape. We did it all analog, straight to tape. When we did the first record back in 1993, we did it all live—the five-piece band and 20 string players. It was quite a vibe. I really enjoyed it. It's terrifying working that way, but it's also really good.

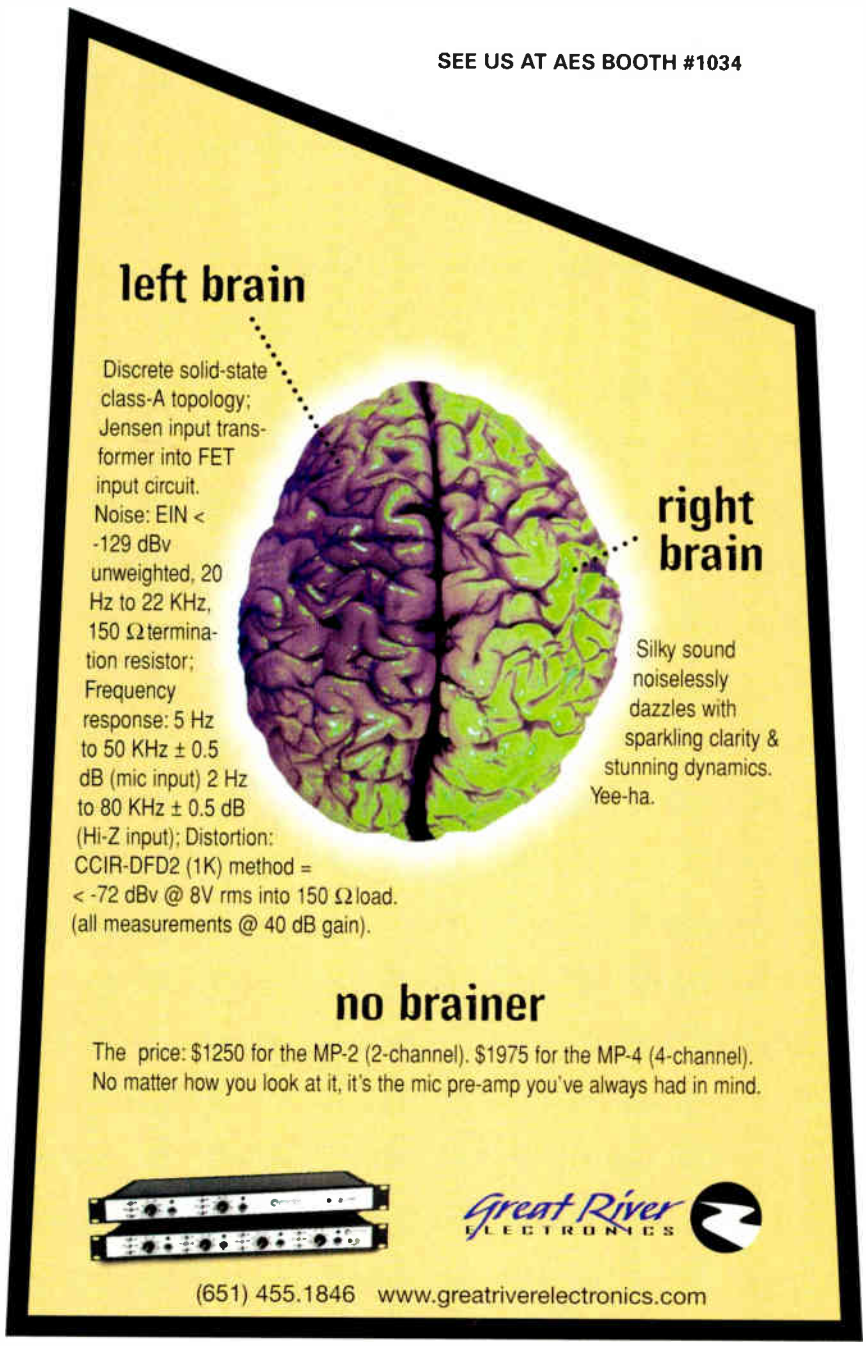
***Anyone new you've worked with recently we should be on the lookout for?***

It's funny because right now I've mostly been working with people who I've worked with before or who are established. Like I did an album with the Pet Shop Boys. I recorded eight tracks, half of them I mixed, half of them Spike Stent mixed. It's a good record. Craig Armstrong produced, and it's quite filmic. We did these huge orchestras up at AIR. An interesting project to do. Good fun.

I also did some mixing work on the new Everything But the Girl album up at AIR Studios in Hampstead. The album was tracked onto a RADAR II at 24 bits, which was good. I have also been at The Townhouse and recording and mixing a track for the new Tom Jones record with a big band in Studio 1. Tom's been recording tracks for a while all over town, and the whole LP is duets with other artists, and what I've heard so far is great! The track we did was a duet with Cerys Mathews of Catatonia. The band consisted of 13 brass players, drums, bass, guitar, piano and Tom and Cerys *all* live. Wow, that was fun! Then, once we got the take, we had to reset the studio, and we dubbed 18 string players, so it was a fairly long, slightly chaotic day. But Tom and Cerys were fabulous and really good fun.

Then I went to Real World in Bath to mix tracks for Kelle Bryan. I love that part of England, as it's very relaxed and also not too far away. So lots going on, which keeps me out of trouble! ■

*Blair Jackson is the executive editor of* Mix.

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M E M O R A N D U M

# The Studio Is Dead, Long Live the Studio!

I went to the opening of a new studio the other day. It doesn't matter which city. The catering was laid out nicely, and there were beers in a cooler next to the piano. The main studio was decorated festively, and the few people milling about seemed to be having a good enough time. Most were, like my new friend who invited me, studio owners or managers themselves.

But a short time after I arrived, the new owner took me off to the side and asked where everyone was. Not just this evening, but in the weeks since the studio's operational opening. This is not the first time I have been asked that question, and there are no comforting answers. The best you can say is, "Everyone's home, in their own studios." I had a question for him, though. I asked why he'd opened a recording studio? He replied, not facetiously at all, "I wonder that myself sometimes."

**Things aren't really bad; they're just different. And it's time to accept that change is irrevocably, undeniably underway in the studio business.**

Not too much later, a call came in from Brian Kelly in New York. Brian has owned Harold Dessau Recording in SoHo for 10 years, the kind of journeyman place that once made up the vast majority of studios in New York and elsewhere: a single room, a solid if not elaborate API console, a nice mix of vintage and new outboard gear, and as acoustically fine a room as you can pull off in Manhattan's tight real estate market. Brian was calling to ask if I'd like to write a story—would I like to chronicle the last days of Dessau? After a decade of watching the industry trends turn against the small independent studio, Brian had decided to toss in the towel. The economic environment, he said, simply no longer was hospitable to small commercial studios. I would be writing an obituary.

If I were a preacher, I know what I would make of these stories. I would say that all things must pass, and to everything, there is a season. What seems like the end is actually a new beginning. That's also what I would say about the landscape that presents itself today. Things aren't really bad; they're just different. And it's time to accept that change is irrevocably, undeniably under way in the studio business.

Change is all around us in the entertainment business. Even the major record labels—all four of them, the only ones left in the wake of ongoing consolidation—are sweating their prospects in the face of the Internet and MP3 downloads. But even these corporate behemoths have shown that they can adapt if prodded sharply enough. An industry that dragged out the DVD-Audio spec for two years suddenly finds relatively quick consensus on secure download initiatives once they see that 50 million teenagers with Internet access and Rio devices have proven, once again, if you can't beat 'em, join 'em. And fast.

Why should recording studios be any different? The studio of today does not look terribly different from one 40 years ago, but with radical change the order of the day, that's no guarantee that studios 40—or four—years hence will be recognizable.

So, back to the original question, why own a studio? Because you can ride any horse you want into the future, as long as you point it the right way. The need for audio is not diminishing; if anything, it's increasing dramatically, from games to Webcasts to new media. And it all needs sound. Good sound. (Most of it, anyway.) The entertainment industry will always need people who do what we do, so mourn for a moment the passing of the paradigm, but don't become mired in grief. The horizons are bigger than ever. Saddle up. ■



World Radio History

# QUARTERLY

ALL TEXT BY DAN DALEY

# NEW YORK BUSINESS

Every picture tells a story, and paging through the *Mix Master Directory* under the New York headings provides an interesting snapshot of the New York City recording studio environment. A few of the classic names still stand out—The Hit Factory, Quad Recording, Electric Lady, for example—but they also bring to mind those that no longer appear, like Regent Sound, Mira, A&R, Automated, Skyline and Media Sound. The studio business itself is hardly a static one, and nowhere more so than in New York, where factors unrelated to the recording process nevertheless have a significant effect on the industry.

Real estate values, for example. Studio apartments can rent for $2,000 a month, if you can find one that cheap, and the city's vertical nature has always limited the number of large tracking rooms. Even when a great location is found, all it takes is a few months of construction noise in the same area to turn an otherwise promising business into a losing proposition. In fact, it was construction of a luxury condominium skyscraper a block away in the 1980s that triggered the demise of Media Sound.

Another factor in New York's general economic health is the stock market. Its role as a bellwether for all of the city's business was illustrated graphically when, during last year's Asian economic flu, brokerage Merrill Lynch issued an internal memo—henceforth, all business lunches and dinners over $200 would require the approval of a vice president—and Manhattan restaurants immediately suffered a dramatic drop in revenues. With much of the entertainment industry based around publicly funded corporations, and with the number of non-record label recordings (speculative and so-called "vanity" projects) still relatively high, the ebb and flow of capital on Wall Street is felt throughout the city.

## RAP IS GOOD—BUT THERE'S MORE

New York is also about diversity, and in an age and an industry (the entertainment industry, that is) that increasingly needs to pigeonhole things to get a handle on them to counter information overload, New York has been increasingly perceived as Rap City. True, New York probably does more Urban records than Atlanta and Los Angeles combined, but there's a lot more going on in the many studios that manage to exist in the concrete jungle than meets the eye.

Even at Chung King, which built its business in the 1980s on rap before moving into a much larger five-room space in TriBeCa three years ago, studio owner John King points out that rap now accounts for about a quarter of his revenues. "The thing is, Urban music isn't just rap," he says. "Lauryn Hill's record had some rap elements, as do a lot of records these days. But it's a solid R&B/pop record. I'd say that kind of music accounts fully for half of what comes through here. Most of R&B isn't street music; it's pop-oriented."

Tony Drootin, manager of audio operations at Sony Music Studios, suggests that many R&B and rap sessions tend to be last-minute bookings, often because so many producers with varying schedules work on the same project, whereas rock and pop acts tend to book far in advance and for longer stays. "That might explain the perception," says Drootin. "But there's plenty of rock and pop in New York." In the last year, New York studios hosted recordings for Eric Clapton, Jon Spencer Blues Explosion, Harry Connick Jr., Savage Garden, Ricky Martin, The Black Crowes, R.E.M., Johnny Cash, Kenny Rogers, Aerosmith—I could go on, but you get the idea.

## FRAGMENTATION TREND

New York is changing in other areas. For starters, the fragmentation of recording projects is an ongoing trend. Many studios report that they are seeing fewer records done from start to finish in the same facility, and that trend is more pronounced in the major studios. "We're seeing more pieces of projects come through here than ever before," says Zoe Thrall, studio manager at

—CONTINUED ON PAGE 118



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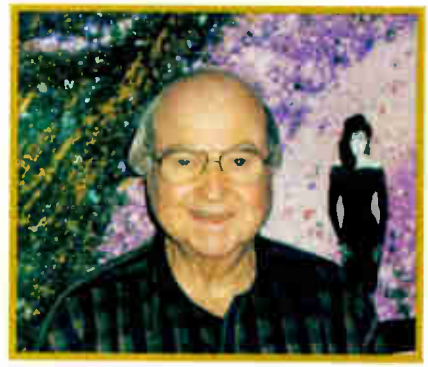
# BIOGRAPH: MACK EMERMAN

In 1958, when Mack Emerman founded Criteria Recording Studios, it was the city's first real recording studio. Emerman, who turns 75 this year, was born in Erie, Penn., and convinced his steel-selling father that he was attending Duke University for its business classes. "The real reason I went there was because Les Brown formed a big band, the Duke Ambassadors, there," recalls Emerman, who played trumpet with Brown in that band. While Les Brown went into the musical pantheon with his Band of Renown, Emerman's family migrated to the sunnier climes of south Florida in 1950, a landscape not changed all that much since the Marx Brothers' 1929 Broadway comedy and film *Cocoanuts* lampooned land sales scams and snowbirding hoi polloi.

Emerman's love of jazz prompted him to expand his record collection by making tapes of touring acts like Woody Herman. Emerman's first recording rig included a Berlant Concertone tape recorder, which featured five heads and could record in mono or stereo, a favorite pair of Neumann U47 microphones and some homemade speakers, which he loaded in the back of his station wagon and took around to the various jazz clubs of Dade County. Emerman then turned the resulting tapes into discs, using the first cutting lathe ever seen in the county.



In 1955 Emerman formed a label, which he christened Criteria Records, and though that venture foundered, it did lead him into a professional *modus operandi* that would stand him well in the years to come. "I called it 'studio-sneaking,'" he says. "I would go into other studios and see how they did it." One such trip led him to the doorstep of famed jazz producer/engineer Rudy van Gelder, in suburban New Jersey. "He was my hero," says Emerman, with the genuine sincerity that made friends of most of the studio owners he met this way. "Rudy came to the door in his bathrobe and told me to come on in. He had the first recording console I had ever seen. I saw a red light flashing on the board, and I asked him about it, and he said, 'I'll cut your masters for you, but I'm not giving you any engineering lessons!'"

In 1958, Emerman opened Criteria Recording Studios in a building on 149th Street in North Miami. The first studio was equipped with Ampex decks—3-track, stereo and mono—and a console built by Wimpy Hutchinson, then the chief engineer at the local NBC affiliate. A few people noticed some distortion in the sound of the garage-built console, and Emerman sought advice from the owner of a local hi-fi shop. That was Jeep Harned, who rebuilt the console and went on to found MCI, the first U.S. manufacturer of dedicated recording consoles and multitrack decks. All of Criteria's studios would eventually be equipped with MCI technology, and the business relationship formed the basis of a lasting friendship, as well.

Criteria's second studio was built in 1965, and the facility, which had been a favorite of regional musicians—including Jackie Gleason, who made a series of best-selling *Music For Lovers* records in the 1960s—quickly became a recording center for the burgeoning rock music industry. When Tom Dowd, a staff producer for Atlantic Records in New York, moved to Miami, the multiroom complex became a beehive of major record activity. Derek & The Dominoes' *Layla* brought the studio acclaim, and The Bee Gees and The Eagles booked months at a time to write and record at Criteria. Emerman even bought a beach house, dubbed "Home At Last," to house his rock clients. In the meantime, the studio became a launching pad for the careers of numerous producers and engineers, including brothers Ron and Howie Albert, and studio designer Ross Alexander, the facility's first chief engineer.

Emerman was in it for the love of the music, but when things slowed down for Criteria—and the entire music industry—in the 1980s, love wasn't enough when the bills were due. After struggling for the better part of the decade, Emerman sold the indebted studio in 1991. An arrangement to stay on after the sale went sour, and Emerman, at the age of 67, found himself without the occupation and interest that had driven him for the past 33 years. What followed was three years of illness, including the onset of diabetes, and a clinical depression so deep that he couldn't even bring himself to answer the phone.

But things did turn around. The first glimmer of hope came in a strange and wonderful manner. His daughter had finally coaxed him to get a physical checkup. When the doctor examined Emerman's ears, he found a wax buildup that was so deep the core of wax he drilled out was nearly two inches long. When the doctor spoke to him after the cleaning, Emerman was astounded at what he could now hear. "I'd been basically deaf for three years and didn't realize it," he says. "I went home, put on a pair of stereo headphones, listened to music for the first time in years. And I cried. I just bawled."

He wasn't out of the woods yet. A series of minor strokes that had gone undetected during the period had robbed him of some of his memory, and years of neglect had ravaged his health. It was his old friend Harned who stepped in. Now living in Durango, Colo., after selling MCI to Sony and continuing a winning business streak, Harned sent his private plane for Emerman, and under a regimen supervised by Harned's wife, who had studied alternative medicines, Emerman was restored, physically and mentally. He now works out three times a week, and while some of his memories are lost forever, he is embarking on a new venture, with Ron and Howie Albert and 1960s-era singer and record producer Steve Alaimo: the expansion of their Miami studio Audio Vision from a private facility to a for-hire one, to meet the growing demand of Miami's expanding music business.

"I made mistakes by not taking care of business better than I should have," concedes Emerman, but without a trace of rancor. "And you can tell your readers that they had better watch theirs, too. You got to take care of the money so it can take care of you. But music is still something you do because you love it. Tell them to remember that, too." ■



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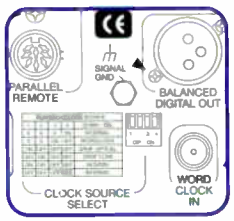


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*—FROM PAGE 115, NEW YORK BUSINESS*

Avatar Studios. "We've been constantly sending tapes back and forth across town to other facilities. I've got one project in here now that we've been the hub facility for with three other studios."

Thrall and other studio managers believe this fragmentation phenomenon is probably caused by several factors, including the fact that substantial amounts of overdub work are done in personal studios. A less tangible yet undeniable influence is the current state of the record industry, which has been simultaneously experiencing massive consolidation, such as the Universal/PolyGram merger, and an equally massive proliferation of new independent labels, many of which are soon purchased by the larger conglomerates.

As readers of this section will recall, a business feature in April focused on the trend among record labels to postpone settling studio invoices for as long as 90 days. Some New York studios report that the situation is not getting any better, and, in some cases, it is getting much worse, sometimes as a result of billing snafus after label consolidations. Thrall notes that record labels' A/P departments are scrutinizing invoices with a clinical eye and use even the smallest anomaly to hold up payments. "I had one entire invoice held up because of a $75 piano tuning charge," Thrall says.

## RATES CREEP UP

Studio rates, while not necessarily a bright spot for most facilities, at least seem to be holding and, in some cases, creeping upward. That's the case at Sear Sound, where studio manager Roberta Finvlay says rates have increased between 10% and 20% in the last few years, partly because the studio opened a second tracking room (which was designed by Steve Durr) late last year. "Live music recording is getting stronger in New York," Finvlay says. "The rooms that can offer good live tracking rooms can hold the line on rates and actually improve them. And the other benefit is that we don't have to find ourselves competing with [personal] studios. They do what they feel they need to at home, but come here for tracking and for overdubs and other things that they want the classic tube equipment for."

With a more stable rate environment and an increased workload, some New York studio owners have made new capital investments. Sound On Sound now has a new room and a Neve Capricorn digital console. Quad Recording added an SSL M-T digital board. Electric Lady added a second SSL 9000J, and Avatar acquired its first.

But caution has hardly been thrown to the wind. King is typical of most large-facility owners. "We're starting to watch carefully what we spend," he says. "There's a limit to how many new, big devices you can own. There was a period where the manufacturers of big-ticket items were [getting a lot of money for equipment]. But there's a lot of stuff coming down the pike that costs a lot less and does just as much. I'm happy with the large consoles we have [a Euphonix CS 3000, a Neve Capricorn and two VRs, and an SSL 9000J], but that's partly because they're

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getting close to being paid off. I'm not planning on investing a lot more money in new technology. A lot of the older stuff is a lot more popular. Music is an animal art—people tend to like the simplicity of analog gear. I don't mind spending $20,000 for the right Hammond B-3."

But others say they would have made their recent capital upgrades regardless of the overall economy. "At the upper end of the studio business, you have to buy certain things just to remain competitive," Thrall says. "For better or for worse, at this level of the business, that's an expensive proposition."

**POST NEWS**

New York's post community has been buoyed by several major milestone events. Plans have been announced for a proposed $150-million production and post facility on the grounds of the old Brooklyn Navy Yard. It will be a joint venture between Miramax Films (which the Weinstein brothers started in New York over a decade ago), Robert DeNiro's Manhattan-based TriBeCa Productions, and New York real estate developer Steven Roth. Sony Pictures has indicated it might become an anchor (no pun intended) client.

The most recent big news in the area was Todd-AO's acquisition of Manhattan's Sound One facility in June. Close on the heels of Todd-AO's acquisition of Sound One, Liberty Media Group, the cable television programming unit of AT&T Corp., agreed to acquire control of Todd-AO for about $92.5 million in stock. The move, announced July 30, essentially makes Todd-AO the post-production arm of Liberty, which has extensive media (television, film and Internet) holdings in North America, Europe, Asia and Latin America. (In a separate transaction, Liberty also agreed to buy control of L.A. audio post-production company Soundelux Entertainment Group, for $70.3 million in stock.) Liberty said it plans to use the companies' services for its existing businesses, which includes Encore Media Group and stakes in Discovery Communications Inc., QVC Inc. and Time Warner Inc.

That move seems to be part of the overall consolidation trend taking place in the entertainment industry, and is in line with consolidations on the corporate level and at the studio level, such as The Hit Factory's acquisition of Miami's Criteria Studios. Jeremy Koch, Sound One's president and now also a senior vice president at Todd-AO, also noted that the key to the alliance was to position this facility as a "gateway to Europe and as a hub to our international movie activities."

Among New York's plethora of mid-sized, multi-room post facilities, Sound Hound is typical. The six-room facility works Madison Avenue and episodic television heavily, but when that work drops off in the summer, the studio shifts to on-air promo work for forthcoming network fall prime-time schedules, as well as corporate work. "New York is the center of more audio post than it seems," says Gail Nord, studio manager of the 25-year-old facility. "Many agencies like New York because its talent pool is so big. I have agencies from Ireland using our ISDN lines to record local voice talent."

Nord acknowledges that even post facilities have to cut deals on rates. The days of a spendthrift Madison Avenue are over, and cost cutting is rampant in

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the media industries. "But facilities like this haven't been hurt by sound design moving into home studios," says Nord. "The larger clients know they need the kind of technologies a place like this has to make their projects competitive."

### MID-SIZED ROOMS

Some mid-level studio owners are increasingly using their facilities as a base for production and artist development ventures. Will Schillinger's Pilot Recording is typical: it comprises one main tracking and control room, and a small second studio equipped for digital editing. Schillinger says his business is growing in the sense that the level of clientele the facility attracts has been moving steadily up—he recently hosted dates for Patti Scialfa and Eric Clapton—and his own production career has been flourishing. About 15% of revenues come from production, another 10% from Schillinger's studio-based MP3-oriented record label.

Schillinger is considering expanding the studio and possibly adding a mix room, but like most New York studio owners he has had to cope with the realities of the real estate market. The Chelsea studio had five months of down time earlier this year while the building underwent significant renovation for a new store on the ground level. But in true New York style, Schillinger used the inconvenience as leverage with his landlord to increase the term of the studio's lease. "If you have an outstanding live space and good gear, mid-sized rooms can make it here," he says.

Though Schillinger's sentiments reflect the feelings of others in the mid-level studio sector, there have been some closures, including Room With A View earlier this year, and Harold Dessau Recording in mid-year. Dessau's owner Brian Kelly partly attributes the closure to difficulty in keeping a one-room facility booked.

On the bright side, new facilities include SG Music and Media, opened in the beginning of the year on downtown Walker Street. Co-owner Lenny Charles, a guitarist, designed the facility's large, 80x25x16 main room for multiple purposes. He has hosted tracking sessions and marketed it to television as a shooting stage. (*The Today Show* has been a client.)

Acknowledging that he may be a "better guitarist than a businessman," Charles says that number crunching is not what the studio business should be about. "I wanted a room that musicians would come into and say, 'I want to record here,'" he states. Charles is marketing the studio towards jazz, world music and other acoustically oriented genres (a niche he feels is underserved in New York's high-tech studio market).

Perry Margouleff, who owns the one-room, decidedly vintage-oriented Pie Studios on Long Island, has a different perspective on the mid-sized market. Margouleff observes that strength in that market sector may lie in a thin but resilient stratum: first albums by young rock bands. "It's interesting: Studios like mine get a lot of bands making their first albums for major labels," he says. "It could be that the labels want to keep them close by while they're doing their first album. Then, if they make it to the

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second record, the bands seem to want to go to L.A. to do it. Compared to New York, L.A. is heaven for studios doing rock bands. It's a more guitar/rock-oriented environment out there."

The real problem in that scenario, Margouleff adds, is that the labels are particularly stingy with first efforts in terms of budgets, perhaps a consequence of the volume signings that have recently characterized the industry, particularly as the major labels acquire independent labels and their young rosters. Whatever survives the first round gets more attention and a larger budget. "Too often they'll say don't worry about how it sounds, we'll hire Tom Lord-Alge to mix it, and it'll be fine," Margouleff says. "I just sit here and say, 'Why didn't you do it right the first time?' Mid-sized studios—good ones—are an incredible resource for record labels that are trying to develop new acts. I have a lot of big-time engineers come through here and tell me they were working in a much larger studio and only using one-third of the console."

### THE INTERNET NICHE

Other studios have found new avenues of expansion. Looking Glass Studios, a mid-sized facility co-owned by recording artist/composer Philip Glass, is rapidly developing a niche with Webcasts—David Bowie did one from there in April. Studio manager Amanda Reisman says that the studio's inclusion of ISDN, DolbyFax, EDNet and T lines, as well as the technical staff's overall familiarity with Internet technology, contribute to that sector's growth. The only problem is figuring out what to charge for it. "They're using the entire facility—we didn't have a card rate for that," Reisman says. "It was a special event, something our billing structure didn't have planned. We had to make it up as we went along. It was more like a press conference than a recording session."

In short, New York looks healthy. But with historical pressures from real estate and finance, combined with the rapidly changing face of the entertainment business in general, it's a place that sleeps with one eye open. And that's not hard, thanks to the noise. ■



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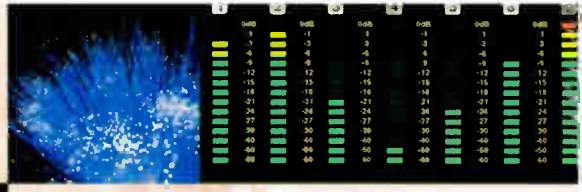

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## FORMAT TRANSFERS DRIVE NEW PRO AUDIO MARKET

In recent years the number of pro audio recording formats has mushroomed; the alphabet soup of acronyms now includes DASH, PD, ADAT, DA-88, PCM, M/O, DAT and so on. More and more recordings are made in multiple locations as musicians and producers overdub their parts independently in a variety of personal

Bill Tesar of TransferMAT

and project studios. A typical project might pass through as many as six formats—analog multitrack for the basics, RADARs and Pro Tools for overdubs and tweaking, digital multitrack for mix playback, back to analog for the mix, with the final digital master going to DAT, CD-R and M/O for distribution.

The need to convert among these formats is driving rapid growth in a new market sector: the dedicated format transfer business. At least four new dedicated transfer rooms have opened in major recording markets since the beginning of the year: The TransferMat at rental company Toy Specialists in


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New York City; the Transfer Room at Sound Stage Studios in Nashville; a transfer room under the auspices of Post Tech Services, a division of World Link Digital, a Burbank, Calif. rental company; and a transfer service at the newly opened Diginote studio in Miami's South Beach district.

Toy Specialists president Bill Tesar sees the format transfer business as a natural outgrowth of the rental business. "No one can have everything anymore—there's just too much stuff," he says, pointing out that transfer facilities offer a one-stop solution for customers who cannot manage all of the available formats. Both Tesar and Dave Rosen, owner of World Link Digital, did some market research before taking the plunge. "When we brought the idea up to our clients, they were excited," says

## TravelWise
# IN-FLIGHT AUDIO PROGRAMS

**ANYONE WHO HAS EVER BEEN BORED SILLY ON A** long flight has probably at some point checked out the in-flight audio channels, which usually offer a selection of music and spoken word presentations. In addition to providing a relief from talking to the obnoxiously hirsute fellow next to you wearing the tank top, flip-flops and five-day beard, these channels also present an opportunity for studio owners looking to expand/diversify their business.

Arthur Coldwells agrees. Coldwells is the managing director at Malibu Post & Production, the audio/video arm of CurtCo Freedom Group, in Southern California. Until CurtCo exited the business about a year ago, it was the largest producer of in-flight entertainment programming, along with AEI and Pace Communications, which also publishes several in-flight magazines. Before it was wound up, Coldwells was involved in much of CurtCo's InFlight Division activities and offers some insights into the market as a possible business venture.

The way the business works in general is that companies like CurtCo purchase airtime (in every sense of the word) from AEI, which is the largest player in the in-flight market. On the largest air carriers, like American, United and Delta, an hour can cost between $10,000 and $15,000. That airtime is then resold to businesses as corporate communications and marketing opportunities, the most widely used application, on a per-minute basis. Obviously, the per-minute pricing is designed to cover the wholesale block time purchase, plus production and post-production costs, and provide a profit. For instance, a corporate executive might ramble on for five to seven minutes about employee motivation or Total Quality Management. Another popular in-flight theme is the vanity sale, says Coldwells, in which company founders beat their chests about building mighty industries in their spare bedrooms, a variation on the old Ted Knight "It all started in a small 5,000-watt radio station in Encino, California..." routine.

But, as Coldwells recalls, vanity productions have become increasingly hard sells because of the cost, which, after production costs were factored in, could run as much as $5,000 for four or five minutes. Another factor is AEI's insistence that block time buyers must also buy airtime on smaller airlines as well as on the major carriers. It's not easy to convince an executive that a message will reach receptive ears when it's playing on a vacation carrier like ValuJet or Southwest, or on foreign carriers like Aeroflot. Even having its own post-production facilities in-house, as CurtCo did, didn't sufficiently offset those thin margins.

The difficulties of this business sector are clear. But several of the sales and production people who once did this work for large companies have since gone freelance, and many are working from home-based studios. Coldwells sees this as a perfect marriage between entrepreneurship and the powerful digital audio equipment best suited to the intense spoken-word editing in this market. "It's really a very good business opportunity for a small project studio and people who are adept at voice editing and don't mind how tedious it can get," he says. "And you'll always hear something that'll make you laugh."

One last thing, cautions Coldwells, you have to be very careful about what your airline passenger listeners will hear. "No comments about crashes, late arrivals or lost baggage—they're very sensitive about that sort of thing," he notes. Certainly nothing about death, which once posed an interesting challenge for Coldwells, who had to edit an hour-long interview with an executive for a company specializing in cryogenics, the process of freezing the dead in hopes of later resuscitation. The resulting four-minute piece did not once mention words like "dead" or "death" or "died" or even "passed away." "I think the closest we were able to get to the point of the message was the word 'inanimate,'" recalls Coldwells. Shades of Monty Python's "ex-parrot" gag. ■



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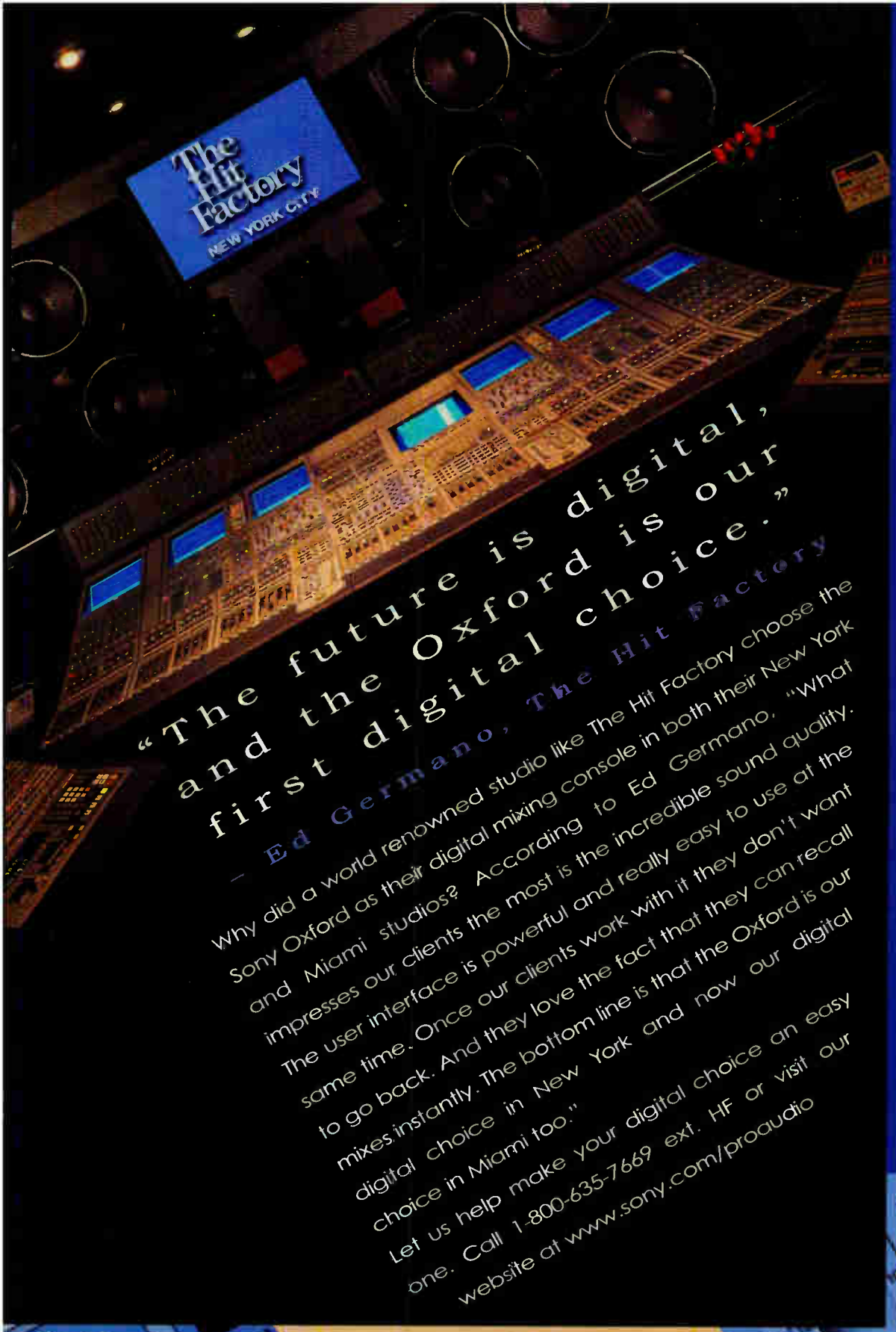


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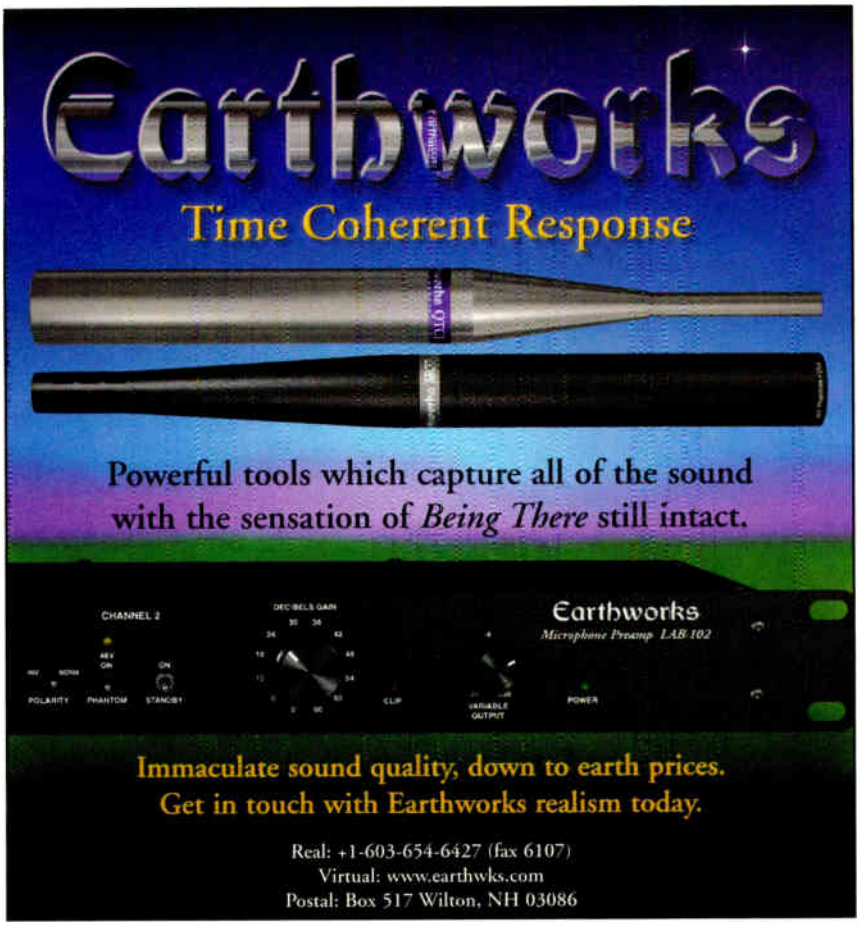


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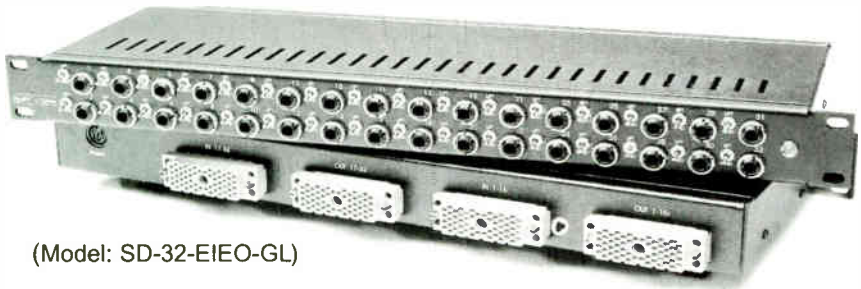

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Rosen, whose company specializes in Pro Tools rentals. "A lot of our [rental] clients can't transfer without renting the equipment, and they often don't have the space or the proper power requirements for large formats. So the idea of a single location to be able to transfer from any format to any format sounded great to them."

Adds Tesar, "Someone might start on an analog multitrack, take the tracks home to do overdubs on their own MDM, go to another facility using a nonlinear multitrack for vocals, then want to mix on an open-reel digital format," he says. "That's not an unusual sequence of events these days, and the need for format transfers at every stage is growing along with it."

Both rental companies can tap into their pools of rental equipment to outfit their format transfer rooms, but they stress that much of the equipment is dedicated. "The core equipment of The TransferMat lives there," says Tesar, listing six Tascam DA-98s, six Alesis ADAT XT-20s, Lynx II synchronizers for lock ups and a host of other equipment. Those are run through a pair of Yamaha 02R digital consoles and Otari UFC-24 universal format converters, as well as custom patch bays. Rosen's facility has a dedicated 24-bit Pro Tools II system with Apogee converters, as well as a Studer A800 MkII analog multitrack, a Sony PCM-800 MDM and ADATs. A Sony 3348 digital multitrack shared with another rental company is a regular visitor to the transfer suite.

Like many studios, Sound Stage in Nashville found that transfer sessions ate into studio time that could otherwise have been more profitably sold. "We were having to wait for sessions to end and do the transfers late at night," says the five-studio complex's manager Michael Koreiba. "After a while, we realized that there was enough business to start a whole new business within the studio." Sound Stage's dedicated format transfer room features a Mackie 32-bus console and Yamaha NS-10 monitors and supports an array of formats, including the PD format, which has maintained a higher profile in Nashville than anywhere else in the U.S. (though it's still also popular in countries such as Italy).

Diginote opened in June of this year and, like much of Miami's rapidly expanding studio market, is primarily a Pro Tools facility. But Diginote's owners quickly discovered a market for transfer services. "It's like pulling teeth to get transfers done at many studios,"


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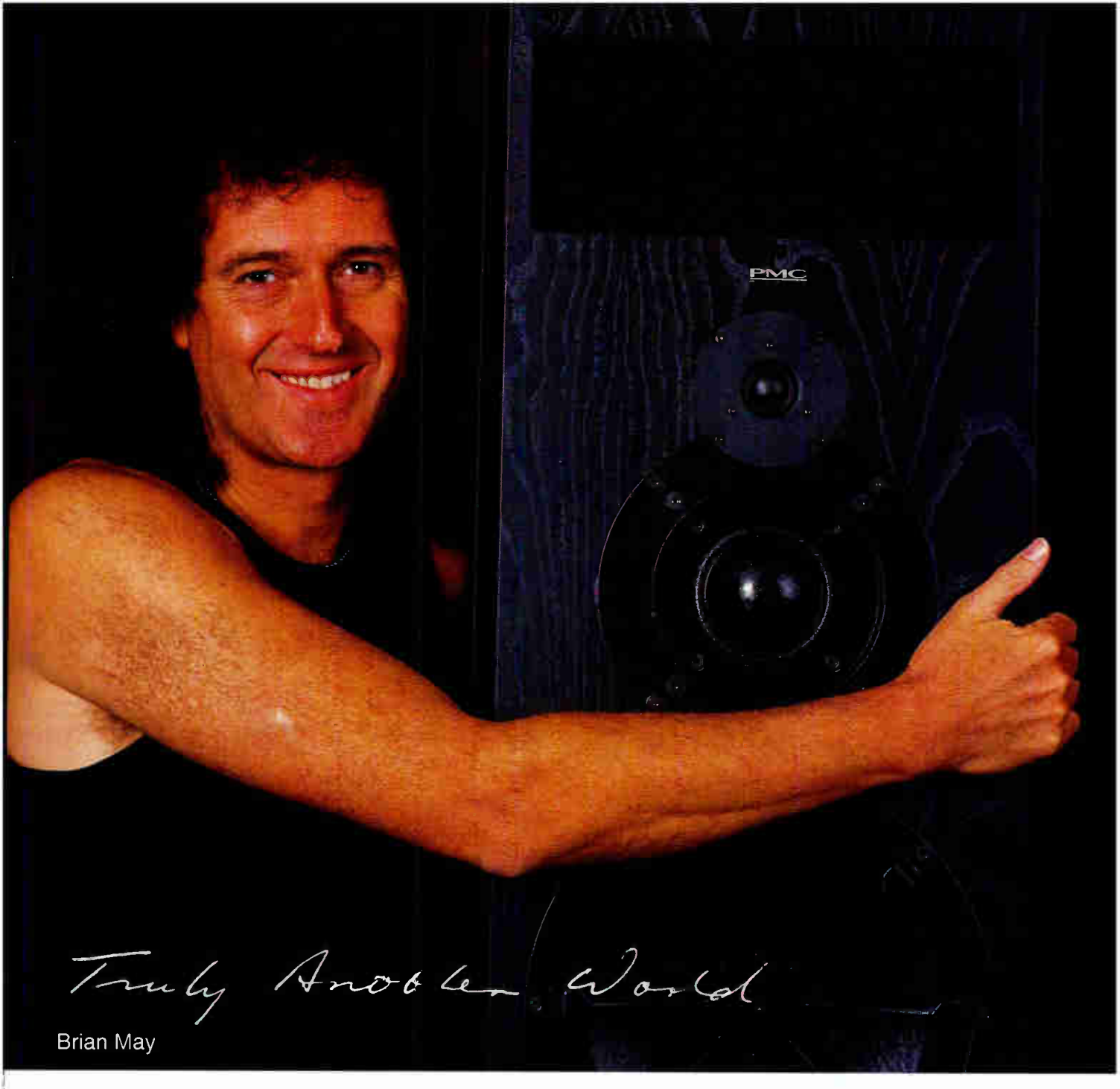


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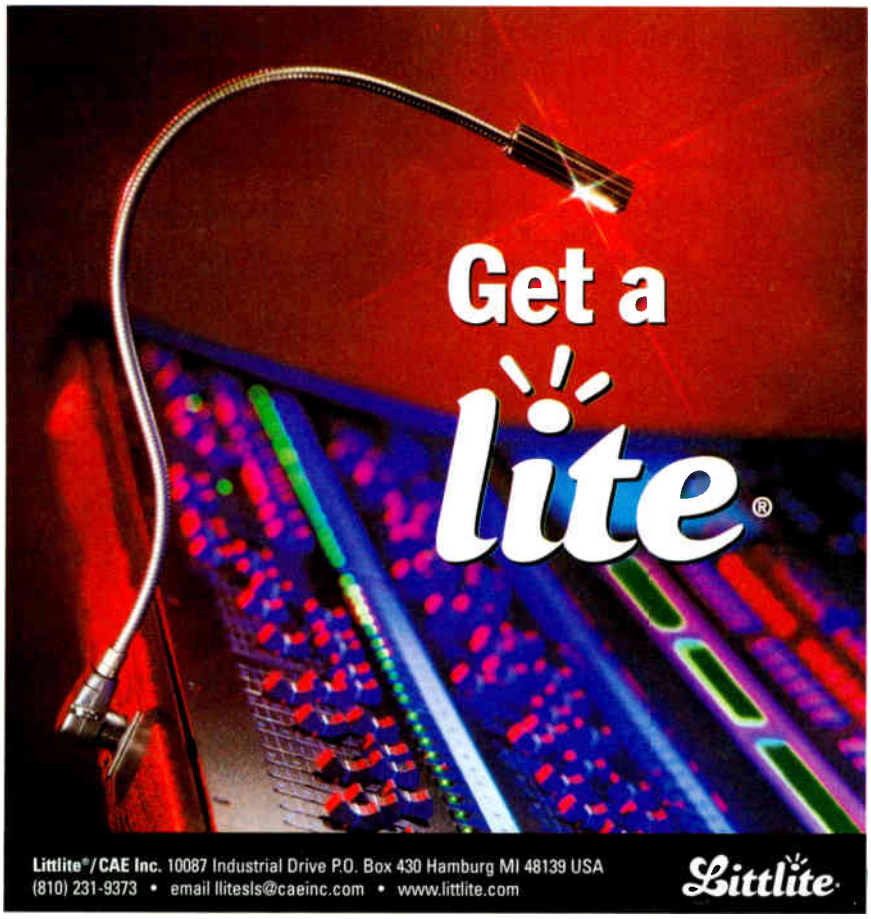


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realized that renewing those archives was about to become an issue. Jointly and individually, they have contacted Nashville record labels and promoted the benefits of archiving to analog tape. "The thing about analog is that it's now where it's always going to be," says Koreiba. "Digital formats keep changing, but you'll always be able to recover the information from an analog tape." Quantegy and Transfer Room have planned a gathering for about 60 label representatives to further that dialog (and sell more tape). The Transfer Room has also noted an increased need for baking services and has installed a convection oven for treating old analog tapes.

### TO MARKET, TO MARKET

Each company has marketed its services slightly differently. Toy Specialists has retained a professional public relations agency in New York; Sound Stage has used a targeted fax campaign, which has brought in transfer work from as far away as Kansas, Virginia and New Orleans; World Link Digital has relied upon word of mouth. Diginote has discovered that a useful marketing tool for its transfer services has been the registration of various domain names, including "24track2adat," "24track2tascam," and so on. "The best one is '24track.com,' which I'm amazed no one else has gotten in all this time," Wiley says.

With the bulk of his rental market based on Pro Tools, Rosen sees his transfer service as a link to future business with up-and-coming producers and engineers, many of whom are now working on hard disk-based systems and MDMs in their homes or in small project studios. "They'll all be moving up into bigger studios eventually, and they'll be working in a hybrid environment of things like Pro Tools and 3348s," he says.

All those interviewed realize that they are "on the ground floor" in a profitable new business niche, one that probably won't stay this exclusive for long. "I'm sure it's going to get more competitive as time goes on, and there's going to be an effect on the rates that can be charged for it," Rosen observes. "The thing is that it's going to be like any other service business—you can stay on top only if you give the best service possible and never, never make a mistake." Tesar agrees: "There's not enough transfer work out there to support ten of these kinds of places in one city." ■



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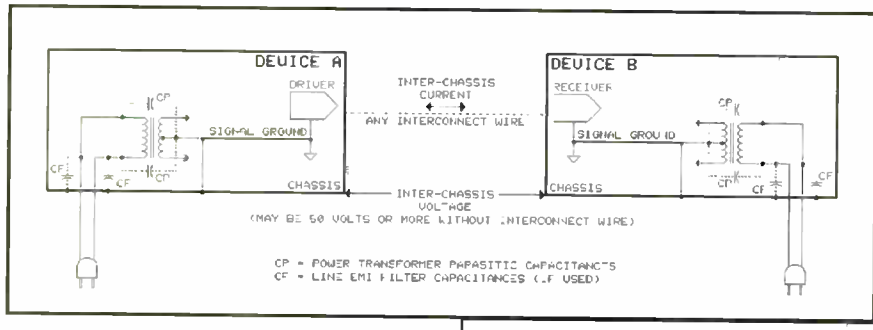
law). If equipment makers forget this when designing the internal shield grounds of inputs and outputs, their error effectively turns the shield connection into an input, a serious problem that Neil Muncy named the pin 1 problem. Because noise currents (which normally flow in cable shields) are allowed to flow through sensitive PC board traces or internal wiring, ground noise couples into high-gain circuitry. The bad news is that the problem is widespread. The good news is that simple tests can find it and simple modifications can fix it.

*Figure 3: With floating equipment, noise currents flow in interconnect cables.*




## RF INTERFERENCE

Electromagnetic compatibility (EMC) is the modern buzzword for equipment's radiation of and susceptibility to electromagnetic interference. Such interference isn't hard to find, and it can arrive either through the air and/or be conducted via any wire (signal or power) connected to the equipment. In addition to well-known sources, devices that produce electrical sparks, including welders, brush-type motors, relays and switches are often potent wide-band interference transmitters. Lesser-known sources include arcing or corona discharge in power line insulators (common in humid areas). Because power and telephone lines can act as huge antennae, they easily bring AM radio interference inside. But the most troublesome sources may already be inside, or worse yet, may be a part of your system. The most common offenders are light dimmers, fluorescent lights, TV or computer CRT displays or any piece of equipment using a switching power supply.

There are no simple, standardized tests to assess equipment's susceptibility to RF interference. Sadly, the performance of most commercial equipment will suffer because little or no attention was paid to susceptibility issues when it was designed. For example, the same design error that creates a pin 1 problem also creates an RFI problem, allowing RF picked up by the cable shield to enter sensitive circuitry. Symptoms of RF interference can range from actual demodulation of signals heard as music, voices, or buzz to subtle distortions, often described as a "veil" or "grain" in the sound.

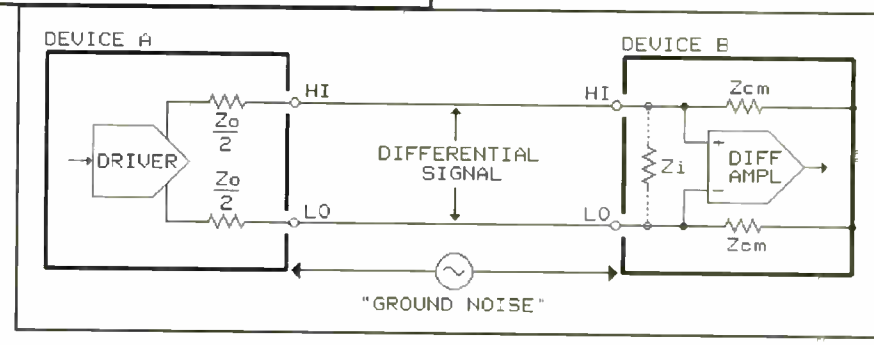



*Figure 4: Balanced interface common-mode impedances*

## BALANCED INTERFACES

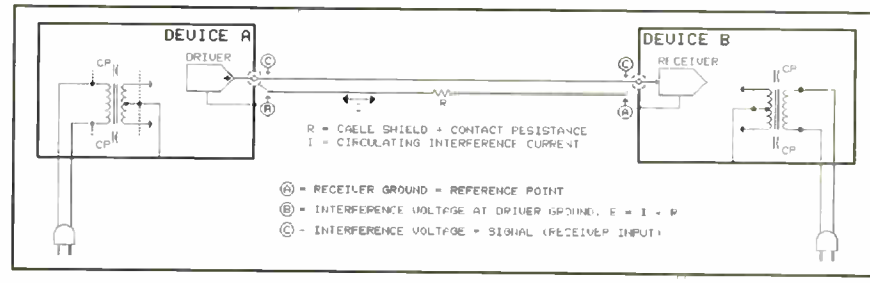
Both balanced and unbalanced interfaces use two wires to convey the signal. Each is defined only by the impedances of the two wires to ground. In a balanced interface, they are nominally equal. In pro audio, interfaces customarily use two twisted conductors plus an overall shield. In theory, a balanced interface is noise-free perfection, completely rejecting the effects of ground noise between driver and receiver as well as the effects of magnetic or electrostatic fields on the cable.

A balanced input uses a differential device, whether an amplifier or a transformer, which responds only to the difference voltage at its inputs. By definition, it does not respond to common-mode (identical) voltages at both inputs. This property is called common-mode rejection. Common-mode rejection ratio, or CMRR, compares the response to differential and common-mode inputs. A simplified balanced interface is shown in Fig. 4.

In reality, a balanced interface is a system consisting of driver, cable and receiver. Real drivers and receivers have common-mode input and output impedances, shown as Zcm and Zo/2 respectively. The ratios and matching of these impedances, and those of the cable, are the major determinants of system ground noise rejection or CMRR. Contrary to popular belief, symmetrical (equal and opposite) signal voltages on balanced lines are not required and have absolutely nothing to do with noise rejection.

In real-world systems, CMRR must be maintained with equipment that's mass-produced and must be freely reconfigurable. To do this, driver common-mode impedances must be as low

*Figure 5: Common-impedance coupling in an unbalanced interface*



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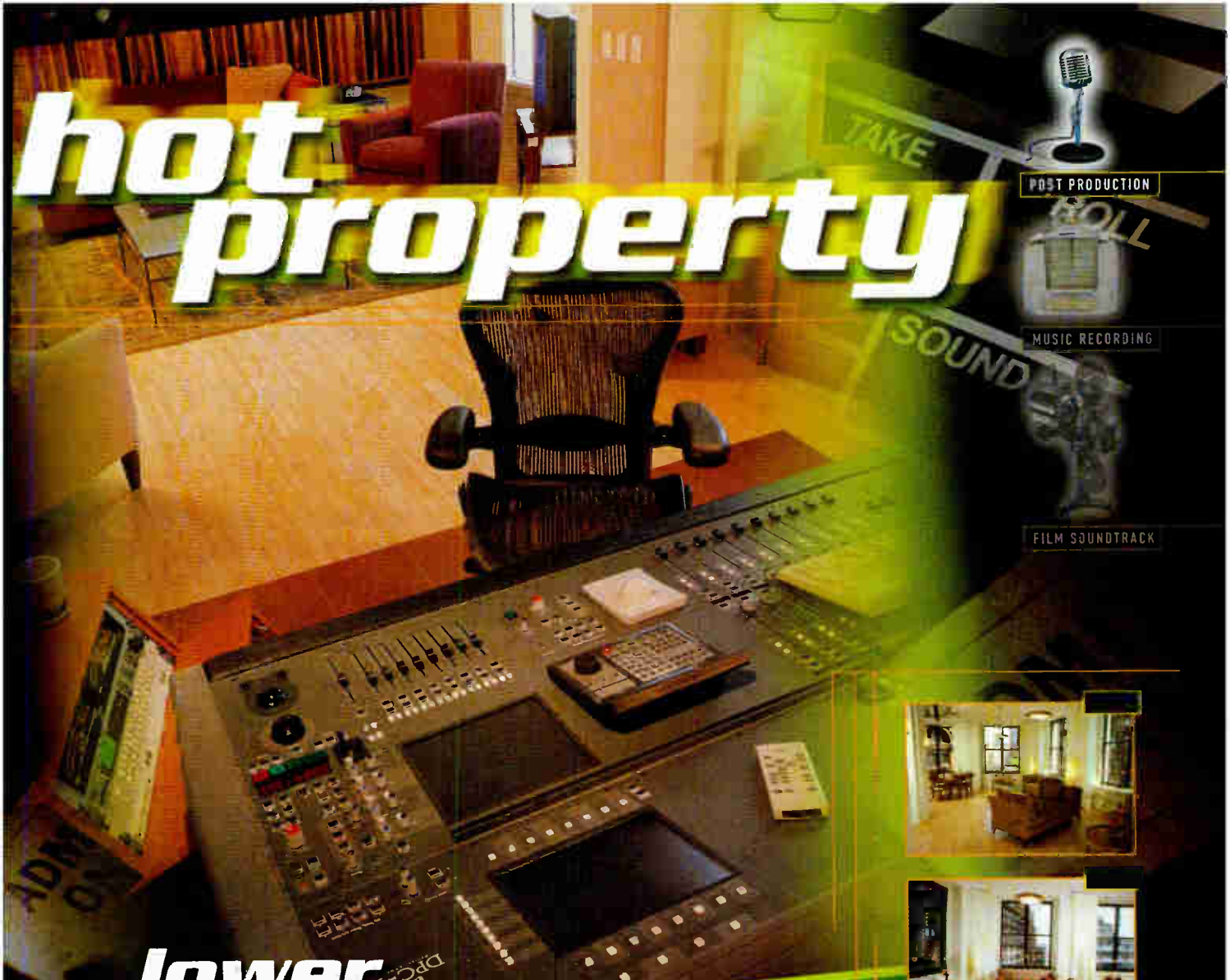


## lower east side new york

*When the New York Media Group made the decision to radically redesign a number of their rooms, Neil Karsh (VP Audio Engineering) had the daunting task of specifying the digital consoles for eight suites in three of their major facilities. Eventually he, along with his mixers, placed their confidence in Soundtracs. The first of the seven DPC-II digital console installations was at 'SuperDupe' followed by 'East Side' and finally the prestigious new 'Lower East Side'. Commenting on the decision, Neil had this to say. "When we first looked at the Soundtracs DPC-II we were really floored. In it we saw new technology that offered as much - maybe more - at a more competitive price than any other product out there". He added. "When you buy a big ticket item you are buying the people who make the product as much as the piece of equipment itself. We went with the new kids on the block in respect of high end digital consoles, a decision which could have gone either way." "A year later, we are extremely pleased with the outcome."*

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as possible, and receiver common-mode impedances must be as high as possible. Nearly all electronically or servo-balanced receivers have such low common-mode input impedances that system CMRR is exquisitely dependent on impedance imbalances in the driving output. Therefore, an input that claims 90 dB of CMRR (when driven by a perfect lab source) may have less than 50 dB when driven by an actual balanced output and less than 20 dB when driven by an actual unbalanced output. A wonderful benefit of transformer-balanced inputs is that their CMRR is immune to this degradation. They can maintain over 90 dB of rejection when driven from virtually any source, balanced or unbalanced. (A new active input circuit having this same immunity has been patented by this writer and is commercially available as the InGenius IC.)


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## UNBALANCED INTERFACES

In an unbalanced interface, the impedances of the two signal conductors to ground are unbalanced since one of them is grounded. Unbalanced interconnections are typified by RCA cables. Their use in a studio can be problematic because they lack any inherent ability to reject the effects of ground noise.

As shown in Fig. 5, noise current flows in the wire connected between points A and B. Because the wire has impedance, a small voltage drop will appear across it which becomes part of the signal. Because the wire impedance is common to both signal and noise current paths, this mechanism is called common impedance coupling. Noise caused by this coupling can even be predicted if noise currents and cable characteristics are known.

If both devices are grounded, either directly or indirectly through other signal interconnections, noise coupling can become very severe because ground noise on the building safety ground wiring is effectively forced across the shield. Unlike balanced systems, noise induced in unbalanced cables by nearby magnetic fields cannot be nullified by the receiving input. Cable shields, whether copper braid or aluminum foil, have virtually no effect on audio frequency magnetic fields.

## TROUBLESHOOTING

More often than not, the elimination of system hum and buzz involves a long series of trial-and-error experiments that end only when someone says, "I can live with that." Ground noise is very often the most serious problem in an audio system. I'll briefly describe a troubleshooting procedure that requires no test equipment except ears and some simple test adapters. It's effective, simple, and can be used in balanced or unbalanced audio and/or video systems.

Gather as many clues as possible before changing anything. Ask important questions like "Did it ever work right?" Sketch a block diagram of the system that shows all interconnecting cables, noting unbalanced inputs or outputs and equipment that is grounded by its power cord or other ground connection. Use the equipment's own controls, and some simple logic, to provide valuable clues.

The heart of the procedure involves the test adapters, which are easily made from standard connectors and a couple of resistors. These are temporarily inserted into the signal path while listening to the system output. If clues



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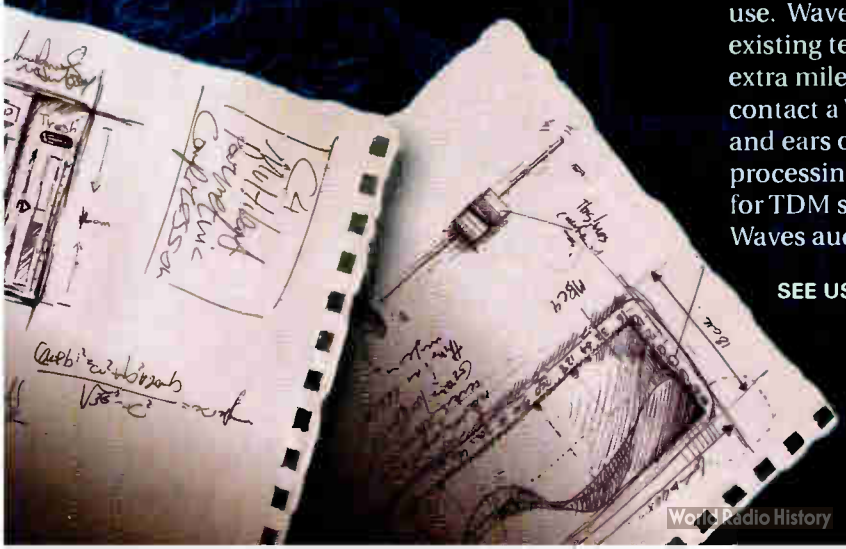

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haven't indicated a specific portion of the system, start at the power amplifier inputs and proceed backward toward the signal source. The procedure reveals the precise location and nature of the problem, whether it's common-impedance coupling in an unbalanced cable, shield current-induced coupling in a balanced cable, magnetic or electrostatic pickup by a cable, or a pin 1 problem in the equipment.

### MAKING IT RIGHT

1. Don't assume that all AC outlets are wired properly! A swapped neutral and safety ground connection can create incredible ground noise problems.

2. Don't make any unnecessary ground connections! In general, extra ground connections simply create higher ground noise currents.

3. Test the system methodically. Install high-quality ground isolators at problem interfaces. High-performance audio transformers are especially well-suited: They're passive, reliable, inherently suppress RFI as well as ground noise, and their distortion is very low and particularly benign.

4. Give special attention to unbalanced/balanced conversion interfaces! How these connections are wired can make a huge difference in ground noise.

5. Use effective treatments to eliminate RFI problems. Whenever possible, find the offending RF source and treat it. A portable AM radio, tuned between stations, can serve as a homing device to locate a defective fluorescent fixture, for example. If the offending RF is above about 20 MHz, try installing ferrite clamp-on chokes at ends of cables. For lower frequencies, install small low-pass filters at inputs or outputs of susceptible equipment. Contrary to widespread belief, it's simply not possible to short out RFI with heavy ground wires.

6. Keep unbalanced cables as short as possible. Longer cables increase noise coupling. Never coil excess cable.

7. Use unbalanced cables with heavy gauge shielding, especially for long runs. Using heavy braided copper instead of foil and drain wire can reduce noise by 15 dB. This is the only property of cable that has any significant effect on audio-frequency noise.

8. Maintain solid connections. Hum or noise that changes if a connector is wiggled indicates a poor contact. Use a good commercial contact fluid and/or gold plated connectors.

9. Be sure all balanced line pairs are twisted. Twisting is what makes a balanced cable immune to noise from magnetic fields. Wiring at terminal strips and connectors is vulnerable because of this. In hostile environments, consider star-quad cable; it's about 40 dB more immune.

10. Don't forget the pin 1 problem. Lots of commercial equipment, some from respected manufacturers, has this designed-in problem. If disconnecting the shield at an input or output reduces noise, check the equipment at both ends.

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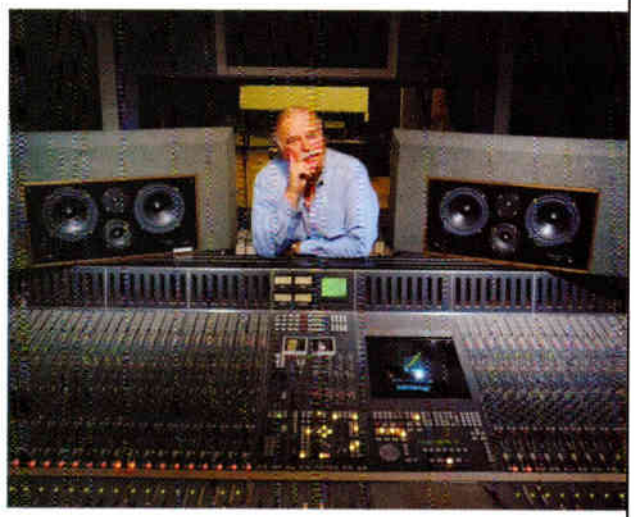

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# Noise

power line, some form of power line treatment will solve their problems. This belief, combined with large doses of vendor-driven hype and paranoia, is selling lots of this stuff. In my opinion, most are unnecessary and many actually make matters worse. Power isolation transformers, for example, have acquired a magical reputation, and misinformation about them abounds both in literature and seminars. The major problem with them, and various filters, conditioners and suppressors, is that they dump the noise that they presumably remove into the safety ground wiring. This often aggravates high-frequency noise problems. Dumping surges and spikes can cause such severe ground voltage transients between equipment that input or output circuitry is actually damaged or destroyed. However, when these devices are installed at the power service entrance, where they're tied to the common point for all building and earth grounds, they can be beneficial.

Symmetrical or balanced power systems are sometimes touted as the solution to ground noise. The basic concept, although seductively appealing, is seriously flawed. Even its proponents admit that noise reduction is usually less than 10 dB and rarely exceeds 15 dB. Many of the benefits ascribed to symmetrical power are due to simply powering all system equipment from the same outlet strip or dedicated branch circuit, which is a good idea for any system. ■

*Note: Due in part to the efforts of this author, the IEC is changing its recommended test procedures for balanced inputs and outputs, IEC 60268-3 section 2.15, to account for the effects of real-world sources. In its call for comment, the IEC recognized that the previous tests resulted in specifications that did not reflect performance in actual applications.*

*Bill Whitlock is president of Jensen Transformers. He also writes and presents seminars about grounding and signal interfacing. Further information may be found at www.jensen-transformers.com.*



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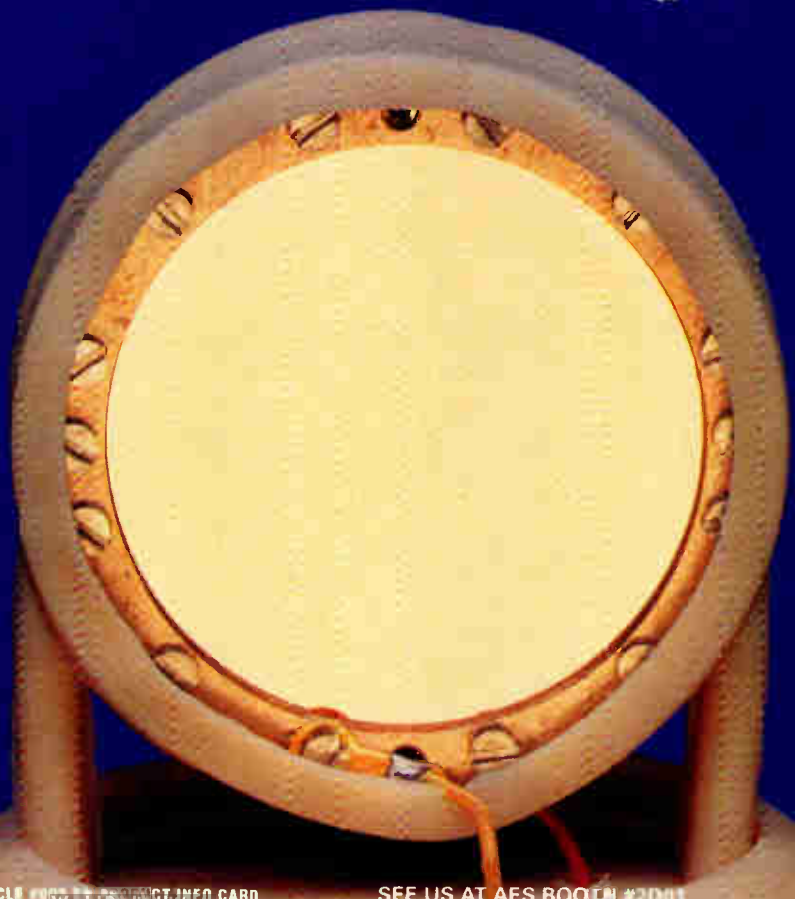

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# TASCAM MX 24-24

## DISK-BASED 24-TRACK RECORDER/EDITOR

An overriding trend in audio over the past decade has been that studio recorders keep getting better, faster and more affordable. In line with that trend, Tascam—building on the success of its DA-88 MDMs, DA-45HR 24-bit DAT and MM Series digital dubbers—now debuts the MX 24-24, a disk-based 24-bit/24-track recorder/editor priced at $3,999.

Housed in a stand-alone (no computer required!) four-rackspace chassis, the MX 24-24 includes an internal hard disk. However, rather than box the user into a particular backup/interchange format, Tascam has provided an empty front panel drive bay that accommodates any qualified 5.25-inch SCSI drive, DVD-RAM or a second HD. An additional rear panel SCSI port connects to external devices. The MX 24-24 supports Broadcast .WAV and Digidesign's SDII file formats.

The MX 24-24 is designed for either project/commercial recording or post-production. And as with Tascam's MMR-8 and MMR-16 digital dubbers, the MX 24-24 was created as a co-venture with synchronization leaders TimeLine, so it's well-equipped in the sync department: The MX 24-24 incorporates MIDI and SMPTE read/write/chase, MIDI Machine Control and an optional synchronizer that supports sample-accurate MDM sync (Tascam and ADAT). The unit also offers Sony 9-pin control and BNC video sync in/out ports.

Aside from the dedicated editing function keys, the MX 24-24 is only slightly more complicated to use than a DA-88. A clever arrangement of triangular track select buttons makes track arming fast and easy, and there are record-ready and signal-present LEDs for each channel, in addition to bright, 16-step LED meters for the 24 channels. Four banks of status LEDs show sample rate, timecode, record mode or sync status at a glance, while a numeric keypad speeds the entry of locate points, take numbers, EDLs, etc. The transport keys (rwd/ffd/play/stop/record) are similar to those on other Tascam recorders and will be familiar to most users. Among the unit's other transport functions are rehearse, autopunch and looping functions, and the MX 24-24 will perform pre/post-roll and offset controlled from SMPTE or MIDI sync sources.

A jog wheel offers audio scrub/locate functions. Surrounding the wheel—just a finger's touch away—are eight function keys (Jog/Scrub mode, Data Up/Down, Nudge, Capture, Trim, Setup and MIDI) that enable users to define edit points and navigate menus quickly and easily. Editing functions include the usual cut/copy/paste as well as insert editing, track slipping, and wipe/clear facilities. There is also a function that allows the user to cut a section while keeping later sections of that track in sync. Users can select nondestructive (up to 100 levels of undo) or destructive (tape-style) modes.

The MX 24-24 comes as a "core" unit, and optional 24-channel I/O cards tailor the system for user needs. Current card options include TDIF (three D25-sub ports), Alesis ADAT (six Lightpipe sockets), AES/EBU (three D25-sub connectors) digital cards and an analog card with six D25-sub connectors. The latter's D25s are wired in the standard DA-88 format, with XLR or TRS fanout snakes available from numerous suppliers. AES/EBU and S/PDIF 2-channel digital I/O are routable to/from any stereo track pair. The rear panel also has a punch in/out footswitch jack, MIDI and word clock in/out/thru, TRS balanced timecode in/out/thru and an MX Bus port for attaching an optional full-function remote or cascading multiple MX 24-24 decks for up to 192 (8x24) tracks.

To sweeten its affordable $3,999 pricing, Tascam also includes Mac and Windows 95/98/NT control/editing software, bringing full-featured editing and control to the MX 24-24. The RJ-45 100 Base-T Fast Ethernet port also permits the downloading of upgrades from the Internet direct to the MX 24-24's front panel SmartMedia™ removable card slot; users without computers can load upgrades simply by bringing their card to a local dealer. Updates already in the works include tempo mapping, MIDI clock generation and support for 12-track 24-bit 96kHz recording.

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**by John Schaffer and Rob Baum**

### PHYSICAL CHARACTERISTICS

The Alesis M1 Active Monitor's enclosure is a bass reflex design with dual, elbowed ports. The 1.5-inch-diameter ports are flared at the baffle, go into the enclosure 5 inches, take a 90° turn, and terminate on a 45° slanted cut. This port design technique minimizes bass reflex artifacts. The charcoal-painted baffle is 1-inch-thick MDF. The remainder of the enclosure is ¾-inch-thick, vinyl-covered MDF, with internal, particle board cleats in all corners. Each enclosure weighs 19.5 pounds, measures 15x8.5x9.75 inches (HxWxD) and is generously stuffed with fiberglass.

The 6.5-inch woofer features a non-woven carbon fiber cone with a Santoprene rubber half-roll surround, a 1.5-inch-diameter voice coil wound on a vented fiberglass bobbin, and a 4-inch-diameter flat spider. The flat outside edge of the spider results in less bass harmonic distortion than a bumped spider. The stamped steel frame is attached to a conventional motor structure using a healthy 4x0.8-inch-thick ceramic magnet, shielded by a bucking magnet on the back side of the bumped T-yoke, providing for extra woofer excursion. Insulated tinsel leads—a

—CONTINUED ON PAGE 150

The Alesis M1 Active Reference Monitors ($649/pair) are compact, bi-amped monitors with mirror image design. The low-frequency section consists of a 75-watt amp (.03% THD @ 30 watts/8 ohms) pushing the 6.5-inch (165mm) dynamic driver with a non-woven carbon fiber cone and 1.5-inch voice coil. Maximum SPL is greater than 118 dB at one meter. Rated response is 50 to 20k Hz, ±2dB, with 38Hz and 23.5kHz -10dB down points. And for those who need more bottom end, the Alesis S1 Active™ subwoofer ($599) adds an 8-inch LF driver pushed by 250 watts, for response down to 40 Hz (±2 dB).

A dual-magnetic structure with opposing magnets is used for magnetic shielding. The 25-watt HF amp (.06% THD @ rated power) pushes the 1-inch silk dome tweeter, which is cupped in low-carbon steel to reduce magnetic interference. To test for magnetic interference, I placed the M1s less than an inch from either side of my DAW monitor; I saw no color or shape distortion at all.

The back of each monitor has an IEC power cord receptacle, on/off switch, a center-detented 28dB sensitivity trim pot and a Neutrik ¼-inch/XLR Combo jack. There are no other adjustments. Alesis uses a regulated switching power supply for the amps. The manual suggests that fuses or breakers have not been included because Pulse Width Modulation (PWM) makes them unnecessary. The manual also suggests setting up the monitors with the offset HF drivers positioned on the inside rather than outside. I tried it both ways—the manual is right. Placing the drivers to the outside was very distracting. I also found that having them exactly at ear level was better than having them a bit above or below.

### STUFF A SOCK IN IT

Although the M1 is without active (or passive) electronic controls for altering its frequency response, the manual suggests that stuffing the two ports with wads of cloth will reduce the LF response. Because the M1s never exhibited too much

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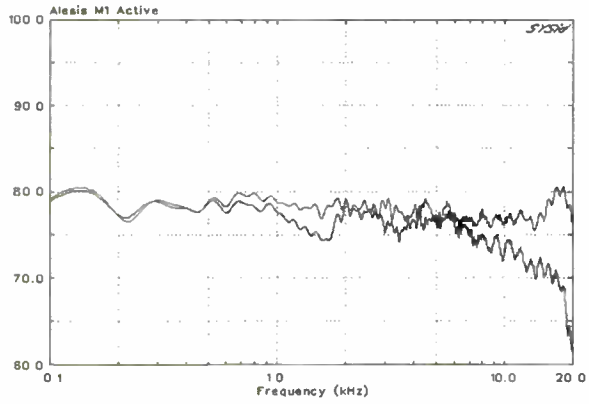
bottom end, I chose not to exercise that feature. The ports are also designed to push air over the warmer parts of the internal power amps, to keep them cool. The back plate of the M1 runs slightly warm, but a lot cooler than some smaller powered monitors I've recently been around.

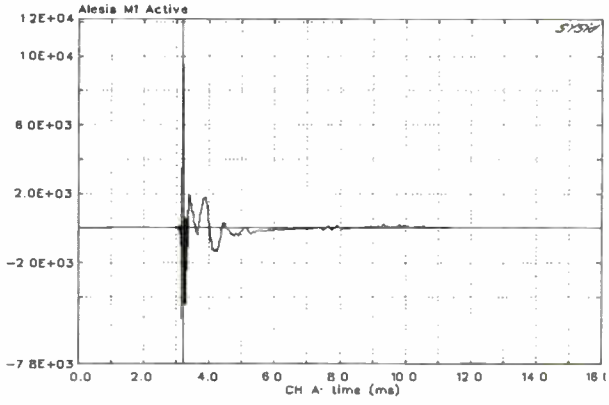
I was joined by Brian Glock for our first session. The monitors were placed, tweeters-in, on top of a pair of Electro-Voice Sentry 100A monitors in the typical triangle about 4.5 feet apart, and we were about four feet from each monitor. After plugging in and firing up the M1s, we listened to an HHB CDR-800 CD burner through a Mackie 1604, with Steely Dan's *Aja* as the test material. The M1 sounded bright and edgy. When the sax solo on "Black Cow" came up, Brian and I looked at each other and simultaneously said, "Listening fatigue."

The Sentry 100As, powered by a Hafler P4000, were much more pleasant, with a more present midrange and without the edge. The M1s' lack of midrange made them sound like they were sort of in the next room. We decided to go get something to eat and left *Aja* playing at a modest level to see if the M1s would loosen up a bit over time. When we came back several

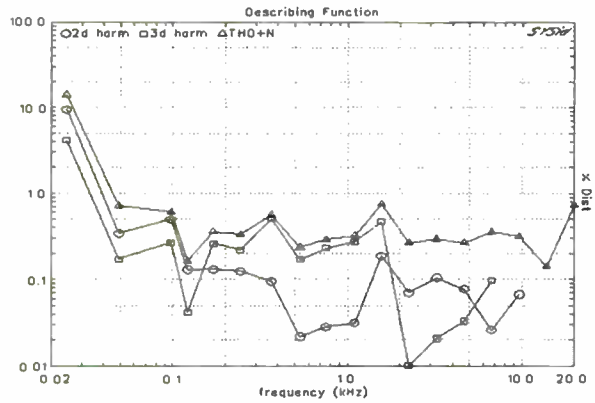
—CONTINUED ON PAGE 154



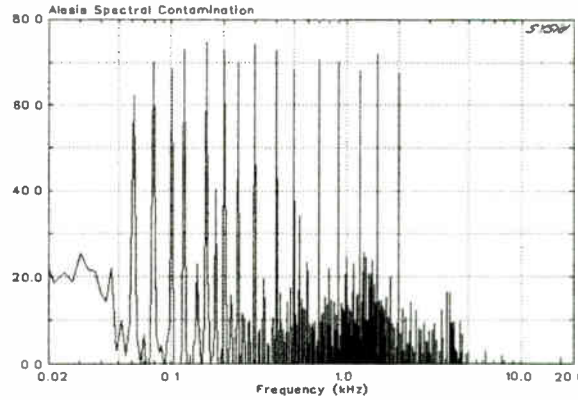

*On-axis frequency response is very flat, while the -30° off-axis response has a constant slope past 5 kHz.*




*Impulse response shows multiple peaks and valleys in the transient's decay.*




*Distortion vs. frequency: Distortion is less than 0.5% beyond 100 Hz, and 1% past 50 Hz. Key: THD+N = Δ trace, 2nd harmonic = ○ trace, and the 3rd harmonic = □ trace.*




*Spectral contamination test compares a series of input tones (tall spikes) to speaker output. The resulting nonlinear distortion products show decent self-noise products in the -40 to -50dB range.*

—FROM PAGE 148, LAB ANALYSIS

good precaution when using an electrically conductive cone—are terminated into polarized 0.205- and 0.110-inch tabs. A decorative, rubber trim ring is placed over the standard pad ring and mounting screws to help reduce reflections off the edge of the woofer frame.

The dome tweeter uses a 1-inch soft, treated cloth dome diaphragm driven by a ferrofluid-cooled, underhung voice coil wound on an aluminum bobbin. Underhung voice coils offer low distortion, more extended top end and more linear phase response. Behind the diaphragm is a hemisphere of felt on top of the pole piece to eliminate cavity resonances behind the diaphragm. The deep countersink on the 3.70-inch-diameter face plate provides good horn loading and directivity control to the tweeter. This waveguide reduces some of the tweeter's spray onto the mixing board, which tends to bounce up into the face of the recording engineer. The conventional ceramic magnet motor structure is magnetically shielded by both a bucking magnet and shielding can. Electrical termination is provided by dual 0.110-inch tabs.

The bi-amplified active monitor delivers 75 watts to the 6-ohm woofer and 25 watts into the 4-ohm tweeter. Two single-sided circuit boards at right angles to each other

—CONTINUED ON PAGE 152



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*—FROM PAGE 150, ALESIS M1*

hours later, the M1s sounded noticeably less edgy. The M1s had about 10 to 12 hours of break-in before our main event on a fresh morning at Sheffield Audio/Video, just outside Baltimore.

A hat tip to Sheffield engineer Bill Mueller, who also runs the Sheffield Institute Audio Recording curriculum, for hosting the session. We were joined by Racetrack Music Group's Sal Chandon and Paul Chiacchierini. We spent the better part of the morning making sure everything was as "real" and fair as possible. In the end, we came away with the impression that the M1s were a bit scooped in the mids and sounded a bit farther away compared to Genelec 1031s and Mackie HR824s, but felt that for the price, and considering the competition, they did very well. As an afterthought, we also listened to a pair of Yamaha NS-10Ms powered by a Yamaha P2075 amp. Here the NS-10Ms brought the midrange out front, way beyond that of anything else on the shelf.

To get a more thorough sense of the working ability of the M1, I continued using them back at my studio, listening to a variety of audio ranging from voice tracks for TV spots, mixed radio spots, a wide spectrum of jazz on vinyl and CD for a syndicated jazz show I'm producing, and some CD tracks from the Eagles, Stones, Yes and Van Morrison. The upper bass and midrange did fill in at about 20 hours, but the sound always seemed just slightly farther away and there was always a bit of an edge, regardless of the source. Dealing with the sound appearing to be slightly farther away was easy; I turned the monitors up.

I subsequently learned from Alesis designer Pat Hart that the M1s should undergo a 20-hour burn-in, which loosens the suspension and drops the resonance to about 42 Hz. After these discussions concerning the break-in period, I continued listening with another pair of M1s. I tested these at my studio with a new Mackie 1604 VLZ/XDR mixer and the same pair of EV Sentry 100As, and at Brian Glock's studio with Event 20/20bas powered monitors.

In my studio, we set the monitors on a board covering my existing custom steel frame supports so they would be on the same lateral axis. Both the EV and Alesis monitors were set up vertically, with the tweeters on top, at ear level and toed in slightly with their faces on the same plane. The Sentry 100s have in-line placement of the LF and HF drivers. The M1 drivers are offset. We placed them with tweeters "in" as recommended by Alesis.

Instantly we noticed that the M1s were not as edgy as before, and the midrange dip was not as apparent. In fact, on "Black Cow," the vocals and sax were now very clear, more focused and more apparent than on the Sentry 100s.

On the Yes tune "Owner of a Lonely Heart," the mid-bass or low-mid of the Sentry 100s was warmer and more apparent than on the M1s. On the mono Stones tune "The Last Time," the focus of the M1s resulted in a much clearer sound, and no sense of scooped mids. It was about at this point that the differences in sound brought my attention to the different materials used in the LF drivers. I think one of the main differences in the signature sound of the two monitors is the Sentry's paper woofer and the M1's non-woven carbon fiber. Think about how differently a Martin guitar and an Ovation guitar sound. It was that sort of difference, sort of.

## SATURDAY NIGHT FERVOR

We broke for an hour or so, enjoyed a shrimp scampi dinner and reconvened at Brian's studio to compare the M1s

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with his Event 20/20bas. These are bi-amped monitors using an 8-inch, mineral filled, polypropylene LF driver pushed by a 130 watts, and a 25mm silk-dome tweeter pushed by 70 watts. The crossover is set at 2.6 kHz.

The 20/20bas has two EQ adjustments, an HF and LF, which we set to ±0. On "Black Cow," the M1s have a nice bite to them, but still sounded a bit scooped in the mids. The 20/20bas sounded more diffuse. On "Owner of a Lonely Heart," the 20/20bas sounded smeary, the M1 clearer, but more distant. The Stones' "Last Time" sounded much edgier on the M1 than on the 20/20bas. The bite of the M1 on "Crazy" from the Seal CD brought our attention to the tweeter placement. Again, the 20/20bas were more diffuse, the M1 more focused. Some of Brian's original synth compositions, recorded and mixed on the Events, also sounded a bit mid-low on the M1. On a compilation CD called Pure Funk, The Commodores' "Brick House" sounded too full on the mids on the 20/20bas and about right on the M1.

I think the difference in mids may be due to the larger LF driver in the 20/20bas and the fact that the crossovers, while hovering around the midrange, are different. The crossover as published for the 20/20bas is at 2.6 kHz, 1.5 kHz for the M1 and at 2 kHz for the Sentry 100A. If these figures still hold true, that distance or scoop we heard in some of the M1 experiences may be due to frequencies above 1.5 kHz but still in the midrange being handled by the silk-dome tweeter. A typical music track with modest complexity contains a lot of information in the 1kHz to 3kHz range. As such, even minor changes can result in a noticeable difference in the mix.

*For more bass, the Alesis S1 Active subwoofer pairs with the M1s in stereo mix or 5.1 LFE surround applications.*

## IN CONCLUSION

For project studio primary monitors, the M1s are a much better choice than the Yamaha NS-10Ms. At $649, the M1s are less than half the price of the Mackie 824s and many times less than the Genelec 1031s, so you might say the comparison was unfair. To me, having the M1s hold up compared to far more expensive studio monitors proves they have a very good price/performance ratio. The blue LED power indicator is pretty cool too.

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*Ty Ford is an independent producer, engineer and writer. You can discuss your scampi recipes with him at www.jagunet.com/~tford.*

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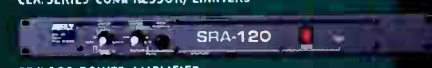


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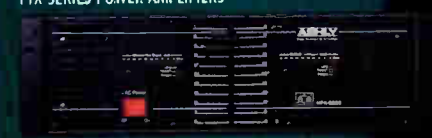

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# SUMMIT AUDIO MPE-200

## ELEMENT 78 SERIES MIC PREAMP/EQUALIZER

On the periodic table, element 78 is platinum, and Element 78 is also the name of the new series of digitally controlled analog processors from Summit Audio. First in the series is MPE-200, a stereo (or dual-mono) microphone preamp with four-band parametric equalizer. MPE differs completely from other new pre/equalizer combinations in two important ways: One, Mr. Rupert Neve designed the Class A, discrete-transistor analog microphone preamp; coupling sections; output driver stages; and English-made transformers, and specified the frequencies and performance of the equalizer section. Two, the entire unit is digitally controlled, using an intuitive and simple interface designed by Summit engineers. Digital control allows all front panel settings to be stored internally in any of the 25 memories, or externally through a MIDI SysEx librarian. Digital control also means that there will never be any scratchy pots or switches to replace, and all settings can be exported by way of the rear panel MIDI ports to less-expensive slave preamp/equalizer units, such as the upcoming MPE-200S.

The unit I reviewed came with Version 1.23 software and differed (in a good way) from the pre-release spec sheets and other reviews I have read. Future updates (if needed) would be handled by your Summit dealer, who would connect a special computer interface to a port within the unit and download. Physically, the MPE-200 is a handsome and impressive unit that reflects professional confidence, from its thick extruded aluminum front panel and massive chassis components, large rotary-shaft encoder knobs and backlit LCD alphanumeric display switches to its 28-pound heft.

Operation of the MPE is easier to work than my friend's new BMW car stereo. LCD onscreen switches display the current accessible menu for that section of the unit, and pushing the switch itself toggles through the other available menus in an endless loop. Once the desired menu is found, a rotary-shaft encoder knob advances around the menu to the desired parameter, while turning that knob changes that parameter value. Furthermore, the switches' LCD screen changes color to indicate operational or setup modes. Thankfully, there are no confusing imbedded submenus or "trick" data entry schemes; the display switches show all data and the shaft encoders also indicate this information with backlit pointers at actual dial positions of frequency, Q, boost, cut, peak, shelf, fine or coarse gain settings.

### MASTER OUTPUT/ SETUP SECTION

I divide the MPE into three parts: the microphone preamp/filter input section; the parametric equalizer sections; and the master output/setup section. Let's begin with the master output/setup section, because when getting a sound I'll go to this section first to choose an unused preset memory location to be saved as I refine the sound. The Master LCD display switch has up to four menus: Master Channel Select, Master Preset, Master Setup and Output Fader. The Master Channel Select Screen indicates whether Channel A and B are "locked" or "unlocked" (more about this later) and has a dual-bargraph VU meter showing the EQ's output level. Output level is adjustable ±16 dB to make up for the EQ's boost/cut settings. This entire screen flashes red with peaks of +18 dB or 3 dB below clip and is pretty hard to miss. Master Preset (a yellow screen) shows both the currently-loaded preset location and the preset that's waiting to be loaded. Here you can A/B compare your stored preset and today's tweak without losing either setting.

Essentially, settings are saved as a preset by "locking" them in. When locked, the preset can be altered but changes in the buffer will not be saved if power fails, the MPE is turned off or another preset is loaded. In Sleep mode, the buffer memory's contents are saved even when the MPE is powered down. Within Master Setup you can unlock and lock presets; select whether the MPE operates in linked stereo—where all settings track together on both channels—or 2-channel modes, where each

BY BARRY RUDOLPH



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channel can have completely different settings. You can also add a fader to the output of the equalizer—a useful feature for "on the fly" fade outs during direct recording. These fader settings are NOT saved, and values are returned to 0 dB when changing presets or powering down—a good thing.

### PREAMP/FILTER INPUT AND EQ SECTIONS

At the front end of the MPE is the microphone preamp/filter input section. The green Mic Gain screen shows gain settings of both channels, and the dual-bargraph VU meter has a –28 to +9dBu range. Gain is in 1.0dB steps. A single setting stores both mic gains in stereo mode, while in 2-channel mode, gain settings can easily be offset when your matched pair of mics don't match up. The Mic Gain display switch changes to bright red at +18dB peaks.

The HP/LP Filter screen (yellow) provides any combination of two filters. The highpass has 17 steps from 25 to 320 Hz; the lowpass has 17 steps from 4 to 30 kHz. These are 12dB/octave filters, but become a single, steep 24dB/octave filter when selecting the same filter twice with the same corner frequencies; or you could configure two LP or two HP filters with two different corner frequencies for an unusual contour. An Input Setup menu handles chores such as phantom powering on/off, phase flip and whether the mic preamp output feeds the equalizer input or not. This is useful when inserting an outboard compressor between the preamp and the EQ section or for using the preamp and EQ sections separately. The rear panel has stereo pairs of XLR analog I/Os for the EQ and preamp sections.

The parametric EQ section has four bands. Each band's LCD screen switch is yellow when bypassed and green when active. When switching, I heard a relay clicking, verifying a hardwired bypass. There is no global EQ in/out switch on the MPE, although this switching is easily accomplished by having a blank preset ready to compare to your current settings. The Low band covers 17 frequency steps from 30 to 300 Hz with ±16 dB of gain. Like the MPE's Master Output and Mic Input sections, all the EQ parameter values are displayed on both the backlit pointer collar around the rotary encoder knobs and the LCD switches. Pressing the Frequency Select knob changes the section from peaking to shelving characteristics. In all four sections, pushing the Boost/Cut encoder knob toggles between Coarse (2 dB) and Fine (0.5 dB) steps—great for mastering. The EQ's Low Mid section handles 100 to 1k Hz in 17 steps. This time, pressing the Frequency select knob changes the knob to Q selection. As indicated on the display switch, Q is adjustable in 17 steps from a Q of 0.60 (or 1.6 octaves) to 2.0 (or 0.5-octave). Perhaps it may be a little esoteric to fuss over a Q of 0.60 vs. a Q of 0.65; and so I would like to see a wider range of Q's offered here—such as from 0.40 to as high as 4.0. The High Mid section is the same as Low Mid, except frequency steps are from 500 to 5k Hz: There's plenty of overlap for the most important middle frequencies. The High section band covers from 2 to 20 kHz in 17 steps and has switchable shelf/peak operation.

### IN SESSION

Equalizing both program sources and individual instrument and vocal tracks with the equalizer sections alone, I was impressed by the MPE-200's ease of

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World Radio History

# Introducing the Antares Microphone Modeler

## Now the microphones you own can sound like the microphones you *wished* you owned.

**IF YOU'VE BEEN FLIPPING** thorough the pages of this magazine, you've almost certainly noticed the intense focus on microphones. From the proliferation of exotic new mics to the almost cult-like following of certain historical classics, never has the choice been greater. Or the prices higher. A perfect time, in fact, for Antares to introduce our new Microphone Modeler.

Using our patented Spectral Shaping Tool™ technology, we've created precise digital models of a wide variety of microphones, from historical classics to modern exotics, as well as a selection of industry-standard workhorses. Simply tell the Microphone Modeler what microphone you are actually using and what microphone you'd like it to sound like. It's as simple as that.

### Just Like Being There

Not only do the models reproduce all of the subtle sonic characteristics that make each microphone unique, but they also give you control of each mic's specific options. Does the mic have a low cut filter? If so, it's in the model. Wind screen on or off? Close or far placement? Each option results in the same sonic effect that it would have with the actual modeled mic.

And for that final touch of perfection, you can even add some tasty tube saturation.

With the Microphone Modeler, you can afford to record every track through a model of the specific mic that will produce the ideal sound you're looking for. Or use it in live performance to get the sound of mics you'd never consider bringing on stage. You can even use it during mixdown to effectively change the mic on an already recorded track.

And with the ability to download new models from our web site, the Microphone Modeler will always keep you at the forefront of the microphone art.

### Have It Your Way

The Microphone Modeler will initially be available as a plug-in for the TDM and MAS environments, with DirectX and Mac VST not far behind. And for those who prefer a self-contained solution, there will be the AMM-1 stand-alone rack-mount processor.

And best of all, whichever version you choose, you can expect to pay substantially less than even a single modestly exotic mic.

ANTARES AUDIO TECHNOLOGIES 464 Monterey Avenue, 2nd floor, Los Gatos, CA 95030 | www.antarestech.com
US and Canada: 888 332 2636 | from Overseas: 408 399 0008 | info@antarestech.com

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ANTARES
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When recording takes you out of the studio and into the field... What mic pre are you going to use?

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Whether you're recording rock, classical or jazz, you'll be happy to discover that the MP-1 provides a low noise, 122 dB dynamic range signal path with a flat 50 kHz bandwidth to realistically capture the performance.

As you leave the safe confines of the studio to enter the unpredictable world, you'll also love the fact that the Sound Devices MP-1 is designed to withstand repeated drops from heights of more than six feet — as well as prolonged exposure to temperature and humidity extremes.

The new MP-1 microphone preamplifier from Sound Devices. A transformer-balanced, studio quality microphone preamplifier with 48 volt phantom power and a selectable high-pass filter. Designed for critical music, radio, television and film-production applications.

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control over spectral tonalities. There is plenty of boost and cut available, with high enough Q's for surgical removal or blatant EQ hyping.

As the two channels track together exactly, in stereo, there is never a question about whether both sides of a stereo mix have the same exact EQ—you know they do! A/B comparison is a practical reality, as you have instant response without having to set up two "identical" signal paths on a console and then switch between them. Switching or "morphing" between presets yielded no glitches, noise or "zipper" effects. Also, I always saved presets as stereo even if I only used one channel for recording vocals. By locking out Channel A, I could then use Channel B for the same vocalist with an alternate microphone, with a different mic gain setting.

Another useful feature is the red peak indicator. This unit is so clean, I never would know by listening that I am approaching clip.

Speaking of clean, the MPE-200 offers some impressive specs. Maximum output is +28 dB. Within the mic preamp path, THD is rated at less than 0.003% (40 to 16k Hz), at 8 dB of gain and with +26dBu output level. THD in the EQ path at unity gain is less than 0.003% (40 to 16k Hz), while output noise at unity gain with all EQ and filters switched out is less than -100 dB. Dynamic range is measured at 133 dB and equivalent input noise at 60 dB of gain is –128 dBu.

Using the mic preamp on a wide variety of sound sources revealed a very transparent and warm sound, reminiscent of a vintage Neve module, but clearer, cleaner and able to handle momentary peaks better when using hotter mic gain settings.

The Summit MPE units should appeal to anyone interested in simple yet elegant digital control of the highest quality analog. If you are interested in owning a future "classic" piece of fine recording equipment, and you're starting a collection of digitally controlled analog processors, then begin with the MPE-200 at $4,495 and add additional slave MPE-200S units at $3,995 each.

Summit Audio, P.O. Box 223306, Carmel, CA 93922; 831/728-1302; fax 831/728-1073; www.summitaudio.com. ■

*Barry Rudolph is an L.A.-based recording engineer. Visit his Web site at http://home.att.net/~brudolph.*



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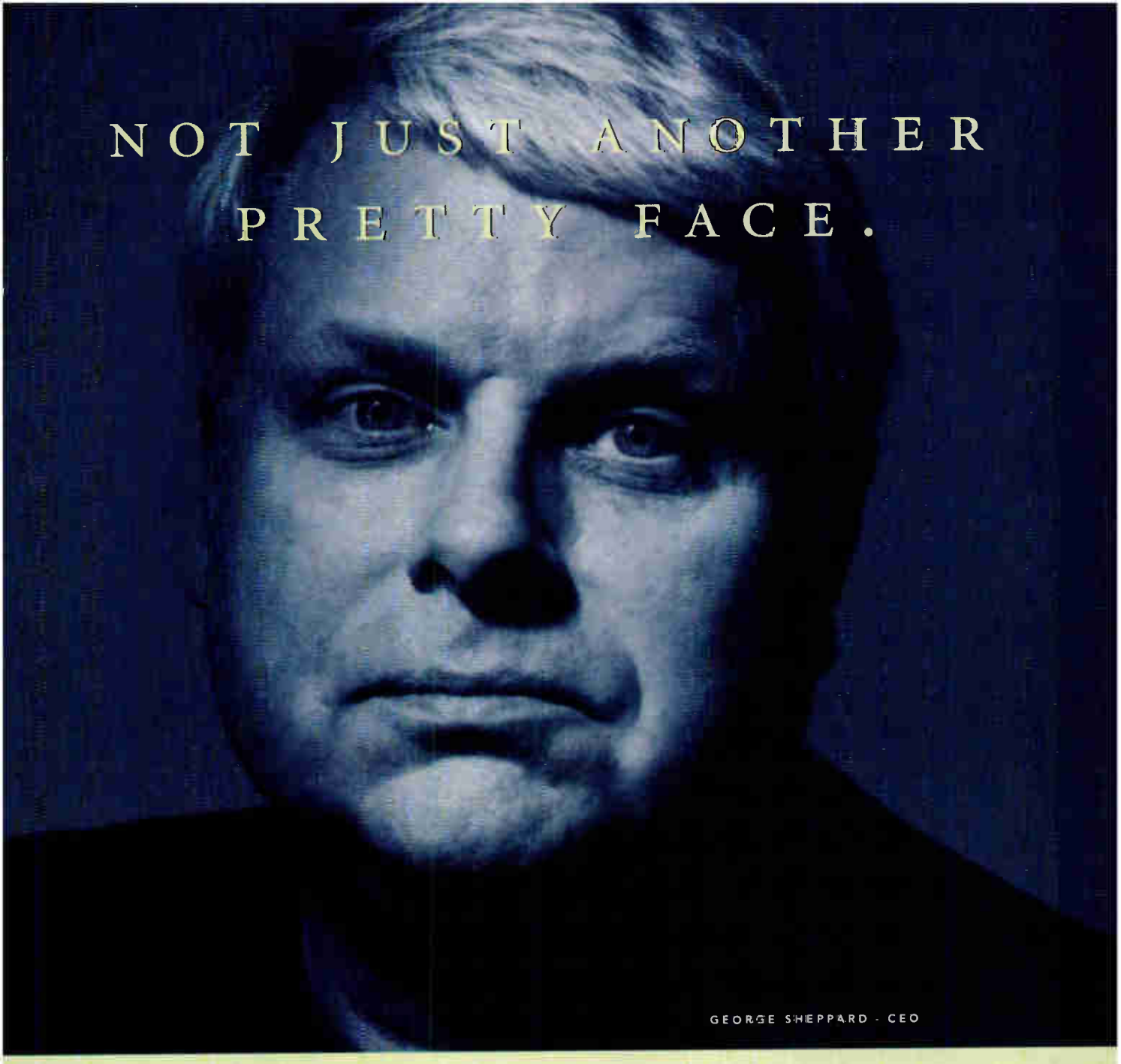


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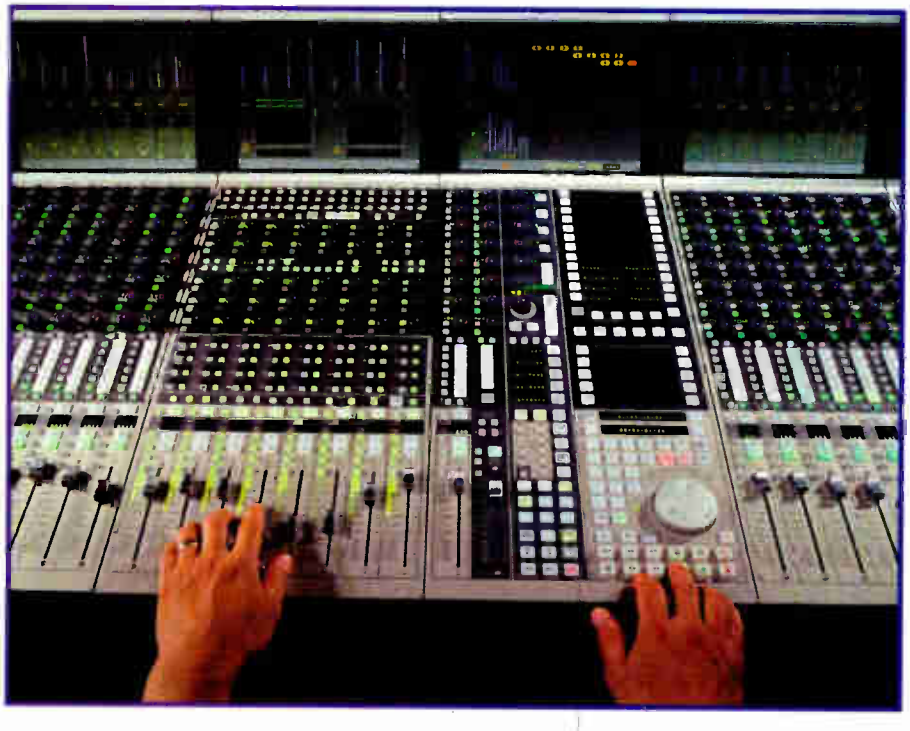
# EUPHONIX SYSTEM 5

## *AUTOMATED DIGITAL MIXING CONSOLE*



The fact that Euphonix has been developing a digital console is no secret. In fact, the company first announced its plans to build a digital mixer in the November 1997 issue of *Mix*. The article stated that Euphonix digital consoles would offer 24-bit analog and digital interfacing, 40-bit floating-point internal processing and 96kHz capability, in a scalable, modular and field upgradeable package. Now, at AES, Euphonix will finally unveil its System 5, a no-compromise digital console that supports from 48 to 200+ channels and meets all the design criteria the company spelled out nearly two years ago.

"We consider System 5 to be a high-performance digital console right from the start," says Euphonix founder Scott Silfvast, "because of the amount of control power we have put in the surface, coupled with more buses, more channels, more surround capability, more control of dynamics, more modularity, more reliability and 96kHz capability. And it will be working from the day everyone first sees it at AES." A System 5 production model has been in daily operation for months at San Francisco post studio One Union, and five more consoles were slated to ship in the weeks before AES.

Essentially, System 5—it's the company's fifth console product—consists of a control surface, the digital mixing core (with all the processing, control, synchronization, routing and DSP) and rackmount audio interfaces providing any desired combination of analog and digital I/O.

The control surface comprises a master fader, a communications/talkback panel, source monitor select, control-room playback (for mains and two sets of alternative speakers), automation control, solo master controls (APL, PFL and solo in-place), transport and locate facilities with jog/shuttle wheel, preset and user-definable function keys, monitor A/B/C/D output controls, a panel with 34 keys (each with eight-character displays) for enabling master functions and an assignable central strip. Identical in appearance to any channel strip, the central strip can be assigned instantly to provide control of any input channel. For example, if the user wants to EQ a snare on channel 2, all controls for that channel can be accessed either from the center section or from the channel itself.

### MODULAR, EXPANDABLE, FLEXIBLE

The channel strips come in 8-channel buckets, each with eight strips and a high-resolution active-matrix TFT screen that simultaneously shows the name and status for each of the channels, along with large, bright peak-type metering, gain reduction metering (for the onboard dynamics), and EQ or compressor curves. Each channel fader-bucket is essentially a self-contained unit with built-in computer, display screen and tactile controller, connecting to the frame via a power and network connector. And besides being hot-swappable, this no-backplace/no-edgecard design brings the possibility of easily designing a customized console housing, or

**BY GEORGE PETERSEN**



World Radio History

# Relive the Magic.

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There are two ways you can relive that magic. If you have a small fortune and can find a classic mic that works--that's one way.

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*Brian Knave, Feb. 98*

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*Michael Cooper, May 98*

*"The Lawson L47MP is a heavyweight contender in the ring of multi-pattern tube mics. Most definitely recommended."*
***EQ***
*Steve La Cerra, Oct. 97*

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creating articulated, sidecar or winged versions.

"It's a very modular system, and because of that, there's no 'master computer' or 'master power supply' or other single big component that could bring the system down," says Silfvast. "We admit to Murphy's Law, saying that something could fail at some time, yet in a distributed modular system, a single component in the system could fail, but the rest of the system keeps running. And that approach means everything in applications such as broadcasting."

According to Silfvast, this approach also lets a studio manage its resources more efficiently. "For example, if there's a 48-fader frame in one room and 24 faders in another room, you can literally move these fader buckets to the other room, drop them in and have a lot more flexibility in your investment," he explains. "And the same is true with the DSP cards and the I/O converter boxes. So if one room doesn't need analog I/O one day and the other studio needs more, just move them around. On the lower end, it allows studios to start out small and grow the systems as their needs and finances expand."

Not coincidentally, Euphonix is also unveiling the 24-bit/96kHz version of its R-1 disk-based multitrack recorder at AES, adding 48-track and 96kHz capability. "With System 5's 96kHz software in place, the console surface behaves exactly the same, but you get half the number of channels," Silfvast says. "A music studio may buy a console that's 200 channels at 48 kHz or 100 channels at 96 kHz, providing a way that System 5 owners can differentiate themselves from competing studios with other digital consoles. We wouldn't launch a 96kHz console without having a 96kHz multitrack available, and a 96kHz recorder is great with analog consoles as well. Also, our multitrack is not buried inside the console—they connect via a single MADI cable, and can be used separately as well."

### COMING TO THE SURFACE

Having shipped more than 500 digitally controlled analog consoles, Euphonix has learned quite a bit about creating control surfaces for mixers. "A console is not only an extension of the person using it," says Silfvast, "but that surface must be one part control and five parts feedback, and be able to show the user what is happening globally—not just one channel at a time."

A key element in reaching that goal was developing a patent-pending "digital knob," a rotary encoder that shows the relative position of the knob via an LED ring. However, unlike similar-looking encoders, the LEDs are built into the top of the knob. This approach prevents the knob from visually blocking the knob pointer when scanning across the entire surface from many different angles. Additionally, there's push-switch built into the knob for entering automation modes, etc. The knob is surrounded by a "tire" outer surface that's removable and could be painted, or molded with various hues for color coded-functions.

The key to creating a successful user interface is offering something people will use, rather than taking unfamiliar approaches such as light-pen control or virtual gloves. "We think we've got a revolutionary control surface," says Silfvast of the System 5. "And by that, I mean somebody can walk up to it and ten minutes later decide that they can do a session and be

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# MASSIVE PASSIVE STEREO TUBE EQ

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Perhaps, but would photographs of our Variable Mu or VOXBOX have created their successes alone?

You have to hear this gear. You have to use this gear. Put your hands on the knobs and crank 'em.

Engineers who have already gotten hold of the MASSIVE PASSIVE have told us: "Why does it make everything sound so much better?", "It's organic and orgasmic.", "It's a f%#king powerhouse.", "It's unlike any other EQ.", "This is IT. The sound I've always dreamt of but couldn't ever get until now."

Craig 'HUTCH' Hutchison designed these monsters... The MASSIVE PASSIVE is a two channel, four band equalizer, with additional high pass and low pass filters. "Passive" refers to the tone shaping part of this clever new EQ design not using any active circuitry. Only metal film resistors, film capacitors and hand-wound inductors sculpt the sound, kinda like a Pultec EQ on hyper-steroids. Super-beefy, hugely-high-headroom Manley all-tube make-up gain amplifiers deliver your tunes into the next realm. You'll need to experience this.

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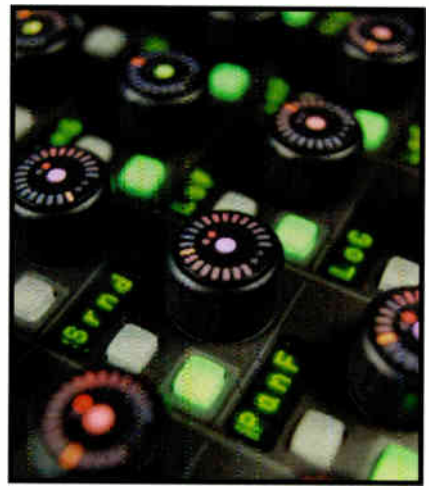
comfortable working on it. Our CS-3000 was never intended to be that way, 'cause it's a 'sit-down-and-learn-this-thing-and-it-will-extend-your-power' kind of surface. The whole point of the System 5 is to NOT be different, but to look and feel friendly and deliver what somebody asks of it."

### RIGHT AT THE CORE

The central digital mixer core—mounts in one to four rack frames (which can be placed in a machine room), providing from 48 to 200+ channels. The DSP cards are based around second-generation SHARC processors. According to Silfvast, a scalable architecture is formed where the console is expanded simply by adding more DSP cards. "There's lots of dedicated power—there's no dynamic allocation of DSP resources—there's none of this 'grab a mouse and pull an EQ out of a resource pool.' And now, processing power has gotten cheap enough that at some point, it cost more to make the DSP assignable than it did to just put a bunch of parallel DSP cards in there. We took that approach of making the console totally programmable.




It's nothing like the approach of an ASIC-based console, where you have a 48kHz, 4-band digital EQ and the console will always be that way, because its design and feature set is fixed in the hardware. So if we decide we want a multiband dynamics tool to replace the EQ and dynamics on a channel, it's on software you can get from us."

The system communicates via EuCon, a high-speed, real-time control network that links the console and computers to a central switching hub. But beyond that definition, EuCon allows the distribution of the operating system over numerous computers, so that the individual computers (one is located inside each fader-bucket, and one for each DSP frame) behave as a single large computer.

### INTERFACE: CHOICES, CHOICES...

I/O interface options for System 5 are numerous, based on Euphonix's existing line of rackmount devices, so the user can choose from that line or use their own converter sets *du jour*. Among the Euphonix line are its 26 channel ADCs and DACs, MADI/analog and analog/MADI converters, and AES/MADI and MADI/AES converters. A matching audio monitor interface provides I/O to all the control room monitoring and talkback functions. As an option, additional I/O interfaces can be located in the control room for short-run connection of outboard gear, instrument patching, etc. And the Euphonix ML130 features 24 remote mic/line preamps, with fingertip console control of input gain, phase, phantom powering, delay and line/mic switching.

### SOME BASICS

In addition to the previously mentioned

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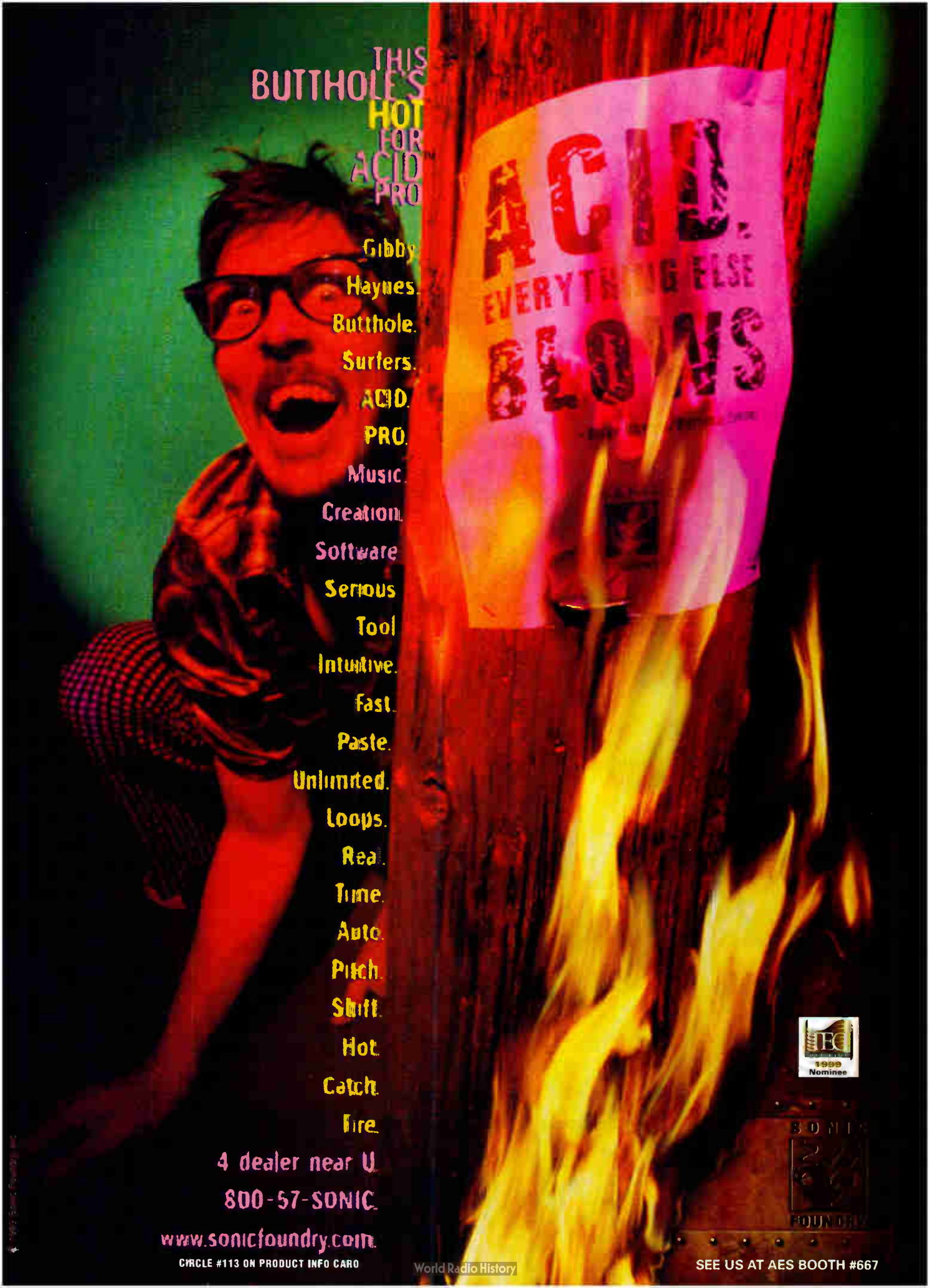

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compressor/limiter/expander and delay on every channel, each System 5 channel also features 4-band true parametric EQ, 20-20k highpass/lowpass/bandpass filters, four-character scribble strip naming of channels and AFL/PFL/solo in-place.

The moving fader and every-function-reset automation offers both dynamic and SnapShot Recall modes, with extensive editing/merge/trim/offset and preview functions. The machine control panel in the master section has a large wheel with jog/shuttle functions (and an LED array "speedometer" indicating the relative rate of forward/backward motion), along with standard recorder-type transport keys, dual LED timecode displays, programmable locator points (99 cues available in each title) and user-definable preroll/postroll/rollback. In keeping with its EuCon distributed intelligence networking, many of System 5's lesser-accessed features are handled by an external PC running eMix management software. Essentially, eMix handles functions such as the digital patch bay, project titles, disk directories and backups.

Borrowing from the innovations in the CS-3000, the flexibility in the stereo and multiformat panning is impressive, offering independent front and surround control of divergence and focus as well as control of the X-Y axes via pan, surround and rear pan knobs in each channel's knob strip or by using the trackball. Either way, entering pan mode immediately brings a visual panner display into the master section and into the TFT screen above each channel. The console supports all standard formats (mono, stereo, LCR, LCRS, 5.1, 7.1) to a max of 16 multiformat surround stems, each with up to eight buses; also, a single control can pan to several stems simultaneously with different formats.

## PRICING

The Euphonix System 5 will be officially unveiled to the public on the first day of AES—and it will be available, not vaporware. Pricing is said to be competitive with digital desks such as the SSL MT, Sony Oxford or AMS Neve Logic. If you're in the market for a high-end digital board, check it out.

Euphonix, 220 Portage St., Palo Alto, CA 94306; 650/855-0400; fax 650/855-0410; www.euphonix.com. ■

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KRK V-SERIES

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# MILLENNIA NSEQ-2

## TWO-CHANNEL PARAMETRIC EQ WITH TWIN TOPOLOGY

Since Millennia (then known as Millennia Media) introduced its acclaimed HV-3 high-voltage mic preamp several years ago, the company's name has been synonymous with extremely transparent solid-state circuit designs. Forssell Technologies was a kindred firm producing state-of-the-art vacuum tube gear with a similarly neutral sonic signature. The two companies merged in September 1997, and the Millennia NSEQ-2 2-channel parametric equalizer is the first offspring of that marriage. Already generating interest, the NSEQ-2 is a nominee for a 1999 TEC Award.

### TWIN, MINIMALIST AUDIO PATHS

The NSEQ-2 features dual circuit paths, one solid-state and the other vacuum tube. Front panel push-button switches allow you to select the topology you want, independently for each channel. The solid-state path is an all-discrete, Class-A FET amplifier path. The vacuum tube path is all Class-A triode. Neither signal path uses any transformers.

Each channel features four active filters. But, unlike other active filter designs, which place the filters in-line or in parallel in the audio path, Millennia's proprietary technology places all filters in a shunt from the main circuit to ground. Because the filters are not technically in the audio path, each band has minimal interaction with the others.

If this sounds a bit vague, it's on purpose. Millennia is reticent to reveal its trade secrets. But what will grab most people's attention is that there is only one active stage in the entire audio path from input to output in unbalanced configuration. One amplifier serves as input buffer, EQ amplifier and output driver. Millennia says that this minimalist approach yields a signal-to- noise ratio improvement of greater than 20 dB over passive designs.

The NSEQ-2 ships with unbalanced I/O in its standard configuration and lists for $2,995. Balanced I/O is a $300 option, but this adds an additional series-connected amplifier to each channel's audio path. Although this causes some slight degradation of the minimalist audio path, it provides 6 dB more headroom and is worth considering. Switching from unbalanced to balanced mode or vice versa is simple: Move six jumpers inside the chassis.

**BY MICHAEL COOPER**

### CONNECTIONS AND CONTROLS

The two-rackspace NSEQ-2 weighs 25 pounds and is built like a truck. You'll probably want to leave an extra space both above and below the unit; this puppy gets quite warm.

Rear panel I/O is via 3-pin XLR jacks. In unbalanced mode, pin 1 is chassis ground, pin 2 is hot signal, and pin 3 is tied to audio ground. Connections to balanced gear are plug-and-play. Rounding out the rear panel are an earth/audio ground jumper (remove this to quash ground loops), a removable fuse holder block (for selecting 100-120 or 200-240VAC operation) and standard IEC power receptacle. Thankfully, there's a power switch, with an associated LED, on the front panel.

The front panel is a work of art, with an updated retro look. Large, knurled, aluminum rotary knobs provide boost and cut for each of the four bands on each channel. The knobs offer 21 detented positions, providing repeatable settings. Large red, yellow and green LEDs are inset behind push-button



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switches. They light when various functions are active and provide airline cockpit decor for your darkened control room.

There are independent switches/LEDs for bypassing each channel, bypassing each of the four filters on each channel and switching audio paths (tube or solid-state) for each channel. When a channel is bypassed, its input is hard-wired directly to its output. Gain range switches toggle the boost/cut controls between ±10dB and ±20dB ranges; the narrower range is best for mastering applications and light-handed tweaking.

The NSEQ-2's filter setups offers a lot of flexibility. Low and high bands are switch-selectable to be shelf or peaking (bell curve) type. Shelving provides a 6dB/octave slope. The end-band Q is fixed at 1.0 for peaking EQ. The rotary frequency select switches for these bands are mil spec and feature gold contacts. They step through only six fixed frequencies for each band, but the two middle band frequency controls overlap so that any frequency is available at your whim. The low band steps through 20, 34, 56, 100, 180 and 270 Hz; the high band steps through 4.8, 5.8, 8.0, 10, 16 and 21 kHz.

The two middle bands are true parametric types, with sweepable Q knobs provided for each band. Q can be continuously adjusted from 0.4 to 4.0. The frequency select knobs for the two middle bands are also continuously variable. Push-button switches kick in "10x" multipliers for these frequencies, greatly extending their range. Depending on how these switches are set, the low-mid frequency knob sweeps through 20 Hz to 220 Hz or 220 to 2.5k Hz, and the high-mid knob sweeps through 250 to 2.5k Hz, or 2.5 to 25 kHz. (The use of standard value capacitors creates a frequency range that is not exactly 10x for the low-mids, but close enough for practical use.)

## PUT TO THE TEST

It's difficult to describe the NSEQ-2's sound, because it is so amazingly transparent and free of artifacts. As one would expect, the solid-state path is a tad more precise and focused. Vacuum tube mode provides a hair more depth and texture, and a slightly sweeter high end. Yet, the spectral balance is not noticeably shifted in any way.

This is not a box you would choose to "tubify" something to death. Which is not to say that the NSEQ-2 won't warm things up. On the contrary, its tube path gave an inherently hard-sounding fiddle a pretty softness that the EQ on my 02R could not provide. It's just that the effect is subtle. Unlike some other processors that change your mix too much before you even begin to tweak them, this is a box you could use for delicate mastering applications. The 1dB boost/cut increments may not be fine enough for every mastering situation, but they should do for many.

The NSEQ-2 is quiet as a mouse. With all bands switched in and gain knobs nulled, I could hear no added noise (this even in vacuum tube mode). In this state, the unit also added no discernible coloration to the sound compared to when both channels were bypassed.

In mixdown sessions, the low shelving EQ was flexible enough to filter out rumble as well as air turbulence on close-miked voice-overs. The Q range for mid bands is fairly broad, though I'd like to see deeper notching capability. The channel and band bypass switches do not pop when you switch them in and out. Switching between solid-state and tube paths causes a momentary dip and quick recovery in out-



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put level, but it's nothing too disconcerting and far preferable to a speaker-nuking pop.

Generally speaking, all controls have a sturdy feel and positive action, although the detents on one of the boost/cut knobs on my review unit were a tad mushy. The knob settings for center frequency and Q are a tad evasive in low light or at a distance. I'd also like to see more frequencies screened on the front panel; the continuous rotary controls for the middle bands only note five frequencies each, and a couple more would hasten finding narrow problem bands. Also, the detents on the boost/cut knobs don't line up with the hash marks screened on the front panel. According to Millennia, this has been fixed in the current version.

My biggest complaint is that the NSEQ-2, in unbalanced mode, would distort when fed flute, xylophone or classical harp tracks from my 02R's master bus at pre-converter levels at or above 3 dBFS—even with all bands set for cut. Once I put the unit into differential (balanced) mode, however, I had all the headroom I needed, and the unit still sounded absolutely gorgeous.

## CONCLUSIONS

Having output gain controls on the NSEQ-2 would allow you to attenuate levels going to downstream units that afford less headroom, which could be an issue when considerable EQ boost is used. But most other devices have input trim controls. Do we really need I/O amplifiers at every point along a signal chain? The dearth of amplifiers in the audio path is no doubt one of the reasons this box sounds so incredibly transparent and quiet. It's a design philosophy you'll wholeheartedly endorse as soon as you hear the first strains of music through this world-class equalizer. And the twin topology design gives you essentially two different units for the price of one. The bottom line: For mission critical EQ applications where transparency is a paramount necessity, the NSEQ-2 is king. Prepare to be thrilled.

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*Michael Cooper is the owner of Michael Cooper Recording, located outside the small resort town of Sisters at the base of the Oregon Cascades.*



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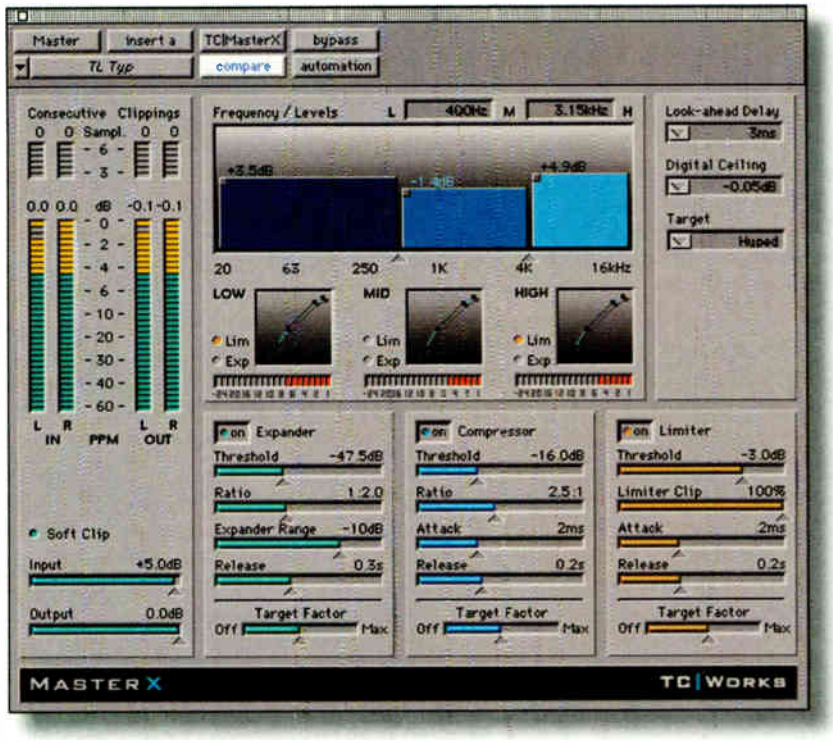
# TC WORKS MASTERX TDM PLUG-IN

## MULTIBAND DYNAMICS PROCESSING FOR PRO TOOLS




There's nothing like multiband dynamics processing to pinpoint and control troublesome frequencies. The ability to target a specific bandwidth gives you greater command over the amount of dynamics processing applied to a signal overall. By zeroing in on the frequencies that require compression, expansion or limiting, more of the original signal's detail is preserved, resulting in a track that sounds open and unprocessed. The squashing, notching, and pumping artifacts that traditional, full-bandwidth dynamics processors often suffer from can be all but eliminated with a multiband machine.

MasterX, a TDM plug-in from TC Works (the software division of TC Electronic), puts this kind of dynamics processing in your hands (or more precisely, in the plug-ins folder of your Pro Tools system). It retails for $995, a fraction of what a hardware unit with comparable features would cost.

There are three bandwidths to work with; expansion, compression and limiting are available on each. The graphical user interface is well laid out, and there is a unique Target Meta-Parameters feature that lets you adjust several related complex parameters simultaneously, from a single fader on each dynamics module. (I'll talk more about this later.) Based on the same core technology as TC Electronic's Finalizer rack units, MasterX brings the essential components of this popular hardware to the software world of mixing and mastering. I used MasterX Version 1.5 for this field test.

### DOING THE MASTER MOVES

Installing MasterX is completely routine: Pop the disk in and run the installer program. One key disk authorization is provided; you can generate a challenge code from the install disk, send the string to TC Works when you register, and they will send you the response code. Then, re-install the software using the response code, put the installation disk with the original authorization someplace safe and sleep soundly, knowing that you never have to worry about losing your hard disk authorization.

When inserted, MasterX eats up 50% of a single DSP chip (the SRAM chip, giving you three chips to work with per Pro Tools MIX card). Two instances will fit on a single chip. It doesn't matter whether the insert is mono or stereo; the DSP usage is always the same.

Considering the amount of processing power MasterX packs, it's very easy to use, thanks to a well-designed main window. There are four basic sections: input/output meters and levels, frequency ranges and levels, the dynamics modules, and parameters for optimizing the digital signal. If you understand the basics of multiband processing and digital mastering, and/or you are familiar with the Finalizer pieces, you will feel right at home.

The input and output meters go from -60 to 0 dB. Above these meters are dedicated clip meters that register samples (not dB) above 0 dB. This is a great metering system because samples are more relevant to digital clips than dB, which are more relevant to analog peaks. On top of each meter, peaks are displayed as numerical values, in dB and samples, respectively. I love being able to see an actual number rather than depend on how accurately I can read virtual LEDs. Peak metering can be set to 6-second hold, infinite hold or off. My only complaint about the metering is that clicking on a peak LED doesn't automatically clear the peak. Clicking on a meter brings up the peak metering hold menu; from here, you have to choose the peak meter

**BY ERIK HAWKINS**



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reset item. An easier way might be to have a single click clear the peak and a double-click to bring up the menu.

The fader controls for L/R input levels are grouped together by default. (I hate stereo input levels that aren't grouped; they are annoying to adjust.) To move the faders independently, hold down the Shift key while moving your fader of choice. The stereo output level is controlled via a single fader.

The three bandwidths are Low, Medium and High. Each band is graphically represented by a different colored block (low is dark blue, middle is blue, and high is light blue). These blocks help immensely to illustrate the relative crossover points from one band to the next. The low and high crossover points are fully adjustable: Low crossover goes from 20 to 8.11k Hz, and high crossover goes from 39.99 to 16k Hz. The numerical values for these points are above the upper right corner of the block diagram. The width of the middle band depends on where the high and low crossover points lie. There are no dedicated controls for this band, but it doesn't need them since its crossover points are dictated by the high and low crossover points. Each band's gain is adjustable from -25 dB to +12 dB; numerical values are registered directly above each block.

The dynamics parameters are typical. The expander has threshold, ratio, range and release controls; the compressor includes threshold, ratio and release; the limiter offers threshold, softclip and release functions. No special explanations needed here; everything works the way you would expect it to.

There are identical metering windows for each of the dynamics modules in every bandwidth. The elements cover gain reduction meters, LEDs for expansion and limiting and visual representations of the dynamics processing curves. The gain reduction meters are from -1 to -24 dB; the LEDs light when expansion or limiting is active. The meters and the LEDs are invaluable for telling you when the individual dynamics modules begin processing a particular band. The curves show not only the amplitude envelopes, but the relative positions of each dynamics module within the bandwidth itself, and between all three bands together (since you can see them side by side at the same time). For example, moving the threshold of the compressor, or the range of the expander, changes the curves in every band (amount of change is determined by the Target Meta-Parameters).

To solo a band, simply click on one of the three dynamics curves—the curve highlights, and you'll hear just that band. Clicking on another curve adds its signal to the first band. (All three bands can be listened to in this fashion.) This function is priceless, because without it, it would be tedious and time-consuming to fine-tune parameters, and impossible to hear exactly what was happening in a particular band with any sort of objectivity.

The Target Meta-Parameters are TC Works' solution to what the company calls "the parameter 'flood'" of multiband dynamics processors. Instead of inundating the plug-in's interface with the hundreds of parameters necessary to create a comprehensive multiband processor (i.e., cutoff frequencies, filters, Q, slopes, etc.), MasterX simplifies matters by giving you four target mastering curves to choose from. These curves are essentially presets that can be modified

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via the Target Factor fader located on each dynamics module. Each curve represents a different sonic coloration, a different set of values for the hidden parameters. The Target Factor fader dictates how much the Target Curve's values will play into the processing of the bandwidth. The higher the Target Factor is set, the more noticeable the curve's sonic ingredients will be.

There are four curves: Linear, Pink, Hyped and Smiley. Only one curve can be used at a time. Each curve has an associated graphic that displays its shape: Linear is essentially flat; when this curve is on, the Target Curve faders are off. This curve is useful for processing without exciting any particular frequency (for example, compressing certain notes of an upright bass). In Pink, the high band is less present, less pumped up. Apply Pink when a signal needs dynamics control in the high end without sounding exaggerated (e.g., vocal processing, like de-essing). With Hyped, the high band sounds excited. This is a great curve for mastering dull-sounding material that needs the extra sheen of added highs, without blowing your tweeters. Smiley pumps up the low and high bands; this a great curve for mastering dance music, where the lows need to be bumping and the highs crisp and clean.

For optimizing the digital signal, there are three parameters. A digital look-ahead function anticipates dramatic spikes; look-ahead delay times are 0 (off), 1, 3 or 10 ms. Dithering is available for 8, 16, 18, 20 or 22 bytes. A digital ceiling parameter can act as your final insurance against any overloads. The digital ceiling value can be set at -.01, -.05 or -.1 dB. Think of it as the ultimate brickwall limiter; it stops all samples that might cause a clip exceeding 0 dB. It works like a charm, but it is no excuse for not setting input and output levels properly. It will not remedy signals that are distorting internally within the plug-in itself, and when it is activated, absolutely no peaks show up on the meters. Use it at the final stage of mastering, after the levels look perfect, just to be on the safe side.

### MASTERING MATTERS AND MORE

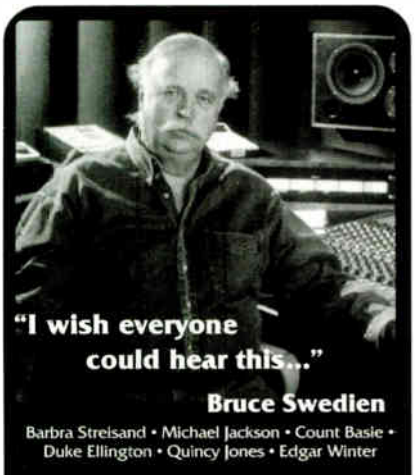
MasterX's sound is beefy, but not so phat as to sound unclear; it still has plenty of edge. Sonically, there are many similarities between this plug-in and the Finalizer units. I attribute this to their common technological lineage, applying algorithms and processing in the digital domain. Even MasterX's presets bear a strong resemblance to several of the Finalizer presets (e.g., CD Master, Dance Master, Pop Final and Commercial). Where I do hear a difference is at the D/A stage. Digidesign's converters have a distinctly different coloration than TC Electronic's converters. I like the way the TC Electronic converters sound; you may prefer Digidesign's converters. Either way, the program itself has nothing to do with these differences and can't be held accountable for not sounding exactly like its hardware predecessor. Ultimately, how it sounds is influenced heavily by the converters you choose.

MasterX is great for its obvious intended purposes, mastering and premastering. However, it also works great for pumping up individual tracks. If, for example, you have an upright bass that needs compression, but a full-bandwidth compressor squashes too many of the high-end string noises, this plug-in is the perfect solution: Dial in the low-end bandwidth you need to subdue, and leave the high-end dynamics intact. Many of the presets sound great on individual instruments without any tweaking. The Speech Master preset is great for kicking a dead vocal track into high gear.

Some might think that TC Works has oversimplified the mastering process with its Target Meta-Parameters, that it has made mastering or mixing choices that would be better left to an engineer or producer. I can't really argue with this. But keep in mind, if you want to create your own multiband dynamics processor plug-in, this is certainly within the realm of possibility. If you have enough DSP horsepower, the right discrete plug-ins and the time to construct the beast, go for it. MasterX doesn't replace a high-end professional mastering suite with a component mastering engineer. However, the bottom line is MasterX sounds great and is simple to use, and those facts alone make it worthy of having in your Pro Tools plug-in arsenal.

TC Works, a division of TC Electronic. U.S. offices: 790-H Hampshire Road, Westlake Village, CA 91361; 805/373-1828; fax 805/379-2648; www.tcelectronic.com. ■

*Erik Hawkins is a musician/producer working in Los Angeles County and the San Francisco Bay Area. You can visit his fledgling indie label online, at www.muzicali.com.*

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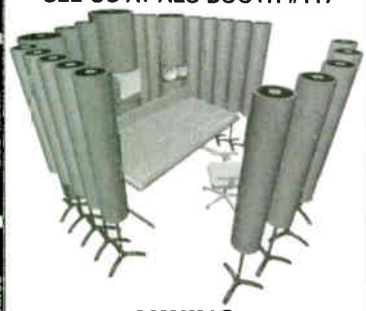
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# UNIVERSAL AUDIO LA-2A AND 1176

## *THE RETURN OF TWO AUDIO CLASSICS*

*A couple of rock classics: the LA-2A, left, and 1176.*

In the audio industry, the terms "legendary" and "classic" have become overused to the point that they have lost all meaning. However, certain products—such as the AKG C-12, Fairchild 670, Neumann U47, Neve 1073, Pultec EQP-1A, UREI/Universal Audio 1176 Compressor/Limiter and LA-2A Leveling Amplifier—are unquestionably examples of audio excellence and deserve classic status. Yet aside from some faithful (and a few not-so-faithful) clones of the LA-2A and 1176 that emerge now and then, both Universal Audio products have been out of production for years.

Now Jim and Bill Putnam have rekindled the Universal Audio name, and are re-introducing the revered LA-2A and 1176LN at AES. Like their father, the late M.T. "Bill" Putnam—who founded Universal Audio, UREI, Chicago's Universal Recording, Coast Recorders in San Francisco and L.A.'s United Recording—the sons are deeply involved in audio: Jim's a recording engineer/musician, and Bill (currently completing his Ph.D. in electrical engineering at Stanford) also runs Kind of Loud Technologies (www.kindofloud.com), a company that makes software plug-ins for surround sound production.

"My brother and I wanted to build analog gear based on some of the stuff my dad did, so we decided to use the name Universal Audio as a tribute to him," explains Bill. But ironically, their father helped the re-issue project. "When we sold our family's home in L.A. last year, we came across his design notebooks, with notes on all the transformers he ever designed," Bill explains. "In the 1176, the custom output transformer is a complicated circuit with three layers of feedback embedded with each other; that transformer was really tough for us. We had this square wave problem—ringing—and we were trying to figure it out. Sure enough, his design notebook had a sketch, showing that same ringing we were getting, and how he solved it. That was the last little nut we had to crack to get it right."

All along, remaining true to the original designs was a number one priority for the brothers. "When you talk to people about 1176s, they seem mostly concerned with whether it is 'blackface' or 'silver.' But among the blackface units there's quite a bit of variation," says Bill. "On our 1176, we are going after the D or E revisions, which were the last versions with Dad's Class A output stage. Our 1176 circuit board is laid out exactly like the original, and we opted to make it just like the original, even though we could have made it much smaller these days. All of the analog designers I had working on this unit had comments like 'Oh, I can make this better'—but in this case, 'better' means more like the original."

Now that ICs and surface-mount components are the norm, finding the proper components required some detective work. "The LA-2A input transformer was a custom part," says Bill. "But other LA-2A parts became a matter of finding out which company bought which company—and when. The original electroluminescent panel was made by a small company and eventually I found the trail of the three companies that had bought it since. We found the original power transformers, meters and the rotary switch for the LA-2A that same way. The pots were all originally Allen-Bradley, and Clarostat—who bought that line—is not quite as good, so on the LA-2A, we used a superior part. But that's the only departure that's different from the original.

"The LA-2A is all hand-wired with point-to-point wiring," Bill adds, "and all the components are built on the turret board—a little piece of Bakelite with a turret standoff. It will look exactly like the original, even down to the wiring, which has wax paper ties rather than modern tie wraps."

The new Universal Audio unveils its analog products at AES under the Universal Audio Classics brand. Pricing wasn't finalized at press time, but will be approximately $2,000 for the 1176 and $3,000 for the LA-2A, with shipments to begin Q1 2000. And as a fitting tribute, Bill was recently notified by NARAS that M.T. "Bill" Putnam was in consideration for a technical Grammy at the 2000 Grammy Awards.

For more information, contact: Universal Audio, 604 Cayuga St., Santa Cruz, CA, 95062; 831/454-0630; fax 831/466-3775; www.uaudio.com. ■

**BY GEORGE PETERSEN**



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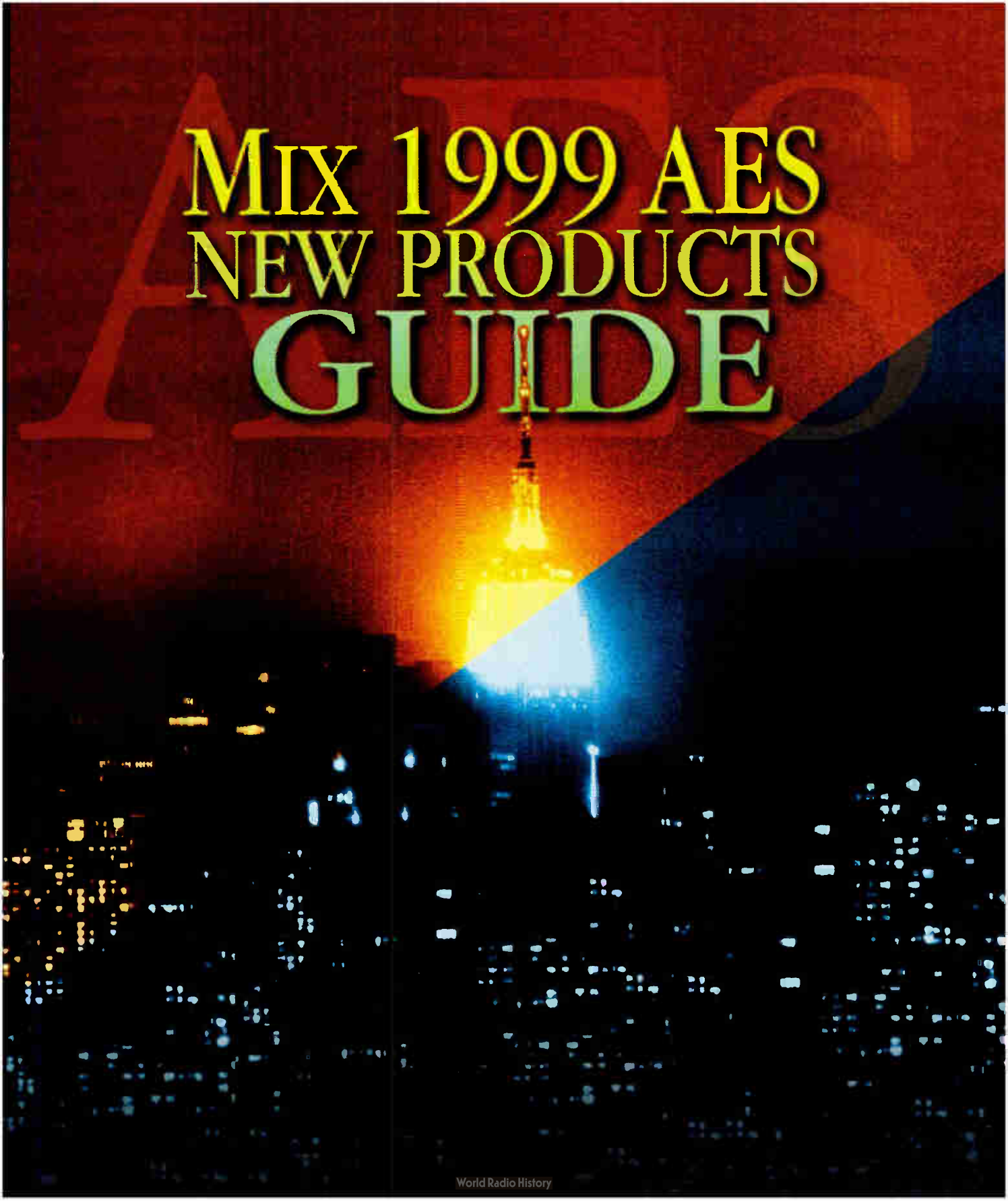
# MIX 1999 AES NEW PRODUCTS GUIDE



World Radio History

# The Mix 1999 AES New Products Guide

Welcome to *Mix*'s annual New Products Guide. In this guide, we focus on products that were introduced (or were shipping for the first time) in the months prior to—and including—new introductions at the 107th Audio Engineering Society convention in New York City. For those who plan to attend, here's some of the new technology that will be on view at the Javits Center September 24-27, 1999. If you can't make it to AES in person, don't despair: We'll provide complete coverage of all of the show highlights in future issues.

*—George Petersen*

*Please note that all of the information presented here was supplied by the manufacturers. Specs, prices and availability may change, so contact the companies directly for more information.*

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## AC Power Products

### Equi=tech Corporation ET7.5R

The model ET7.5R is a 75-amp, 4-unit-high, balanced-power rack system with the capacity to power a large recording room or portable live sound system with up to 5,000 watts of P.A. A digital voltmeter and switchable input voltage are standard features useful in touring situations.
PO Box 249
Selma, OR 97538
541/597-4448; Fax 541/597-4099
www.equitech.com

### Middle Atlantic Power Products

Middle Atlantic is proud to introduce an extensive selection of vertical power strips designed to mount in all sizes of rack enclosures. Choices include 15-amp and 20-amp single and multiple circuits, isolated ground, and multiple termination methods. All models are UL-listed and in stock for immediate shipment.
North Corporate Drive
Riverdale, NJ 07457
973/839-1011; Fax 973/839-1976
www.middleatlantic.com

### New Frontier Electronics Surge-X SX-2120

Housed in a rugged 2U metal chassis, the Surge-X SX-2120 provides guaranteed surge protection and power conditioning for up to 15 pieces of audio, video, broadcast and computer equipment. Using Series Mode technology, the unit provides proven, reliable protection, stopping multiple surges of up to 6,000 volts and unlimited surge current without producing ground contamination. The Surge-X unit is rated for 20-amp use and uses the company's proprietary and advanced new Impedance Tolerant EMI/RFI filtering.

### New Frontier Electronics Surge-X SXN-220

The Surge-X SXN-220 is a 220V split-phase Series Mode surge suppressor and power conditioner designed to provide surge protection for dedicated lines at the service panel. Housed in a 16x12x4-inch, magnetically shielded, steel NEMA enclosure, the SXN-220 meets code for use in ceiling plenums. The unit is 20-amp-load capable and has two surge suppression modules—one for each 110-volt leg. Two self-test circuits with external visual indicators are also provided.
2744 N. Sugan Road
New Hope, PA 18938
215/862-9344; Fax 215/862-0270
www.new.frontierelec.com

## Acoustical Materials

### Acoustical Solutions Inc. Alpha Pyramid

Discover the secret of the Pyramids! Alpha Pyramid acoustical foam has a unique surface pattern that is matching and seamless when installed. With an NRC 0.70-1.05, it's a powerful sound absorber that dramatically reduces echo, reverberation and standing waves. Alpha Pyramid foam gives one uniform look to a treated wall, is easy to install with a water-based panel adhesive, and comes in charcoal, blue, brown and beige.
3603 Mayland Ct.
Richmond, VA 23233
800/782-5742; Fax 804/346-8808
www.acousticalsolutions.com



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### Acoustics First Corp. Cloudscape

Cloudscape banners and baffles are designed to solve acoustical problems in large cubic volume spaces economically. Banner noise reduction coefficient (NRC) = 1.00. Sabins of absorption per 2x4-foot baffle = 12.80 at 1,000 Hz. Reverberation times of 4 to 9 seconds are reduced to 1/2 to 2 seconds. Sound intensity levels are reduced by 3 to 12 dB. Standard colors are black, white and light gray. Composition is acoustical fiberglass with PVC covering. Fire rating is Class A.
2247 Tomlyn Street
Richmond, VA 23230-3334
804/342-2900; Fax: 804/342-1107
www.acousticsfirst.com

### Illbruck Contour Ceiling Tiles

New Contour ceiling tiles from Illbruck Inc. can significantly enhance the aesthetics as well as the acoustics of any studio environment. Made with 100% fiber-free Willtec foam, Contour ceiling tiles feature a durable Hypalon coating for easy maintenance. Ten contour ceiling tile designs come in standard colors of white, almond or gray. Custom colors and designs are also available.
3800 Washington Ave. North
Minneapolis, MN 55412
800/662-0032; Fax 612/521-5634
www.illbruck-sonex.com

### RPG Diffusor Systems Inc. Modex

The advent of 5.1 digital surround sound has generated a need for dedicated low-frequency modal and speaker boundary interference control in the woofer/subwoofer region. RPG has addressed this need by introducing a range of wall, corner and free-standing modal control devices called Modex. Each Modex module offers 100% absorption in the 40, 50, 63 or 80Hz 1/3-octave band. Thus, users can control a specific frequency range or combine modules to cover an extended frequency range.
651-C Commerce Dr.
Upper Marlboro, MD 20774
301/249-0044; Fax 301/249-3912
www.rpginc.com

### WhisperRoom Inc. SE 2000 Series

WhisperRoom Inc. announces its new SE 2000 Series of portable/modular sound isolation enclosures. Nine sizes and two levels of isolation, Standard and Enhanced, are available. In addition, a Standard model can, at any time, be converted to an Enhanced model by installing a set of secondary isolation components. As with previous models, assembly and relocation can easily be performed by the customer, and no specially trained personnel are required.
116 S. Sugar Hollow Rd.
Morristown, TN 37813-2883
423/585-5827; Fax 423/585-5831
www.whisperroom.com

## Cables and Connectors

### Apogee Electronics Corp. Wyde-Eye A/D

A/D digital cable in cablepak packaging. Apogee's Wyde-Eye A/D premium digital cable is the ideal interconnect for both high-quality digital and analog applications, and is available in both AES/EBU 110-ohm and S/PDIF or Word Clock 75-ohm formats, in a series of standard lengths. Wyde-Eye A/D interconnects are shipped in the unique new Cablepak reusable case
3145 Donald Douglas Loop S.
Santa Monica, CA 90405-3210
310/915-1000; Fax 310/391-6262
www.apogeedigital.com

### CommScope 1414 AES/EBU Audio Cable

CommScope, world leader in high-performance transmission line technology, introduces the 1414 Series miniature digital audio cable. The 1414 Series are 110-ohm, shielded, twisted-pair cables made to meet the requirements of Audio Engineering Society's digital audio standard AES-3. The 1414 cables achieve exceptional low loss characterisics in a cable small enough to fit most common multipin connector sizes. Signal transmission performance is maintained while the size is reduced by using CommScope's low loss foam technology to allow the cable to use 24 AWG conductors and provide precision 110-ohm impedance. The 1414 cables feature tined copper conductors to reduce long-term corrosion of connections and to enhance solderability.
1375 Lenoir-Rhyne Blvd
Hickory, NC 28603
800/982-1708; Fax 828/328-3400
www.commscope.com

### Conquest Sound Inc. Veam Multipin Disconnect for Snakes

All machined aluminum construction; hard coat, black anodized finish; stainless-steel, rubber-covered coupling ring; waterproof; 2,000 couplings/uncouplings minimum. Extremely rugged; withstands 50 Gs of shock. Audible, tactile and visual indication of full mating.
26113 S. Ridgeland Ave.
Monee, IL 60449
800/323-7671; Fax 708/534-0398
www.conquestsound.com

### Gepco International Inc. D5524EZ

Gepco International's new D5524EZ is a dual-pair, 110-ohm cable designed for transmission of two channels of AES/EBU format digital audio. The D5524EZ features 24-gauge, tinned-copper conductors insulated with a precision, low-loss dielectric, and each pair features a drain wire and 100% foil/Mylar shield. The dual zip-configuration allows a fast and streamlined pair breakout, while the foil/Mylar shield is removed when the jacket is stripped, reducing preparation time. The D5524EZ is UL-listed as Type CM.
1770 Birchwood Ave.
Des Plaines, IL 60018
847/795-9555; Fax 847/795-8770
www.gepco.com

### Hannay Reels AV Series

Hannay AV Series reels are specfically designed for broadcast and pro audio applications. The reels feature welded channels for stacking, which promotes maximum transport and storage efficiency. AV Series reels are constructed of rugged steel and have a nonreflective matte finish. A removable, side-mounted connector panel allows for complete customization of XLR and/or BNC connector patterns. An adjustable friction brake prevents cable overrun and damage during operations.
553 State Route 148
Westerlo, NY 12193
518/797-3791; Fax 518/797-3259

### Hosa Technology PHB-265 Patchbay

48-point professional patchbay with front-panel switches on every channel. Switches select between full-normal, half-normal and "de-normaled" operation. Bay is unbalanced but may be used as a balanced bay in the de-normaled position only. Suggested retail $179.
6920 Hermosa Circle
Buena Park, CA 90620-1151
714/736-9270; Fax 714/522-4540
www.hosatech.com

### Klotz PolyWire, PolyFlex, PolyStar

The Klotz Polywire is specially made for studios and musicians. An ultraflexible cable with extraordinary characteristics on drums and a slight outer diameter. The area of 0.22 and the PE-insulation enable signal transmission over long distances. Any assembly of connectors is very easy due to individually numbered black pair jackets, and heat-shrink tubes are rendered unnecessary.
Hans-Stiessberger Str. 2A
85540 Haar B. Munchen, Germany
49/89/461-000-30; Fax 49/89/461-000-51
www.klotz-ais.de

### Marshall Electronics Inc. GCRS-TP

The GCRS-TP is a guitar cable made from Mogami 2792, an ultra-low-noise twisted pair cable. Depending on how the conductors are wired, the characteristics of the cable can be altered to produce different sound qualities. In the "A" configuration, both conductors connected to the plug's lead (tip) produces a fatter tone. With the "B" method, connecting one lead to the tip and one to the ground (sleeve) allows a clear, neutral tonal balance.
P.O. Box 2027
Culver City, CA 90291
310/390-6608; Fax 310/391-8926
www.mars-cam.com

### Neutrik USA Inc. BNC Connectors

The Neutrik BNC connector Series offers a nonlocking "budget" friction fit connector, a bayonet version with easily accessible locking and a push-pull connector for high-density applications. All three feature a new, comfortable cable clamp principle: After an easy preparation, the cable is simply inserted into the plug, a machined nut is turned to complete the assembly and crimp machined contacts are inserted.

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### Neutrik EaZyCon Z+ XLR Connectors

Neutrik debuts the EaZyCon Z+ Series of XLR Connectors. The Z+ reduces assembly time by as much as 60%. The NC3FZ+ and NC3MZ+ EaZyCon XLR cable connection system offers easy and rapid assembly with self-adjusting cable strain relief that makes screwed assembly obsolete and provides increased retention force under tensile stress. The Z+ Series accepts a wide range of cable diameters; and gold-plated, self-cleaning tuning fork contacts drastically extend its lifetime.
195 Lehigh Ave.
Lakewood, NJ 08701
732/901-9488; Fax 732/901-9608
www.neutrikusa.com

### Ramtech Industries Ramlatch Color Shells

Ramtech industries is offering a fool-proof way to plug in your rig. The Ramlatch is now available in five new colors. Color ID your system, e.g., monitor from house snakes or male from female ends. Completely compatible with the Ramlatch and old Amp Quicklatch. A screwdriver and 30 minutes get you a color-coded rig and fewer headaches down the road. Color shells are just $29.95.
3709 Sw 42nd Ave., Suite 13
Gainesville, FL 32608
800/817-2683; Fax 352/466-0906
www.ramtech.net

### Switchcraft QG Twist XLR Connectors

The unique feature of the QG Twist is there are only two pieces for assembly. The connector consists of a front-shell with a preloaded insert, and a handle with a preloaded strain relief system. Simply slide the cable through the handle and strain relief, terminate to the insert solder cups, and twist on the handle. The QG Twist is available in 3 through 7 pins or contacts; options include gold-plated pins or contacts, black finish and a diecast metal handle.

### Switchcraft HPC Series

The HPC series is a 4-pole connector series completely compatible with the Neutrik SpeakOn Series. The panel mount connectors offer unique features, including an IP26 environmental rating (splashproof), an optional 0.200-inch deep flange for thick panel applications, and the Faston version is rated at 30A. The HPC series is available in straight PC, RAPC or 0.250-inch Fast-on terminals; round or rectangle housing; 0.10-inch or 0.20-inch deep mounting flanges; flush or countersunk mounting holes. RAPC versions offer an optional PC board post to ease wave soldering.

### Switchcraft 3502RA Series Phono Plugs

The 3502RA is a right-angle version of our popular RCA plug. The new style incorporates a large cable clamp, easy soldering terminals, and a rugged, heavy-duty handle. The back of the handle has a large ID to accept large OD cable. The 3502RA is available with nickel/nickel, black/gold, and nickel/gold finishes.
5555 N. Elston Ave.
Chicago IL 60630
773/792-2700; Fax 773/792-2129
www.switchcraft.com

## CD/DVD Duplicating/Recording Systems

### Apogee Electronics CD74-SCJ

Apogee's CD74-SCJ consumer audio CD-Rs have been designed to suit the growing number of low-cost audio CD recorders on the market, such as the Philips CDR880. These recorders require a special CD-R containing a code conforming to SCMS requirements. The Apogee CD74-SCJ is a silver-over-gold phthalocyanine disc essentially similar to Apogee's existing silver CD-R product, but with the addition of SCMS code.

### Apogee Electronics CD74-IUJ

The CD74-IUJ inkjet printable CD-R has been introduced to satisfy an expanding market among owners of inkjet printers that print in color directly onto the disc, as opposed to thermal-transfer printers such as the Rimage (for which the existing Apogee discs are ideal). The new Apogee inkjet printable discs feature a silver reflective layer for maximum compatibility, with Apogee's premium true phthalocyanine dye, and a special white printable surface that retains ink without smudging and dries quickly.
3145 Donald Douglas Loop S.
Santa Monica, CA 90405-3210
310/915-1000; Fax 310/391-6262
www.apogeedigital.com

### Bertsch Electronics Inc. The TAIL

The TAIL is a stand-alone CD mastering and duplication unit with true RMS look-ahead envelope detection. It comes standard with an 8.4GB hard drive, 2x CD burner and four bands of dynamic processing. The TAIL records in 24-bit and 16-bit, and will automatically dither to 16-bit for burning CDs (from 24-bit). Also included: four bands stereo (8 total), 4 bands compression, 4-band saturator plus a stereo normalizer, 4-band expander and stereo limiter.
1860 B. Campbell Crescent
Quesnel, BC V2J 5Z9 Canada
250/992-9298; Fax 250/992-6362
www.quesnelbc.com/bertsch

### Emagic WaveBurner for Mac

WaveBurner is the ultimate new Mac software for Audio CD mastering. Complete with the innovative adjacent stereo waveform display with CD overview, WaveBurner can also convert 48kHz DATs to Red Book1 44.1kHz format in real time, while recording. WaveBurner lets you compile your glass master with automatic crossfades, trim, independent markers and multiple index points, even within an audio region. WaveBurner reads mono files, split stereo or interleaved stereo files (AIFF, SDII).
13348 Grass Valley Ave.
Grass Valley, CA 95945
530/477-1051; Fax 530/477-1052
www.emagic.de

### HHB CDR850PLUS

Advanced version of HHB CDR850 professional CD recorder. This is the only CD recorder with a word clock input—essential for playback when locking to a master clock source in "all digital" systems. Also features balanced digital output.

### HHB CDR-W74

Rewritable CD-R disc; 74 minutes recording time, with special hard coating.
1410 Centinela Ave.
Los Angeles, CA 90025-2501
310/319-1111; Fax 310/319-1311
www.hhb.co.uk

### MediaForm CD-3706P

MediaForm's CD-3706P duplicator/printer simultaneously duplicates six CD-Rs and then automatically prints the CD-Rs with a thermal transfer printer. The CD-3706P will duplicate and print 200 CD-Rs before the system needs to be refilled. The CD-3706P provides simple operation and unattended duplication, and delivers bit-for-bit copies of your data or audio CDs. This system will detect defective blank media and place them in a reject area.

400 Eagleview Blvd.
Exton, PA 19341
610/458-9200; Fax 610/458-9554
www.mediaform.com

### Microboards Technology Inferno

A high-performance, stand-alone CD-R/DVD tower duplication system featuring precision 8x technology. The system can be expanded up to 320 simultaneous drives, with the ability to add internal DVD-R drives when available. The Inferno will interface with PC or Mac, for complete control of the mastering and duplication process, and can be adjusted to record at 2x, 4x or 8x speeds for a variety of applications.

### Microboards Technology STARTREC

STARTREC is the first multidrive CD-R duplication and digital audio editing system. Designed specifically for the audio professional, STARTREC has a user-friendly interface that incorporates simple touch-button control. It offers a complete complement of both digital/analog inputs and outputs and gives the audio engineer a seamless rack-mountable system for a short-run production.
11721 Lake Drive W.
Chanhassen, MN 55317
612/556-1600; Fax 612/5561620
www.microboards.com

### Microtech Systems ImageAutomator 150

ImageAutomator 150 features a new automated handler with a small footprint, up to four 4x or 8x write drives and up to 400-disc capacity. With a base price of $8,395, the first units are expected to ship in July 1999. ImageAutomator 150 is the ideal machine for network enterprises and stand-alone unattended duplication. It handles premastering, verifying and in-line printing simultaneously. Up to four jobs can be run at the same time unattended.

### Microtech Systems MYDisc

MYDisc is a desktop job-ordering application for all ImageAutomator CD-R production systems. With MYDisc, an enterprising user can send CD images, print images and publishing instructions to a networked ImageAutomator directly from the desktop. Users can simply drag and drop files from any available directory to a target window. The user then easily creates the graphics labeling artwork with the built-in DiscPrint software.
2 Davis Drive
Belmont, CA 94002
650/596-1900; Fax 650/596-1915
www.microtech.com

### Superscope/Marantz CDR630

Superscope Technologies Inc. is pleased to introduce the Marantz CDR630, a recent addition to the Marantz family of professional stand-alone compact disc recorders. A wide array of inputs and outputs are included to allow easy integration into almost any recording environment. Digital signals from sources such as CD, DAT, MD, and PCs can be directly input via either a coaxial or optical connection. A built-in sample rate converter (SRC) allows any frequency between 12 and 56 kHz to be input and converted to the CD standard of 44.1 kHz.



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www.whirlwindusa.com

888.733.4396

### Superscope/Marantz CDR640

Superscope Technologies Inc. is pleased to introduce the Marantz CDR640, the latest addition to the Marantz family of professional stand-alone compact disc recorders. To interface the CDR640 to professional studios, the CDR640 is equipped with all of the essential I/Os, including XLR AES/EBU, XLR analog and coaxial S/PDIF in/out; RCA analog outputs; a GPI control port for custom integration; and a 15-pin input for an optional 34-key wired remote control, the RC640.
2640 White Oak Circle, Suite A
Aurora, IL 60504
630/820-4800; Fax 630/820-8103
www.superscope-marantzpro.com

### Tascam CD-R624M and CD-R624W

Tascam debuts the CD-R624M and CD-R624W software solutions for Macintosh and Windows. Reliable and easy to use, the CD-R624 packages both burn 100% Red Book-compliant audio CDs and popular data CD formats. Included in the package is cabling, blank media, tutorials and even a CD-labeling kit. The CD-R624 can also create data CDs to back up your computer, and it can create MP3 audio files for Internet distribution or use in MP3 personal systems.
7733 Telegraph Rd.
Montebello, CA 90640
323/726-0303; Fax 323/727-7635
www.tascam.com

## Computer Software and Peripherals

### Be Inc. BeOS Release 4.5

BeOS is an operating system designed for digital media applications on desktop computers and Internet appliances. Based on an entirely new idea in computing, BeOS is designed to satisfy the higher processing and memory requirements of today's digital media on standard PC hardware, without slowing down or freezing up. It enables you to work with audio, video, image and Internet-based applications, and edit files of millions of gigabytes in size simultaneously, in real time. BeOS runs on Intel Pentium and PowerPC systems
800 El Camino Real, Suite 400
Menlo Park, CA 94025
650/462-4113; Fax 650/462-4129
www.be.com

### BIAS (Berkley Integrated Audio Software) New Products

BIAS Peak, the award-winning waveform editing program, is now available in three editions: Peak le 2.0 ($99), for entry-level audio recording, editing, processing and delivery; Peak 2.0 ($299), offering advanced features for professional recording, editing, processing and delivery; and Peak 2.0 TDM Edition ($499), which includes all of Peak 2.0's features plus TDM support. Also available from BIAS are the Peak/SFX Machine Bundle ($399) and BIAS Studio, a powerful bundle combining Peak, Deck and SFX Machine, for only $699. BIAS also introduces new Powerbook solutions that bundle various configurations of Peak and other BIAS applications with Digigram's VXPocket PCMCIA card, which features 24-bit conversion, S/PDIF I/O and sample rates to 48 kHz.
1370 Industrial Ave, Suite A
Petaluma, CA 94952
800/775-BIAS; Fax 707/782-1874
www.bias-inc.com

### Cakewalk Pro Audio 9

The leading multitrack digital audio and MIDI software for professionals. With support for 24-bit/96kHz audio, real-time effects processing, real-time MIDI FX plug-ins, and a suite of professional editing and mixing tools, Pro Audio is the complete music and sound solution. New features for Version 9 include optimized audio performance for Windows 95/NT, enhanced mixdown, support for MP3 and Windows Media Technologies, a new Session Drummer MIDI plug-in, new Console Window, and support for AudioX hardware. Price: $429.

### Cakewalk Metro 5

The complete multitrack Mac studio. Great for Power PCs and iMacs. Provides a suite of professional recording and editing tools found in products that cost twice as much. Now offered are 64 audio tracks, along with MIDI, real-time audio effects processing with automation, crossfades with linear and exponential curves, support for ASIO-compatible audio cards, support for VST and Premiere plug-ins, eight stereo aux buses, notation editing and printing, an enhanced user interface, and other professional-level features. Price: $229.
5 Cambridge Center
Cambridge, MA 02142
617/441-7870; Fax 617/441-7887
www.cakewalk.com

### CreamWare SCOPE

SCOPE is a 24-bit, 384kHz PCI card—real-time software platform with 15 floating-point AD SHARC DSPs per board. Each board can handle 64 to 128 discrete audio channels with virtually unlimited expansion via the SCOPE/TDM buses. SCOPE represents more than 100 staff-years of development. A stand-alone synthesizer, multi-effects processor, studio configuration, I/O router, patchbay, mixing environment and remote controller. It's also the developer's environment used to create all of the above. Multimedia or audio for video/film—build, create and study digital audio.
6879 Russell Ave.
Burnaby, B.C., Canada V5J 4R8
604/435-0540
www.creamware.com

### Digidesign Inc. Pro Tools 5.0

Digidesign introduces Pro Tools 5.0. This software upgrade provides new functionality for entry-level music production as well as professional music and post-production on the Mac and Windows NT platforms. Digidesign re-affirms its commitment to post, providing advanced editing features and native support for the capture, import and playback of Avid media within Pro Tools. Other features include an update to the existing plug-in architecture and the introduction of the cost-effective host-based mixing and processing systems targeting project studio operators.
3401A Hillview Ave.
Palo Alto, CA 94304
650/842-7900; Fax 650/842-7999
www.digidesign.com

### Digigram NCX200

The NCX200 Network Audio Terminal is designed for a variety of networked audio applications, including audio on demand, permanent playback and public address. When connected to a server via Ethernet (10/100BT), the NCX200 decodes and mixes MPEG Layer II and MP3, and plays a stereo audio stream. A bidirectional serial connection permits source selection, status and other communication with the server. The NCX200 puts the power and flexibility of a sound card in an Ethernet device.

### Digigram VXpocket

The VXpocket is a type II PC card for laptops, with 24-bit converters, a balanced analog stereo input at microphone or line level, and balanced analog stereo output. S/PDIF input and output allow direct digital transfer. The VXpocket is designed to work with the wide choice of applications using Microsoft's WAVE protocol and the Mac OS Sound Manager. An ASIO driver is also available. User price is $729.
2101 Wilson Blvd. Ste. 1004
Arlington, VA 22201
703/875-9100; Fax 703/875-9161
www.digigram.com

### Emagic Logic Audio Platinum 4.0

MSRP: $799. Logic Audio Platinum Version 4.0 seamlessly integrates digital audio editing, MIDI sequencing and professional scoring into a leading-edge music production system for Mac and Windows 98. Renowned for its rock-solid feel, Version 4.0 introduces a complete new graphic user interface, 24-bit/96kHz recording and 31 high-end audio plug-ins. From the very warm, fat EQ to the groundbreaking Spectral Gate, Platinum 4.0 plug-ins are setting new standards in native audio editing.
13348 Grass Valley Ave.
Grass Valley, CA 95945
530/477-1051; Fax 530/477-1052
www.emagic.de

### Frontier Design Wave Center/PCI

Low-cost, high-performance PCI sound card with ADAT lightpipe, S/PDIF, and MIDI I/O. Wave Center/PCI is an integrated audio I/O hub for computers, with industry-standard interfaces that provide access to digital mixers, external converters, ADAT and DAT tape machines, digital effects processors and MIDI gear. Includes drivers for Windows 95/98 and control panel software for status and feature control. Compatible with Cakewalk Pro Audio, IQS SAWPro, SEK'D Samplitude Studio, Sonic Foundry Sound Forge, Steinberg Cubase VST and Syntrillium Cool Edit Pro. MSRP: $389.
199 Heater Rd.
Lebanon, NH 03766
800/928-3236; Fax 603/448-6398
frontierdesign.com



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# Picks up what other mics leave behind.

- Large 1.10 inch, hand-dampened, 24K gold-infused, Optema™ capsules are among the most precise and sensitive ever made.
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The VSM1 offers the warmth and smoothness you expect from a large diaphragm tube condenser. But what makes it different is its enhanced sensitivity—to capture and articulate voices, instruments and rooms with their distinctive character intact.

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Email: sales@cadmics.com. Web: www.cadmics.com

**CIRCLE #130 ON PRODUCT INFO CARD**

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### Glyph Coba/SAN

Coba/SAN enables audio professionals to work in closer collaboration with others. Coba/SAN's primary component is the Coba control unit, which includes up to six fibre channel connections that bridge to Ultra SCSI/LVD drives. Each Coba enables as many as six users to share eight (up to 256) high-performance SCSI drives at speeds as high as 100 MB/sec. For a typical configuration supporting six users and including 72 GB of Trip storage, the MSRP is $45,000

### Glyph DVD RAM Player/Recorder

Glyph's DVD-RAM drive is the next generation in drives using optical technology. You can use your Mac or PC, and the software included makes backing up to the 5.2GB removable cartridge as easy as drag-and-drop. Multiread functionality makes this drive backward-compatible with media containing digital audio, including CD-Recordable, CD-Rewritable, and CD-ROM. Technical specifications: Interface: SCSI-2; Sustained Transfer Rate: 1,385 KB/sec; Buffer size: 2 MB. Available in tabletop and rack mounted enclosures (MSRP: $1,032, and $1,263 respectively).
735 W. Clinton St.
Ithaca, NY 14850
607/275-0345; Fax 607/275-9464
www.glyphtech.com

### Hardware Research LLC

Rackmounted Apple G3 workstation. Provides a turn key rackmounted computer for audio/video professionals. 256 MB of RAM/6GB HD/dual channel SCSI controller card, etc. Based on Apple's Blue and White tower. 1 year warranty.
610 #10 Pisgah Church Road
Greensboro, NC 27455
336/282-8450; Fax: 336/282-3573
www.hardwareresearch.com

### Innovative Quality Software SawPro

SawPro is the ultimate value in 24-bit digital audio solutions, featuring nonlinear, nondestructive editing and direct-to-hard-disk multitrack recording. Features 3-D real-time mono/stereo tracks, support of up to 12 stereo devices, DirectX/VST plug-in support, 99 levels of multiple undo, and more. Price: $950; (upgrade pricing available).
4680 S. Eastern, Suite H
Las Vegas, NV 89119
702/435-9077; Fax 702/435-9106
www.iqsoft.com

### Intelligent Devices Fire•Ball

Fire•Ball (Finite Impluse Response Equalizer using control Balls) is a frequency domain, finite impulse resonse (FIR) equalizer (VST or Premiere) plug-in. Shape the frequency content of any audio signal by way of a sophisticated intelligent curve-fitting 4,096-point filter with no phase shift of delay artifacts. No other EQ offers the versatility and curve fitting of Fire•Ball. The Fire•Ball filter curve is generated in real time by using these edit points as a guide.

### Intelligent Devices Virtual Paris Pro

Virtual recording studio/audio editing system with integrated MIDI. Recorder/editor: 1,000 tracks of advanced freeform editing, 99 levels of saved redo/undo, user-definable crossfades, integrated sample-level editor. Mixer: five multimode EQs and six inserts per channel, 12 effects buses and up to eight stereo bus. User-configurable tool sets and views allow saving screen configurations. Minimixer shows comprehensive overview of mix. Support of third-party control surfaces, VST, DirectX. Fully editable automation for all parameters.
7 Hickory Ridge
Baltimore, MD 21228
410/744-3044; Fax 410/788-6370
www.intdevices.com

### Korg OaSyS PCI

The OaSyS PCI integrates high-quality synthesis, effects processing and computer audio input/output into a single PCI audio card that supports all major audio and MIDI standards. Its synthesizers have evolved from Korg's legendary OASYSY project and feature hundreds of sounds based on more than 20 algorithms. Also included are more than 100 effects algorithms from the Korg Trinity workstation, plus additional effects. As with the synthesizer algorithms, all effects are plug-ins loaded from disk, allowing for easy expansion. The 12 inputs and outputs (stereo analog, stereo S/PDIF and 8-channel ADAT optical) are all 24-bit and can be used simultaneously.
316 S. Service Rd.
Melville, NY 11747
516/333-9100; Fax 516/333-9108
www.korg.com

### mSoft Pro/Spotter and Pro/Master

mSoft Inc. announces the new Pro/Spotter and Pro/Master software modules for its highly acclaimed ServerSound cross-platform hard disk SFX & Music retrieval system. Pro/Spotter allows editors to spot SFX using multiple audition & spotting windows, adding or deleting effects to projects with the click of a mouse. Pro/Master software quickly links digitized audio to a database, automating a slow process that previously was done by hand.
6355 Topanga Canyon Blvd., Suite 507
Woodland Hills, CA 91367
818/716-7081; Fax 818/716-0547
www.msoftinc.com

### Opcode MIDIport 96

MIDIport 96 is a USB cross-platform MIDI interface. It is designed to be automatically detected by a Macintosh or PC with faster, more accurate MIDI data delivery than old serial or parallel methods. Features include six MIDI ins, six MIDI outs, 96 MIDI channels, Status LEDs to display MIDI activity, MIDI Thru'ing, and routing to control MIDI gear without a computer connected. Powerful MIDI patchbay features using OMS studio patches on the Macintosh.

### Opcode Studio Vision Pro 4.5

Studio Vision Pro is integrated MIDI sequencing and digital audio recording software for Macintosh. Version 4.5 includes comprehensive automation for consoles and VST plug-ins; ReWire support for software synthesizers; and new audio file management, EQ and plug-in enhancements. SVP features Power Mac native code, Digidesign Pro Tools TDM and ASIO hardware support, advanced DSP features, real-time effects and EQs, patented Audio-to-MIDI, QuickTime Movie support, and Bias Peak SE sample editing software.
365 E. Middlefield
Mountain View, CA 94043
650/429-2400; Fax: 650/429-7202
www.opcode.com

### QDesign Corporation iQ

iQ is a digital music player that incorporates MP3 and QDesign Encode and Decode ability. iQ also supports playback of all other popular audio and video formats available on the Internet today: .WAV, .AIFF, .AVI, .MOV and more! Requirements: PowerMac, Windows 9.x/NT, Pentium 120 or faster, 8BM of RAM.

### QDesign Music Codec 2 Pro Edition

The QDesign Music Codec 2, the QuickTime 4 Streaming audio codec, now sounds better, encodes faster and is easier to use. Enabling audio files to be compressed to levels beyond 60:1 while maintaining good-quality sound allows a one-minute, 44.1kHz, stereo clip to be reduced from 11 MB to 180 KB—or smaller. Cost: $399. Requirements: PowerMac, QuickTime 4 Pro, Windows 9.x/NT, Pentium 120 or faster, 8 MB of RAM.
1107 Homer Street, Suite 201
Vancouver, BC, Canada V6B 2Y1
604/688-1525; Fax 604/688-1524
www.qdesign.com

### Rane Via 10

Rane's Via 10 Ethernet bridge offers a 10BaseT data path between RS-232, RS-485 and other system components. The Via 10 allows designers to integrate nonnetworked products into PC-based Ethernet network systems. The Via 10 includes eight precision ADC control ports, and eight output ports to drive relays, LED indicators, TTL or CMOS logic. RaneWare 2.10 supports 10BaseT communication for using Via 10 with existing RW-232 products. Retail $799.
10802 47th Ave. W.
Mukilteo, WA 98275
425/355-6000; Fax 425/347-7757
www.rane.com

### Renkus-Heinz EASE 3.0 for Windows

Programmed and compiled using Visual Basic by Rainer and Stefan Faistel, EASE 3.0 is a 32-bit Windows program using the Open GL Windows graphics protocol. The new program also integrates real-time auralization code from Lake DSP in Australia. New technologies mean vast increases in power, speed and flexibility for system designers. EASE 3.0 offers more data formats, including 1/3-octave surface diffusion. Models and predictions are made with greater accuracy.
17191 Armstrong Ave.
Irvine, CA 92614
949/250-0166; Fax 949/250-1035
www.renkus-heinz.com

### RePlay Technologies Karaoke Maker

Karaoke Maker is a Windows-based software program that allows you to remove or reduce the vocals from any recorded song. Now you can create an unlimited library of background music to accompany you whenever you want to sing, using the original music from your favorite songs. With other great features like pitch change and lyric displays, Karaoke Maker will be there when you just have to sing out loud!
P.O. Box 1221
Melville, NY 11747
516/385-1398; Fax 516/385-1398
www.replayinc.com

### Rocket Network API/SDK

The Rocket Network API and Software Development Kit



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allows audio and multimedia application developers to add live collaboration capability over the Rocket Network. As such, remotely connected users of your application (as well as other RocketPower applications) can simultaneously see, hear, and manipulate the same creative projects. The cross-platform (Mac/PC) SDK includes debugging and development tools, sample media and RocketControl, a standalone application that allows users to communicate with each other, and to create and join ongoing live collaborative projects.
53 Stillman St.
San Francisco, CA 94107
415/538-0123; fax 415/538-0121
www.rocketnetwork.com

### Seer Systems SurReal

SurReal is Seer Systems' powerful, user-friendly software application for Pentium PCs that brings the audio quality of professional music synthesizers and samplers to the personal computer. Now, for just $129 (suggested U.S. retail price), you can add quality piano, brass, percussion, guitar, bass, classic synth, techno, ambient and many other musical instruments and sounds to your computer, getting the most out of the audio power offered by today's Pentium processors and soundcards. Plus, SurReal now gives you an easy way to load SoundFont files and play General MIDI files.
108 Portola Rd., Ste. 133
Portola Valley, CA 94028
650/947-1915; Fax 650/947-1925
www.seersystems.com

### SEK'D Samplitude 2496 Version 5.2

New version of award-winning Samplitude 2496 multitracking/mastering software for Windows 95/NT. Additional features include tactile control surface support, MIDI engine, optimization for Pentium III CPUs, Surround 5.1 editing and automation, new scalable mixer page, MP3 and AIFF export. List price $799.

### SEK'D PRODIF PRO Digital Audio Card

SEK'D PRODIF PRO is a PCI audio card with Win 95/NT and MAC OS drivers. The PRODIF PRO features 24-bit 96kHz digital transfers via XLR connections, ADAT Lightpipe 8-channel, analog stereo I/O at 20-bus 96 kHz, and wordclock input on a BNC connector. List price $699.
407 Stony Point Road
Santa Rosa, CA 95401
800/330-7753; Fax 707/578-2025
www.sekd.com

### Sonic Foundry Acid Pro 2.0

Acid Pro is a breakthrough composition tool that brings unprecedented creative flexibility to loop arranging and editing. Acid Pro allows you to preview any loop before adding it to the mix, automatically matching the tempo and pitch in real time. Control the volume, pan and effect envelopes for each track to create a perfect mix between loops. To add the finishing touches, you can apply multiple real-time effects with DirectX Audio plug ins. Retail: $399.

### Sonic Foundry Vegas Pro

Vegas Pro is a Windows-based, nonlinear, multitrack hard-disk recording system. Its unique multithreaded architecture is designed to squeeze superior performance from standard PCs. Vegas Pro will use multiple processors, extra RAM and optimized disk throughput to achieve new levels of software mulitrack performance. Audio data is processed using floating-point math, which yields high mathematical precision which, when coupled with the ability to output 24-bit audio at the final mixing stage results in superb audio fidelity.

754 Williamson St.
Madison, WI 53703
608/256-3133; Fax 608/256-7300
www.sonicfoundry.com

### Sonorus Inc. MEDI/O

PCI Sound card featuring stereo XLR microphone inputs with phantom power and compressor/limiter/gate, balanced line in/out, guitar input with speaker cabinet simulator and comp/lim/gate wave blaster header, two MIDI interfaces, S/PDIF in/out with sample rate converter, 24-bit ADAT in/out, word clock sync, 64 voice DirectX synth engine.
111 E. 12th St., #2
New York, NY 10003
212/253-7700; Fax 212/253-7701
www.sonorus.com

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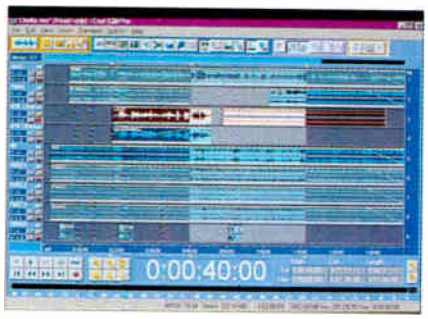
### Sound Construction and Supply Iso Box

Hard drive noise a problem? Problem solved. The Iso-Box virtually eliminates seek, spindle and white noise. Electrostatic filter controls dust. Exclusive HVLP fan system moderates temperature. keep hands on gear at arm's length. Digital thermometer and LED indicators. Shock-mounted rails.
443 Chestnut St.
Nashville, TN 37203
615/313-7164; Fax 615/313-7799
www.custom-consoles.com

### Steinberg NUENDO NT/SGI

Combines native audio processing with real-time EQ, effects, VST-compatible plug-in architecture, up to 256 tracks of digital audio plus MIDI recording and editing into an easy-to-use application. It has all the essential tools required for professional audio post-production. Open framework for media asset management for creating, searching, editing and archiving media keeps data fully organized. Plus, sample editors, loop functions, infinite undo/redo, fades, automation, remote control, import OMF, video integration and advanced syncronization.
21354 Nordhoff St., Ste. #110
Chatsworth, CA 91311
818/678-5100; Fax: 818/678-5199
www.steinberg.net




### Syntrillium Cool Edit Pro V. 1.2

Cool Edit Pro 1.2 is a 64-track digital audio recorder, editor and mixer. With 34 built-in effects and support for DirectX plug-ins, it's a powerful tool for audio creativity—even on slower computers. Cool Edit Pro also offers 24/96 and even 24/192 sampling. Now with RealMedia G2 support!
PO Box 62255
Phoenix, AZ 85082-2255
480/941-4327; Fax: 480/941-8170
www.syntrillium.com

### TC Works Spark

Spark is an all new Digital Audio Mastering Editor for MacOS. Spark represents a new approach to stereo-based audio editing, real-time processing, plug-ins and mastering featuring a unique Browser window, integrating Wave editing, project file management and play list all at once with CD recording software bundled. Retail price: $499.
790-H Hampshire Rd.
Westlake Village, CA 91367
805-373-1828; Fax 805/379-2648

### Tracer Technologies SAS

The Tracer SAS sound card is designed for CD mastering. This 20-bit, high-quality card is an affordable solution that provides high-quality digital audio, full authentic 3-D sound, a high-quality MIDI synth with sampling expansion capabilities and a software bundle designed to help users create the highest-quality masters for their CDs. Price: $199; with S/PDIF digital I/O, $299.

### Tracer Technologies Studio Suite 16

Studio Suite 16 is a full-featured 16-track digital recorder that is designed to completely duplicate the familiar front end of most of today's popular multitrack tape decks. Studio offers multiple sound card support, DirectX support, a full assortment of onboard effects, full automation and basic editing features. Price: $219.
2101 Pennsylvania Ave.
York, PA 17404
717/843-5833; Fax 717/843-2264
www.tracertek.com

### Turtle Beach Montego II Home Studio

The Montego II Home Studio integrates Voyetra's award-winning MIDI/digital audio sequencer, Digital Orchestrator Pro with a powerful Montego II sound card. Built-in enhancements such as 18-bit digital audio recording, a S/PDIF digital I/O interface, a 64-voice Roland GS compliant synthesizer, a 64-voice DLS compatible sampler, an external MIDI interface, built-in effects and more provide all the composing power you need for professional grade recordings.
5 Odell Plaza
Yonkers, NY 10701
914/966-0600; Fax 914/966-1102
www.tbeach.com

### Wave Digital Systems Studio PC/NT

Preconfigured Windows NT workstation for Pro Tools NT. Features Intel Pentium III CPU, Seagate Barracuda and Cheetah SCSI hard drives. ATI AGP video, Microsoft Windows NT workstation OS. Digidesign's Pro Tools NT software pre-installed and optimized for trouble-free performance. Prices start at $2,999.
1170 Greenwood Lake Turnpike
Ringwood, NJ 07456
973/728-2425; Fax 973/728-2931
www.wavedigital.com

## Digital Converters

### Benchmark Media Systems AD2404-96

The AD2404-96 is an ultrahigh-performance 4-channel audio A-to-D converter. Features include selectable 16, 20 and 24-bit word lengths; sample rates of 44.1, 48, 88.2, and 96 kHz as well as varispeed; and digital-to digital redithering. The AD2408-96 also allows for simultaneous output of both 24-bit data and 16 or 20-bit reduced word length data. Spectacular THD+N performance of -110dB at -1dBFS. $2,795.

### Benchmark Media Systems AD2408-96

The new AD2408-96 has eight channels of no-compromise 24-bit A-to-D conversion at sample rates up to 96 kHz. Spectacular THD+N performance of -110 dB at -1dBFS and a 120dB dynamic range. This outboard converter allows facilities to choose the digital console or signal router of their choice and not have to accept poor "built-in converter" performance. the AD2408-96 allows for simultaneous output of both 24-bit data and 16- or 20-bit reduced word length data. $4,995.
5925 Court St. Rd.
Syracuse, NY 13206-1707
315/437-6300; Fax 315/437-8119
www.benchmarkmedia.com

### Hosa CDL-313 S/PDIF to AES/EBU Link

This links devices that only output coaxial S/PDIF via RCA connectors to devices that only accept AES/EBU inputs, and vice-versa, simultaneously. Features RCA ins/outs as well as XLR AES/EBU ins and outs in a chassis with a footprint of only 3x3 inches. AC/DC adapter included. Price: $95.

### Hosa ODL-312 Optical to AES/EBU Link

Links devices that only output fiber-optic S/PDIF via Toslink to devices that only accept AES/EBU inputs, and vice-versa, simultaneously. Features Toslink ins/outs as well as XLR AES/EBU ins and outs in a chassis with a footprint of only 3x3 inches. AC/DC adapter included. Price: $95.

### Hosa ODY-314 Optical Splitter

Splits a single Toslink-type fiber-optic input into two identical Toslink-type fiber-optic outputs. Works for 2-channel S/PDIF, as well as 8-channel Alesis Lightpipe optical formats. Chassis footprint: 3x3 inches. AC/DC adapter included. Price: $95.
6920 Hermosa Circle
Buena Park, CA 90620-1151
714/736-9270; Fax 714/522-4540
www.hosatech.com

### Midiman/M-Audio C03 Digital Converter

Converts between AES/EBU, S/PDIF coax and Toslink. Three inputs/outputs: AES/EBU, S/PDIF coax and Toslink. Source button selects audio source. Source input is converted to all three output formats simultaneously. SCMS (Serial Copy Management System) sets copy protection: pass-thru, no copy protection, force "original," or force "first generation." Supports sample rates up to 100 kHz. Built-in jitter correction. Source button, SCMS button, Power button and LEDs on front panel. All analog/digital I/O on rear panel. 9VDC wall wart-powered. Retail: $249.95.

### Midiman/M-Audio DELTA 1010

PCI-based 10x10 digital audio system. 24-bit, 96kHz system. 8-input, 8-output high-performance audio, S/PDIF, MIDI and WordClock inputs and outputs. PCI Host card with external break-out box. Breakout box has A/D and D/A converters, MIDI and Word Clock. D/A rated at 117dB, A/D at 110 dB. Analog I/O balanced or unbalanced independently switchable +4dBu/-10dBV on each output and input. All data paths support up to 24-bit 96kHz. Hardware sample-accurate sync links multiple PCI host cards. Windows 95/98, NT, ASIO; Mac to follow. Retail: $999.95.

### Midiman/M-Audio SUPERDAC 24-96

D/A converter: 24-bit, 96kHz, 128x oversampling. Dynamic Range: 115 dB (A-weighted). Supports 16-, 18-, 20- and 24-bit data widths. Supports sample rates from 11 kHz to

—LISTING CONTINUED ON NEXT PAGE



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# Electronic Musician's 1998 Choice for Best Microphone —*at any price.*

## RØDE™ NT1

**Large Diaphragm Condenser Microphone**

Electronic Musician 1998 EDITORS CHOICE

TEC TECHNICAL EXCELLENCE & CREATIVITY
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"It gets our award for two simple reasons: It sounds great, and it's as inexpensive as they come. You need adjectives? How about fat, warm, and present? Heck, how about rich, sexy, and downright delectable? We won't hide our surprise in learning that the NT1 held its own, at least tonally, against mics costing four and five times the money."
*—EM Editors, January 1998, EM*

"The NT1 sounded surprisingly good on just about everything, but I especially liked it on vocals, on acoustic guitar, and as a drum overhead. This mic has a very open and detailed sound with lots of presence."
*—Brian Knave, April 1998, EM*

"The NT1 has a rich, stunning sound—very transparent, present, and brightly detailed—that would prove a valuable addition to any mic cabinet."
*—Brian Knave, April 1998, EM*

"...the NT1 compared very favorably to both the AKG C414 and the Neumann U 87—and that's saying a lot!"
*—Brian Knave, April 1998, EM*

"...puts vocal tracks right in your face with startling clarity."
*—Brian Knave, April 1998, EM*

"...cymbals and hi-hats were reproduced exceptionally well..."
*—Brian Knave, April 1998, EM*

"...it really helped a dark-sounding acoustic guitar cut through a busy rock mix, and on a gut-string classical guitar, it captured the warmth of the instrument while detailing the high end and minimizing boominess."
*—Brian Knave, April 1998, EM*

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Voice: 805-566-7777
Fax: 805-566-7771
E-mail: info@event1.com
Web: www.event1.com

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over 100kHz. Front panel button selects between three rear inputs: S/PDIF, Toslink optical or AES/EBU. Audio outs: balanced XLR, unbalanced 1/4-inch (TR), +4dBu balanced, 10dBV unbalanced. Peak output levels: +20dBu balanced, +6dBV unbalanced. Sample rate automatically locks to incoming digital data. "D/A Valid" LED indicates valid incoming digital data.
45 E. St. Joseph St.
Arcadia, CA 91006
626/445-2842; Fax 626/445-7564
www.midiman.net

### Pacific Microsonics Inc. Model Two HDCD

Pacific Microsonics debuts the Model Two HDCD Processor for DVD, DVD-audio and CD mastering, mixing, and tracking. The Model Two features two channels of HDCD A/D conversion, D/A conversion and digital processing at 192, 176.4, 96, 88.2, 48, and 44.1 kHz sampling frequencies, and 24-, 20-, and 16-bit word lengths. The Model Two is designed for surround sound with a Master mode that runs multiple Model Two units from a single precision clock. The Model Two's resolution and accuracy are unmatched, with distortion products below 120 dBfs.
32990 Alvarado Niles Rd., Suite 910
Union City, CA 94587
510/475-8000; Fax 510/475-8005
www.hdcd.com

### Prism Sound Ltd. ADA-8

Unveiled at AES, the ADA-8 multichannel A/D and D/A converter is the first multichannel combined A/D and D/A converter capable of 96 kHz, supporting both 2-wire and 1-wire (2× speed) AES interfaces. Its compatibility with a wide variety of digital interfaces makes it a leading contender in surround sound and has already stimulated much interest from many of the UK's leading facilities, some of which have already placed advance orders.
William James House
Cambridge, UK CB4 4WX
44/223/424-988; Fax 44/223/425-023
www.prismsound.com

### SeaSound Ensemble 4

Ensemble 4 features: four mic/instrument preamps with phantom power and assignable to discrete software channels. 24-bit/96 kHz. Two analog effect sends, assignable stereo returns. Eight channels ADAT (Lightpipe ADAT) 9-pin transport control. Word Clock. MIDI In/Out/Thru. Ensemble 4 is stackable for eight real-time recordable channels.

### SeaSound Solo

Solo features: Two mic/instrument preamps with 48-volt phantom power. Two line inputs. Inserts & direct outputs. Mac/PC PCI card with S/PDIF. 24-bit 96kHz converters. Monitor mixer. MIDI In/Out/Thru. Two headphone amps. ASIO, Sound Manager and Wave drivers. Cubase AV and Acid Rock software.
2955 Kerner Blvd.
San Rafael, CA 94901
415/485-5122; Fax 415/485-3901
www.seasound.com

### Sonifex Ltd. Redbox Series Converters

Two new Redboxes include digital distribution amplifiers with either S/PDIF or AES/EBU outputs. The input is buffered and distributed to the eight outputs in perfect sync with the input. They can handle 96kHz audio and have the same styling as the analog Redboxes, with red anodized cases that can be screw- or rack-mounted. Also new are an A/D D/A converter, a sample rate/format converter and a digital automatic mix-minus unit. Price: TBA, $500-to-$600 region.
61 Station Rd.
Irthlingborough, Northants UK NN9 5QE
44/1933/650-700; Fax 44/1933/650-726
www.sonifex.co.uk

### Sonorus Inc. AES/8

Designed for video post, to interconnect AES/EBU, S/PDIF, TDIF and ADAT formats. Features input sample rate conversion (bypassable), pullup/pulldown, lock to NTSC/PAL video, illuminated buttons and status/activity LED's. Full 24-bit signal path, internal universal-voltage supply.
111 E. 12th St., No. 2
New York, NY 10003
212/253-7700; Fax 212/253-7701
www.sonorus.com

### Yamaha Corp. of America AX88

Eight additional channels (8 in/8 out) of 24-bit balanced analog I/O professional +24 dBu signal levels. Expandable to 16 channels, 24-bit, 128x oversampling A/D and D/A converters. Main inputs accessible from front and rear panel main outputs presented on both XLR and 1/4-inch TRS phone jacks. 105dB dynamic range (typical), word clock sync. $999.
6600 Orangethrope Ave.
Buena Park, CA 90622
714/522-9011; Fax 800/926-3580
www.yamaha.com

## Disk-Based Recorders/Editing Systems

### Alcorn McBride DVM/HD

High Definition video player replaces film. The DVM/HD stores over an hour of high definition video on a removable hard disk. It supports all 14 ATSC Digital Television standards, including 1080I and 720p, at bit rates far higher than broadcast—up to 80Megabits/sec. Video is loaded into the DVM/HD using Ethernet, and may be updated across the Internet. The DVM/HD offers nearly instantaneous access times and zero maintenance.
3300 S. Hiawassee, Bldg. #105
Orlando, FL 32835
407/296-5800; Fax: 407/296-5800
www.alcorn.com

### Akai Digital DD16PB Plus

A cost-effective alternative for audio playback applications, the DD16PB Plus provides 32 voices of random-access playback on 16 outputs, either analog or digital, in sync with timecode or biphase, forward and reverse. The DD16PB Plus offers the highest cross-platform compatibility available with direct playback of most DAW formats. Providing high-quality 24-bit linear resolution and 96kHz sampling rate, the DD16PB Plus is the ideal digital audio player for feature film and video post-production use. Price: from $5,894.

### Akai Digital DD8 Plus Version 3.01

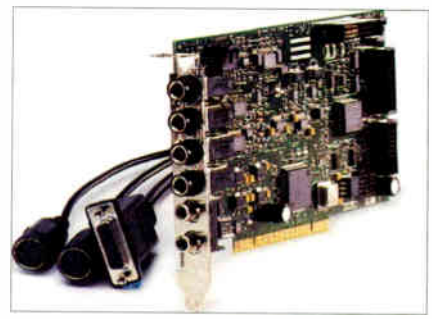
The DD8 Plus is the first affordable digital dubber delivering 24-bit linear resolution and 96k sampling rate, with the highest cross-platform compatibility available, supporting direct playback of most DAW formats. The DD8 Plus provides 8-track random-access recording, controlled via RS422, parallel or Akai's own remotes. When connected to the DL1500 or RE32 controllers, the DD8 Plus offers full DAW editing features with VGA display. The DD8 Plus syncs to timecode or biphase, forward and reverse. Price: from $5,595.
7095 Hollywood Boulevard PB 652
Hollywood, CA 90028
818/762-3094; Fax 818/762-2348
www.akai.com/akaipro/postpro/

### Alesis Masterlink ML9600

Masterlink ML 9600 is a new mixdown and mastering system that combines hard disk recording and editing, digital signal processing and CD creation in a single versatile unit. Masterlink ML 9600 stores, delivers and plays stereo 24-bit, 96kHz audio on standard recordable compact discs. The unit can also produce and play back conventional 16-bit, 44.1kHz Red Book format CDs. Masterlink features a 3.2GB internal hard drive with editing, digital signal processing and mastering functions, a 4x CD-R drive, and 24-bit A/D and D/A converters. MSRP: $1,699.
1633 26th St.
Santa Monica, CA 90404
800/5-ALESIS; Fax 310/255-3401
www.alesis.com

### Denon Electronics DN-M991R

Denon's new DN-M991R MiniDisc recorder/player was developed for a multitude of applications, including broadcast, theme parks, airports and theater. User-friendly features, such as keyboard character entry, keyboard operation and a large, easy-to-read fluorescent tube display showing track number and track name; as well a variety of control terminals, including RS-232C, RS-422A, D-Sub 25 pin and keyboard Mini Din, make the DN-M991R arguably the most versatile MiniDisc recorder on the market.
222 New Road
Parsippany, NJ 07054
973/396-0810; Fax 973/396-7459
www.del.denon.com



### E-mu E-Card/NOMAD MP3 Bundle

The E-Card/ NOMAD MP3 Bundle ($750 list) is an all-in-one so-



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lution for recording, mastering, encoding and uploading/downloading professional-quality audio. The E-mu E-Card gives you a 64 voice sampler, hard disk recording and dedicated, hardware DSP plus comprehensive analog and digital I/O. The bundle also includes a NOMAD MP3 player with 64 MB of memory and all of the software you need to record, sequence and encode your music for distribution/placement on the internet.
1600 Green Hills Road
Scotts Valley, CA 95067
831/438-1921; Fax: 831/438-8612
www.emu.com

### Fairlight USA ViVid

ViVid is Fairlight's high-bandwidth video and audio hard disk recorder. It is perfectly suited to any number of audio-for-video editing applications. ViVid provides broadcast-quality recording and playback. ViVid is simple to operate, using the front panel controls or by 9-pin serial remote control. ViVid can also be tightly integrated into the MFX 3+ and FAME editing environments, providing complete control of all operation from the MFX 3+ and FAME control surfaces.
3855 Hughes Ave.
Culver City, CA 90232
310/287-1400; Fax 310/287-0200
www.fairlightesp.com.au

### Fostex VR 800

Model VR800 is an 8-track simultaneous recorder with ADAT interface, internal or external drive, 16 virtual tracks and audio scrubbing with graphic display. $749.
15431 Blackburn Ave.
Norwalk, CA 90650
562/921-1112; Fax 562/802-1964
www.fostex.com

### HHB LLC MO 640

Random access, high capacity and excellent long-term security make magneto-optical disks the natural successor to tape, and HHB announces 640MB MO recording media in a 3.5-inch form factor.
1410 Centinela Ave.
Los Angeles, CA 90025-2501
310/319-1111; Fax 310/319-1311
www.hhb.co.uk

### Korg D16

Korg's new D16 is an affordable 16-track integrated digital recording system. It includes a 24-bit digital recorder, 24-channel digital mixer, extensive effects system (including modeling) and a built-in 2.1GB hard drive for a total of 65 hours of recording time. The effects section (97 total effect types) features Korg's latest REMS (Resonant structure and Electronic circuit Modeling System) technology, which emulates a wide variety of effects, amplifiers, speaker cabinets and microphones.
316 S. Service Rd.
Melville, NY 11747
516/333-9100; Fax 516/333-9108
www.korg.com

### Lexicon Core2 Desktop Audio System

Core2 offers connections for four channels of analog in, eight channels of analog out, eight channels of ADAT digital I/O and a stereo S/PDIF pair. Ultrawide-range 24-bit A/D and D/A converters with selectable dbx Type IVTM soft-knee limiting on every input channel to simulate tape compression and provide 4 dB of improved headroom. Ships with Syntrillium's Cool Edit Pro SE. An optional daughterboard includes all of the effects found in the Lexicon MPX 100 Dual Channel Effects Processor.
3 Oak Park
Bedford, MA 01730-1441
781/280-0300; Fax 781/280-0490
www.lexicon.com

### Sonic Solutions SonicStudio HD

At AES 99, Sonic Solutions, the leader in CD premastering and DVD publishing, will demonstrate the new SonicStudio HD workstation—the only system capable of High-Density Audio and DVD-Audio authoring. Sonic will be joined by its HDSP Plug-in Partners, who will debut the new line of High-Density Audio Plug-ins for SonicStudio HD.
101 Rowland Way
Novato, CA 94945
415/893-8000; Fax: 415/893-8008
www.sonic.com

### Sony DADR-5000

The Sony DADR-5000 Digital Audio Disk Recorder is a digital alternative for the analog magnetic film dubber. It is a 16-channel recorder for selectable 16-, 20- or 24-bit uncompressed digital processing. Designed to network without external synchronization, the DADR-5000 provides unique user interface capabilities. Recently announced, DADR-5000 is scheduled to allow users simply to plug and play disks containing Digidesign Pro Tools digital audio editorial tracks without format conversion, real-time transfer or generation loss.

### Sony MDS-E11

While offering the same basic feature set of the MDS-E58 MD recorder, the sleek MDS-E11—a single rack recorder—also offers a built-in RS-232C interface for computer control and a relay/playback terminal that allows the link-up of multiple units for longer continuous record and play, a great benefit in live applications. Other MDS-E11 features include a parallel remote interface, as well as digital coaxial, RCA analog and XLR analog I/Os. This compact unit is targeted at mobile production and sound contractor applications where size and weight are often major considerations.
1 Sony Drive
Park Ridge, NJ 07656-8003
201/358-4197; Fax 201/358-4907
www.sony.com/proaudio

### Soundscape RED

Red is a Windows 95/98/NT-compatible 32-track recorder/editor, featuring sample rates up to 96 kHz, and maximum 137 GB storage using IDE drives. 24 digital I/Os are via TDIF. Also: RS422, timecode board, MIDI in, out and thru.
4478 Market St., Suite 704
Ventura, CA 93003
805/658-7375; Fax 805/658-6395
www.soundscape-digital.com

### Spectral Design AudioCube 3

The AudioCube 3 is a 24-bit/96kHz mastering, audio restoration, audio archival, audio editing workstation, based on dual 500MHz Pentium III processors in a 19-inch 5U enclosure. The AudioCube performs numerous real-time audio restoration functions (deNoise, DeBuzz, DeCrackle, DeEss, DeClipp, etc.) in multichannel formats and includes a powerful editor. The Quadriga module offers automated transfer from analog tape or vinyl to digital audio, while monitoring the incoming audio data and reporting on errors. $18,500.
34 Nelson Street
Oakville, Ontario, Canada L6L 3H6
905/469-8080; Fax 905/469-1129
www.sascom.com

### Superscope/Marantz PMD650

Superscope Technologies Inc. proudly introduces the Marantz PMD650 professional portable MiniDisc recorder. The PMD650 offers a full complement of analog and digital I/O's to suit a wide variety of applications. The coaxial digital input with sample rate converter can be used to record from digital sources with sample frequencies of 32, 44.1 or 48 kHz. An S/PDIF digital output offers the flexibility to transfer the recorded digital data to other professional equipment.
2640 White Oak Circle, Suite A
Aurora, IL 60504
630/820-4800; Fax 630/820-8103
www.superscope-marantzpro.com

### Tascam MD-301 MkII

Tascam introduces the MD-301 MkII MiniDisc Recorder/Reproducer. The MD-301 MkII is designed for anyone in need of a system that takes full advantage of MiniDisc's diverse capabilities. The MD-301 MkII features a full complement of exciting new features, including 20-bit ADC/DAC, sample rate conversion facility for digital inputs, monaural recording mode, front panel keyboard connection (PS/2 type keyboard connector), XLR balanced analog inputs/outputs and RCA unbalanced analog inputs/outputs.
7733 Telegraph Rd.
Montebello, CA 90640
323/726-0303; Fax 323/727-7635
www.tascam.com

### 360 Systems Short/cut 99

Short/cut 99 is the newest version of 360 Systems' cut-and-paste digital audio editor, offering 2-track digital recording to internal hard disk or optional external removable disks. Either track can be independently recorded and edited. Short/cut 99 is self-contained, including titling keyboard, speakers, large alphanumeric display, scrub wheel, editing and tape transport controls. New features include gain edits, fades and crossfades, and file interchange in .WAV, .BWF and .AIFF formats for transferring audio over the Internet or on removable disks.

### 360 Systems TCR8

TCR8 is an 8-track digital audio hard disk recorder designed for broadcast and video production applications. Features include 24-bit audio quality, high-density removable disks, massive internal hard disk storage, complete timecode implementation and VTR emulation.
5321 Sterling Center Drive
Westlake Village, CA 91361
818/991-0360; Fax 818/991-1360
www.360systems.com

### TimeLine TransAudio PipeLine Version 1.1

TransAudio PipeLine ($795) is a software application that provides backup, import and export of popular DAW file formats. Supported file formats include Pro Tools, Waveframe, OMF (SDII), Akai and Sonic Solutions. The software

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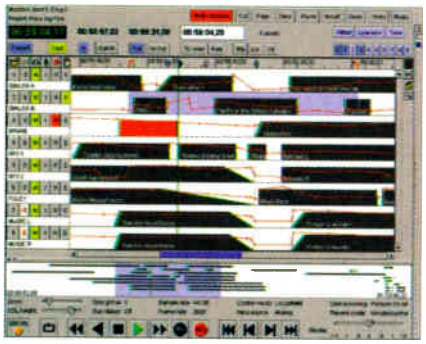
can perform a TapeMode convert that rewrites all audio referenced in a session into contiguous files. A great feature for backup, it also reduces seek times that can cause problems in larger sessions. Requires Pentium 120 (or higher) running Windows 95/98/NT.



### TimeLine ViewNet Audio Version 1

ViewNet Audio ($595) is a graphical user interface application for the Tascam MMR-8/MMP-16 digital multitrack systems. The software provides real-time status display and control of multiple machine systems along with a wide variety of intuitive commands for manipulating audio events. Created using the JAVA programming language. ViewNet Audio is compatible with Apple Macintosh and Windows 95/98/NT systems. As a Tascam development partner, TimeLine is the OEM supplier for the MMR/MMP hard disk multitrack products
1755 La Costa Meadows Drive Ste. B
San Marcos, CA 92069
760/761-4440; Fax 760/791-4449
www.TimeLineVista.com

### WaveFrame Inc. Net Wave

Developed with mSoft, the leader in sound effects servers for post-production, NetWave provides complete integration with the WaveFrame editing system. Sounds are stored on a Windows NT server in .WAV format to be shared among a virtually unlimited number of users, eliminating the slow process of searching shelves of CDs, tapes or MO cartridges. Sounds are searched, auditioned and selected in a Web browser application and transferred to the user machine automatically in the background. Prices start at $9,995.

### WaveFrame Version 6.5

WaveFrame 6.5 improves upon WaveFrame 6.22's popular features by adding more import/export formats (including Broadcast .WAV and Sound Designer II with time stamps), eight tracks per SCSI bus for recording, reversing regions in tracks, standard Windows file management (File.Save As) and features for combing several projects into one. Upgrade from Version 6.22 $250. Upgrade from previous versions $895.
1226 Powell St.
Emeryville, CA 94608-8370
510/654-8300; Fax 510/654-8370
www.waveframe.com

### Zaxcom Inc. Deva II

Deva II is the second generation of Zaxcom's Deva Disk Recorder. The world's first portable 4-channel, 24-bit uncompressed hard disk recorder evolves with a complete new look. Deva II is designed with a sleek new Swiss look. Deva II is loaded with upgraded software and triple redundant directory structure.
140 Greenwood Ave.
Midland Park, NJ 07432
201/652-7878; Fax 201/652-7778
www.zaxcom.com

## Loudspeaker Products

### Adgil Design Director LC

The Adgil Design Director LC is a programmable surround monitor matrix system. It can handle one main monitoring system with up to 8 output channels (2, 4, 6 or 8) and two auxiliary stereo systems. Functions include Mute, Dim, Mono, Solo, Cut, Preset Monitoring Levels, Down Mix Function and more. The Design Director LC can monitor several sources simultaneously, i.e., fixed 1:1 mixer for stems or submixes, and provides an insertion point for encoding/decoding matrixes. Prices range from $2,995 (8x8 matrix) to $3,975 (32x8 matrix).
34 Nelson Street
Oakville, Ontario, Canada L6L 3H6
905/469-8080; Fax 905/469-1129
www.sascom.com

### Apogee Sound FH-18 Quad Subwoofer

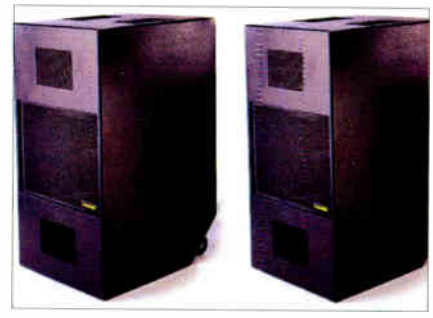
The "F" Series was presented at the 1998 AES show. The FH-18 Quad Subwoofer is the newest addition. The FH-18 is a unique, quad 18-inch subwoofer designed with the same footprint as the FH-4, making flying, stacking and arraying an easy task. The FH-18 provides wide bandwidth, unprecedented power and an extremely rapid response for crisp, punchy LF reproduction. The FH-1 and FH-2 are general-purpose FOH speakers, while the FH-4 is designed for large-scale concert sound reinforcement.
2180 S. McDowell Blvd
Petaluma, CA 94954
707/778-8887; Fax 707/778-6923
www.apogee-sound.com

### Bag End TA6000-R

Bag End has again broken through the size/performance barrier with the TA6000-R. Combining a very compact enclosure with matched high-performance drivers using Time Align Technology, the TA6000-R is capable of higher fidelity and output than previously possible. At 27 pounds and over 120 dB SPL capability, the TA6000-R compares with systems of twice the size, cost and weight. Convenient features of the system include flying points, pole mount and multiple input connectors.
22272 N. Pepper Road
Barrington, IL 60011
847/382-4550; Fax 847/382-4551
www.bagend.com

### Celestion KR1/T

The KR1/T is a 75-watt, 4-ohm installation loudspeaker now available with internal transformers for use in constant voltage distributed systems. The KR1/T features an internal jumper setting to allow the loudspeaker to be preset for industry standard 70.7v, 100v, or 25v use. Transformer can be bypassed so loudspeaker functions as a conventional low impedance model. This loudspeaker offers five different power tap settings at 1/16, 1/8, 1/4, 1/2 and full power. The KRII and SR Compact are also now available with internal transformers.
Dist. by Group One Ltd.
200 Sea Lane
Farmingdale, NY 11735
516/249-1399; Fax 516/753-1020
www.celestion.com



### Community VLF 218 Subwoofer

The VLF218 delivers powerful output (in excess of 128 dB SPL) and high-impact transient response. Dual 18-inch drivers (over 400 sq. inches of cone area) pump larger volumes of air, while 4-inch voice coils and a large 6.8-inch magnet delivers high output. Heavy-duty cast frame. Ferrofluid cooling. Vented-pole piece dissipates internal heat, reduces output loss due to power compression. Rated for 800W RMS, 2000W program with sensitivity of 99 dB (1W/1m). Frequency response from 35 to 150 Hz.

### Community WET Custom Series

The WET Custom Series is based around four basic enclosures allowing flexible configurations in two- or three-way systems with passive or electronic crossovers. Mid- and high-frequency ranges are horn-loaded with dispersion patterns to suit application. Selectable compression drivers for midrange. Low-frequency and subwoofer drivers range from 8 to 18 inches. Units are fiberglass, weather-resistant enclosures with carbon fiber, polimide or mylar



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diaphragms. Ferrofluid voice coils. Three-layer Weather-Stop grilles.
333 E. 5th St.
Chester, PA 19013
310/876-3400; Fax 610/874-0190
www.community.com

### D.A.S. Audio Factor-9T

The Factor-9T is a highly efficient, two-way vented loudspeaker with a 60-watt, multitap transformer for 50, 70 or 100V distributed systems. Designed for applications requiring longer "throw" than typical dome tweeter equipped devices, the Factor-9T is ideal for background/foreground music, audio/video and reference monitoring. Features a 150W, 8-inch low-frequency transducer with a 1.5-inch voice coil. High-frequency reproduction achieved via 1-inch horn-loaded, ferrofluid cooled tweeter. Injection-molded cabinet reduces vibrations, resulting in superior acoustical properties. List price $299.
Enterprise Dr.
Old Lyme, CT 06371
860/434-9190; Fax 860/434-1759
www.dasaudio.com

### Dunlavy Audio Labs SM-I

The Dunlavy Audio Labs SM-I loudspeaker was designed to provide quality-conscious recording, editing and mastering studios with an incredibly accurate two-way desk top monitor. Like all Dunlavy Audio Labs loudspeakers, the new SM-I is individually measured anechoically to provide the highest levels of objective performance possible, with each SM-I exhibiting a guaranteed frequency vs. amplitude response of +/-1.5 dB from 60 to 20k Hz (-3 dB at 50 Hz). 6-ohm impedance (nominal). Dimensions: 25x11x13 inches (HxWxD); 45 lbs. each. U.S. Suggested retail: $1,995/pair and up.
PO Box 49399
Colorado Springs, CO 80949-9399
719/592-1159; Fax 719/592-0859
www.dunlavyaudio.com

### Genelec 1034 8C Active Center Channel

Genelec will introduce a dedicated center-channel 1034BC speaker for 3-channel and surround sound systems. The speaker complements the 1034B dual 12-inch active monitor system. To ensure complete tonal compatibility, the 1034B and 1034BC use the same drivers and Directivity Control Waveguide as a complete calibrated package. All drivers are shielded. The separate amplifier unit is built into a rackmounted chassis for easy fitting into a 19-inch 7U rack. Bass, midrange and treble amps produce 800, 350, and 120 watts respectively. The system frequency response is 32 to 20k Hz ±3dB.

### Genelec 1036A Active Monitor

Genelec's new flagship monitor is the 1036A, which goes lower in frequency than any other Genelec monitoring system. Each channel consists of a 430-liter speaker enclosure and a 19-inch electronics rack, containing active crossovers, tri-amp power modules, plus protection and diagnostic circuitry. Bass, midrange and treble amplifiers respectively produce 2x 1,100, 600, and 300 watts of short-term power. Dual 18-inch woofers reproduce frequencies down to 19 Hz (-3dB). Dual 5-inch Genelec midrange and a single 1-inch compression tweeter extend the frequency response to 22 kHz.
7 Tech Circle
Natick, MA 01760
508/652-0900; Fax 508/652-0909
www.genelec.com

### Generalmusic K Series

Despite their compact size and light weight, Generalmusic's K Series loudspeakers are engineered to provide exceptional sonic quality, efficiency and reliability. Designed for permanent and portable applications alike, the trapezoidal K Series range comprises the K3 12-inch, two-way system; K6 15-inch, two-way system; and KL single 15-inch subwoofer. For added versatility, the systems are also available in active versions, featuring integral power amplifier modules with crossover and anticlip circuitry.
1164 Tower Lane
Bensenville, IL 60106
630/766-8230; Fax 630/766-8281
www.generalmusic.com

### Guitammer ButtKicker Shaker

Based on a patented low-frequency transducer that uses piston technology to provide true subsonic or infrasonic reproduction, the ButtKicker Shaker moves mass rather than air to create sound systems, providing the perception of being extremely loud or earthshaking without being heard outside the studio, room, theater, simulator, car, arcade rides or other environments. Its 5 to 200 Hz range is greater than existing subwoofers, without peaks or "hot spots." Price: $599.
Box 82
Westerville, OH 43086
888/676-2828; Fax 815/346-9532
www.guitammer.com

### Hafler TRM6

Hafler is introducing the TRM6, the newest addition to its popular Active Monitor Speaker System. Based on the same quality performance as the industry-acclaimed TRM8, the TRM6 two-way bi-amplified active speaker system is being offered at the incredible price of just $1,390 a pair. The TRM6 is magnetically shielded and is based on Hafler's superior Diamond Series Trans•nova amplifier technology. It was designed to fill the monitoring needs of music recording studios, film and video post-production houses, professional and home surround sound applications, remote trucks and mastering facilities.

### Hafler TRM10s

Hafler unveils its new TRM10s Trans•ana Powered Subwoofer. This down-firing, ported system augments the performance of Hafler's new TRM6 Active Monitor System or any small monitor when frequency response down to 25 Hz is vital. Now shipping, the TRM10s is a combination of Hafler's latest Class G Trans•ana amplifier circuitry coupled to a 10-inch subwoofer and is entirely custom-designed and manufactured for optimum performance and priced at only $695 apiece.

### Hafler TRM12s

Hafler debuts the TRM12s VFET Transana powered low frequency speaker system. The TRM12s provides extended low end response for the Hafler TRM8 powered monitor system, or any studio system requiring accurate low frequency reproduction. The TRM12s is a well-designed and -powered, low frequency subwoofer offering a free field frequency response of 25-110 Hz (±2dB) at less than 3 percent Total Harmonic Distortion, 25-110 Hz at 96 dB at two meters on axis. This performance more than adequately meets the dynamic range needs of 24-bit digital playback. $795 each.
546 S. Rockford Dr.
Tempe, AZ 85821
602/967-3565; Fax 602/894-1528
www.hafler.com

### Hot House ARM 265

Configured vertically as a Virtual Point Source, the bi-amplified ARM 265 exhibits extraordinary imaging, extremely fast transient response and ruler-flat (±1.75dB) wide bandwidth over a 9 1/2 octave range. Our choice of twin small, quick, yet very long excursion 6.5-inch woofers and ultra-low-distortion recessed dome tweeter in a rear-vented 6th-order alignment, coupled with a no-compromise 150kHz electronic signal path, provides unbelievably low harmonic and phase distortion for fatigue-free near or midfield critical monitoring applications. $6,499/pair.

### Hot House PRM 165

Fully shielded, ruler-flat, two-way near-field reference monitor with a 6.3-inch long-excursion woofer providing excellent midrange characterisics up to the crossover point. And with its ultralow-distortion, recessed 1-inch dome tweeter, minimal front baffle area and heavily braced sixth-order aligned rear-vented flat black enclosure with broadly radiused edges, the 165 delivers pinpoint imaging and smooth response for exremely non-fatiguing long-term critical monitoring. Frequency response: 59 to 20k Hz ±1.5 dB. $1,299/pair.
275 Martin Ave.
Highland, NY 12528
914/691-6077; Fax 914/691-6822
www.hothousepro.com

### JBL LSR Series Monitoring System

JBL Professional will introduce new additions to its very successful LSR Series Monitoring Systems. The new models will feature the same high levels of innovation and design that have made the LSR Series the choice of some of the most accomplished engineers and mixers in recording, post-production and broadcast.
8500 Balboa Blvd.

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Northridge, CA 91329
818/894-8850; Fax 818/830-7802
www.jblpro.com

### Jensen Vintage Speakers

Jensen Music Industries will present the P8R, an Alnico 8-inch speaker, and the C8R, a ceramic 8-inch speaker. These are replacement speakers modeled after Jensen speakers used by guitarists in smaller amplifiers in the '60s. Both are 4-ohm speakers designed for such amplifiers as the Fender Champ.
18404 Blue Ridge Dr.
Lynwood, WA 98037
877/853-6736; Fax 425/744-1052
www.jensenmusic.com

### KRK S10

The first product of our new powered subwoofer line features a cast-frame 10-inch woofer with a special cone. The built-in electronic crossover is specifically designed for 5.1 systems. Input: 2-channel VLR, 10k balanced, Pin 1 or sleeve=ground, pin 2 or tip = high, pin 3 or ring = low. Controls: System gain is +6dB to -30dB variable. LPF variable from 50 to 130 Hz. Phase adjust switch 0 to 180 degrees. Amplifier power 130 watts. Frequency response 34 to 130 Hz ±2 dB. Retail $799.

### KRK V6

The V6 features separate amplifiers for the woofer and tweeter, an electronic crossover, cross-bracing and standard video shielding. Drivers: 1-inch silk dome HF, 6.75-inch polyvinyl LF. Input: XLR 0.25-inch combo 10k balanced, pin 1 or sleeve = ground, pin 2 or tip = high, pin 3 or ring = low. System gain is +6dB to -30dB variable. Amplifier power: 30 watts HF, 60 watts LF. Frequency response 54 to 20k Hz ±2 dB. Maximum SPL at 1 meter: 102dB music, 105dB peak. Retail $799/pair.
16612 Burke Lane
Huntington Beach, CA 92647
714/841-1600; Fax 714/375-6496
www.krksys.com

### Mackie SRM-450

The SRM-450 is a bi-amplified, optimized active loudspeaker system for corporate AV, bands, rental and installations. Built-in monolithic FR Series 300 and 100-watt amps put out high-quality SPL with extremely low distortion. Built-in precision 24 dB/oct. Linkwitz-Riley electronic crossover. Other electronic features include time correction, phase alignment and equalization. Servo feedback controlled woofer for precise woofer control and extended low-frequency response. Horn coverage: 90x45 HxV. Stand-mountable, multiple flypoints and doubles as a wedge monitor. Suggested list price: $799.
16220 Wood-Red Rd. NE
Woodinville, WA 98072
425/487-4333; Fax 425/487-4337
www.mackie.com

### MacPherson AXIA

Designed to provide high-fidelity concert sound for fixed installation and touring. Available in tri-amp or optional three-way bi-amp, the AXIA incorporates a 15-inch LF driver, two 8-inch MF cone drivers and one 2-inch HF compression driver mounted to a 90x55 slot cd horn flare. Unique, rear-mounted "Exospine" rigging system allows up to 12 cabinets to be precisely joined to form a vertical line array. Individual cabinets can be angled from 0 to 15 degrees. This versatile system can also be used in deck stack applications. Dimensions of the Baltic birch cabinet are 18 5/8"x38"x13 1/4" (HxWxD). Weight is 129 lbs. Recommended amplifier power is LF 1000w, MF 400w, HF 200w. $4.850 each.

### MacPherson LFE-12

MacPherson Inc. announces the release of a new addition to its IS series Flat Panel loudspeaker line. The LFE-12 was designed to enhance the low-frequency range of systems needing more output in the critical 50 to 120Hz range. The LFE-12 uses a single high-power 12-inch LF driver loaded in a ported, flat-panel cabinet. The unique size of the LFE-12 allows it to be installed in between standard wall studs or floor/ceiling joists. Eyebolt Rigging points are provided for safely hanging the cabinet. Dimensions of the Baltic birch cabinet are 14.25x45.5x7 inches (WxHxD). Weight is 60 lbs. Recommended amplifier power is 500 w to 800 w. $1,150 each.
5500 W. Touhy Ave. Unit L
Skokie, IL 60077
847/674-3535; Fax 847/674-3548
www.macpherson-inc.com

### Martin Audio Ltd. WT3

The Wavefront Theater model WT3 has been designed to cover a wide variety of theater applications, from main front-of-house to infill and underbalcony. The WT3 is a switchable (bi-/tri-amped) three-way system, equipped with a selection of theater-specific flying points and suspension hardware. This arrayable, compact trapezoid enclosure, finished in rugged multilaminate birch-ply construction, gives an angle coverage of 65° and offers an exceptionally efficient, high-power, full-range sound from a compact, 28-inch high enclosure.
Distributed by TGI North America
PO Box 44019
Kitchener, Ontario, Canada
519/578-0213; Fax 519/578-1575
www.martinaudio.com.

### Meyer Sound Labs DS-4P

Meyer Sound Laboratories Inc. will exhibit the DS-4P self-powered mid-bass loudspeaker system, which supplements the 70 to 200k Hz band in full-range systems.

### Meyer Sound Labs UPM-1P

Meyer Sound Laboratories Inc. will introduce the UPM-1P, a self-powered loudspeaker system that features a bi-amped system comprising two 5-inch, low-frequency cone drivers in a vented enclosure and a 1-inch titanium dome on a symmetric horn. The two MS-5 mid/low-frequency drivers are driven in parallel, and one of the drivers is passively rolled off above 500 Hz.
2832 San Pablo Ave.
Berkeley, CA 94702-2204
510/486-1166; Fax 510/486-8356
www.meyersound.com

### Nexo NX241 Digital Controller

Designed to work with any Nexo loudspeaker system, the NX241 is a 2-in by 4-out digital controller housed in a 1-rackspace chassis. Specs of this programmable 24-bit processor (with 48-bit accumulator) include THD+N of 0.02% and a 120dB dynamic range. Price: $3,505.

### Nexo PS-8

This 2-way passive box packs 124 dB SPLs (continuous, or 127 dB peak) into a compact 14x13x10-inch (HxWxD), 16-pound enclosure. Its Neodymium-based 8" woofer and 1" HF compression driver provide a response from 60 to 21k Hz. Features include an asymetrical horn that is rotatable to offer variable horizontal dispersion in the 50°-100° range (vertical is fixed at 55°), and an angled back for use as either an FOH or monitor box. Price: Approximately $1,100.
7950 Redwood Highway, Unit 3
Cotati, CA 94931
707/793-9300; Fax 707/793-9310
www.nexo-sa.com

### PMC Monitors AL-1

The PMC AL-1 is a self-powered, two-way, near-field, 6-inch monitor, using discrete, internal Bryston electronics. The AL-1 has a usable frequency range of 30 to 25k Hz. SPL >118 dB. Sensitivity -90 dB at 1 watt. Retail: $2,450.
Unit 72 Haslemere Industrial Estate

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Tewin Road, Welwyn Garden City
Hertfordshire, UK AL7 1BD
705/742-5325; Fax 705/742-0882

### Professional Audio Design/Munro MA1
The MA1 is a highly versatile, compact, high-power studio monitor ideally suited for stereo and multichannel applications requiring accurate and full-range monitoring. The system may be used freestanding or flush-mounted and will outperform many speakers twice its size. The speaker is an innovative three-way integrated active system, containing a dedicated 600W power amplifier package that can be rackmounted. The MA1 is equipped with extensive onboard variable equalization and level trims to allow fine-tuning to any situation.
357 Liberty St.
Rockland, MA 02370
781/982-2600; Fax 781/982-2610
www.proaudiodesign.com

### Quested F11P
A passive version of the best-selling self-powered F11, the F11P uses the same driver configuration as the F11 and the same stylish cabinet, made from a mineral-loaded, highly dense, hard-wearing material and featuring built-in mounting points. Ideal for customers wanting the qualities of the F11 but not requiring a self-powered speaker, the F11P is designed with a built-in passive crossover and features a 6.5-inch bass driver and a 1-inch tweeter.

### Quested VS3208
A self-powered 3-way monitor that houses 2x8-inch bass drivers, a 3-inch softdome mid and a 1 1/8-inch tweeter. The VS3208 is only 19 inches wide, which makes it possible to place the speaker above 19-inch rackmounted equipment, which can be useful in certain installations. The built-in amplifier provides in excess of 400 watts rms, a three-position EQ switch on each of the LF, MF and HF bands and an input sensitivity switch with an 18dB range.
462 N. Baldwin St.
Madison, WI 53703
608/251-2500; Fax 608/251-3158
www.quested.com

### Radian RPS-115
Small, portable, single 15-inch high-output subwoofer system. Power handling capacity 2,400 watts peak, max SPL 131 db, 13-ply Baltic birch construction, handles, pole cup for full-range system use, Duradian finish. List price $1245.
600 N. Batavia St.
Orange, CA 92868
714/288-8900; Fax 714/288-1133
www.radianaudio.com

### Renkus-Heinz D26 Digital Controller
Renkus-Heinz has added the flexibility of digital signal processing to its integrated sound systems by introducing the D26 Digital Controller. The D26 has two inputs and six outputs. It provides both loudspeaker-specific and system integration functions, with multiband parametric EQ, limiting and delay on inputs and outputs as well as complex crossovers with limiters, EQ and time alignment delay on each frequency band. The D26 can be controlled via MIDI from within SIA SMAART Pro's equalization window.

### Renkus-Heinz TRC51
The TRC51 is available in white and black molded thermoplastic resin enclosures, with a variety of mounting and hardware options. Three powering configurations are available. The TRC51PS is an active system with a 60-watt amp operating at 110V or 220V AC. The passive TRC51T includes a 70/100V line matching transformer with taps from 3 to 50 watts. The TRC51 is a standard system, using a 16-ohm woofer.
17191 Armstrong Ave.
Irvine, CA 92614
949/250-0166; Fax 949/250-1035
www.renkus-heinz.com

### Selenium Loudspeakers 10MB1P
Midbass transducer, 10-inch for midbass professional sound reinforcement, offering high power capacity, outstanding midrange reponse and exceptional long-term performance. This transducer is ideal for compact enclosures, closed, vented or horn-loaded. This transducer exhibits excellent acoustics with long-term workhorse construction. Designed for smaller enclosures, the 10MB1P is a versatile, high-performance midbass. The general construction includes a rigid, injected aluminum frame. Impregnated cloth surround, stable double spider and a large central vent channel reduce long-term heat build-up and extend the performance of this exceptional driver.

### Selenium Loudspeakers 12CO1P/15CO1P
12-inch and 15-inch coaxial loudspeakers designed for professional use in touring or fixed applications. Both 12CO1P and 15CO1P employ a 1-inch titanium, ferrofluid loaded compression driver coupled with either a 12-inch or 15-inch woofer. High-performance compact systems can be designed easily with the added advantage of the almost point source characteristics that a coaxial offers, virtually eliminating the delay problem between adjacent acoustical sources. These coaxial transducers can be used in studio monitor applications, compact MI cabinets and high-power sound reinforcement systems.
15 East Uwchlan Ave #424
Exton, PA 19341
610/280-3595; Fax 610/280-3598
www.Selenium-USA.com

### Servodrive Inc. Unity Loudspeaker
The 22-inch cube Unity VFL loudspeaker featuring Tom Danley's patent-pending Unity Summation Aperture uses a pyramid-shaped multiband wave guide to combine the amplitude and phase from 13 drivers into a single coherent output. Performance: 104 dB at 1 watt 1 meter. Response: +2 dB, 100 to >20 kHz. 60x60 dispersion pattern. Design offers greater efficiency. Low distortion. High output. No external processing. Passive crossover.
1940 Lehigh Ave. Ste C
Glenview, IL 60025-0068
847/724-5500; Fax 847/724-4847
www.servodrive.com

### Shedwerks-TLC Bass Boss Management System
Single rackspace, 7-channel bass redirection box. Full trims on all channels. Two LFE channels out. Balanced in/out. Selectable solo and mutes. $899.
4411 Brookford Ave.
Woodland Hills, CA 91364
818/225-1809; Fax 818/225-1309

### Shure PSM700 Wireless Personal Monitor
This frequency-agile system offers 32 selectable UHF frequencies divided into two compatibility groups. Up to 16 PSM700 wireless systems may operate simultaneously per group. The PSM700 incorporates popular design elements of the PSM600 system, and users choose from stereo, mono, or MixMode operation. New features include Shure's E5 earphones equipped with low-mass/high-energy drivers, a frequency locator function, dynamic overload control and the ability to link multiple antenna combiners. Supplied with all necessary accessories. Price: $2,990 with E5 earphones; $2,400 without earphones.
222 Hartrey Avenue
Evanston, IL 60202-3696
847/866-2553; Fax 847/866-2232
www.shure.com

### SPL Atmos 5.1
At AES, SPL will be showing the new Atmos 5.1 surround recording and monitoring system with Brauner's ASM 5, a 5-channel surround microphone. The system represents the first discrete multichannel recording system with open architecture. Recordings made with the Atmos 5.1/ASM 5 exhibit perfect spatial localization combined with outstanding recording performance. Also shown are the new GoldMike tube mic preamp, the Transient Designer effects compressor premiering SPL's Differential Envelope Technology.
Sohlweg 55
41372 Niederkruechten, Germany
49/2163/983-40; Fax 49/2163/983-420
www.spl-electronics.com

### Studio Technologies Bass Manager
Studio Technologies introduces the Model 65 Bass Manager, an analog processor designed to allow more effective multichannel monitoring. While designed to directly connect to Studio Technologies StudioComm for Surround monitor systems, the Model 65 is compatible with virtually every monitor system. The one-rackspace unit provices a 5.1-input, five main outputs and two subwoofer outputs. While preconfigured to support the most common requirements, parameters can be easily modified for site-specifiec requirements. Suggested price: $799.
5520 W. Touhy Ave.
Skokie, IL 60077
847/676-9177; Fax 847/982-0747
www.studio-tech.com

### Sundholm Acoustics SL10/ps
The SL10/ps is an active 10-inch subwoofer in an upright cabinet to reduce standing waves between the floor and ceiling. Power Amplifier 200 watts. Left and right summing inputs and outputs. Max. SPL 108 dB. Output level control. Variable crossover frequency control 50 to 100


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Hz. Phase reversal switch. Frequency response ±3 dB, 34 to 100 Hz. Finish textured charcoal gray. Cabinet dimensions 32 1/8"Hx12"Wx15 1/4"D. List price $897.50 each.

### Sundholm Acoustics SL8.0

The SL 8.0 is an 8-inch, two-way, passive nearfield reference monitor using a phase correction plate and premium crossover components, including a gold-plated bi-wire connector. Response ±3dB 40 to 20k Hz. Sensitivity: 89 dB. Maximum SPL: 108 dB. Crossover point: 2.2 kHz. Nominal impedance: 8 ohms. Power handling: 160 watts peak. Finish textured charcoal gray. Cabinet dimensions 15 7/8x12x14 inches (HxWxD). Shipping weight 65lbs/pair. List price $995/pair.
16630 S.E. Round Oaks Court
Milwaukie, OR 97267
503/794-2661; Fax 503/786-1550
www.sundholm-acoustics.com

### Tannoy Ceiling-Mount Subwoofer

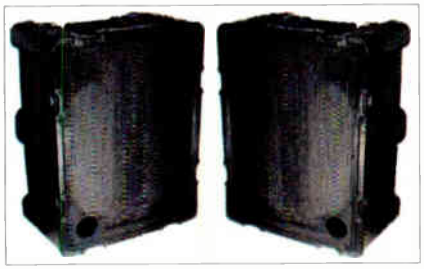
The CMS110B mounts directly into a 2x2 ceiling tile opening to maximize available floor space for revenue and floor traffic. This ceiling-mounted subwoofer provides extended low frequency and impact with 10-inch long-throw transducer, and switchable fixed or variable crossover. $599/ea. Frequency response: 31-150 Hz +3 dB. Woofer diameter: 10 inches. Low-frequency cutoff: -3 dB at 31 Hz, 6th-order tuning vented box. Maximum SPL: Half Space 110 dB peak SPL at 1 m. AC power requirement: 110/120 VAC 50/60Hz. Power Rating: 110 watts RMS.

### Tannoy Reveal Active

The Tannoy Reveal Active, with its 1 1/2-inch front panel, is designed to reduce diffraction and provides the most rigid mounting platform for the drive units. Two 50-watt amplifiers and electronic crossover are matched to a 1-inch soft dome tweeter and a 6 1/2-inch long-throw bass unit that are both magnetically shielded, allowing operation close to video monitors. $449.50/ea. Shielded frequency response: 62-20k Hz. Maximum SPL: 114 dB. Dispersion: 90°. Crossover frequency: 3,000Hz. Amplifier output power: LF 50W rms, HF 50W rms. Low frequency design: optimized bass reflex loaded in 12 litres. Dimensions (HxWxD): 13.4x 8.25x10.25.
Dist. by TGI North America Inc.
300 Gage Ave., #1
Kitchener, Ontario, Canada N2M 2C8
519/745-1158; Fax 519/745-2364
www.tannoy.com

### Technomad Noho C V.5

The Noho C is a fully weatherproof, military-specification, compact two-way loudspeaker for installed or mobile applications requiring the ultimate in reliable, high-performance audio. Measuring only 20x16x10 inches, the Noho C incorporates a proprietary coaxial 1-inch ceramic driver/12-inch cone driver. Other features: three-layer, chemically treated WeatherTech grille, sealed electronics, self-draining cabinet design, optional gasketed clamp-on transport lid, thick rotationally molded cabinet, four stand-mount sockets, MonitorTilt sockets, and PassiveProcessor adjustable HF output. Specs: 300W.RMS, 60-17.5k Hz, 96dB sensitivity, 60x90 dispersion. 12 threaded mounting inserts (yoke, wallmount, etc.). 14 colors.



### Technomad Vernal 15

The Vernal 15 is a fully weatherproof, military-specification, extremely compact two-way loudspeaker for applications requiring the ultimate in reliable, high-fidelity, high-performance audio. Measuring only 9x6x6 inches, the Vernal 15 incorporates a horn-loaded 1-inch ceramic driver and a proprietary 5-inch cone driver. Other features include a three-layer, chemically treated WeatherTech grille, sealed electronics, self-draining cabinet design and thick rotationally molded UV-stable cabinet. Specs: 60W RMS, 95-18.5k Hz, 91dB sensitivity, 120°x120° dispersion. Optional 70-watt multitap transformer, 8 threaded mounting inserts (yoke, wallmount, etc.). 14 colors.
1112 Boylston
Boston, MA 02116
800/464-7757; Fax 617/424-8233
www.technomad.com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### THX CC4 Subwoofer Controller

The THX CC4 is for THX pm3 certified rooms (Professional Multichannel Mixing and Monitoring) and other recording studios and post production facilities involved in 5.1 channel audio mixing, mastering or monitoring. Features include Bass Management, which allows the use of five compact loudspeakers and a subwoofer instead of five large monitors while delivering full frequency response and timbre accuracy. It also offers THX Re-EQ, source switching, individual channel solo, and master volume control functions to speed up production work and ease 5.1 channel monitoring.
P.O. Box 10327
San Rafael , CA 94912
415/492-3900; Fax 415/492-3999
www.thx.com

### TOA H Series Interior Design Speakers

TOA is introducing the new H Series interior design speakers. These speakers deliver high-quality sound and the revolutionary design lets users rotate and aim loudspeaker components without altering the enclosure's external appearance. The H Series speakers are easy to install and come with a push-on, paintable grille for custom matching to any environment.
601 Gateway Blvd Suite 300
S. San Francisco, CA 94080
650/588-2538; Fax 650/588-3349
www.toaelectronics.com

### Turbosound QLight Series

The new QLight Series from Turbosound is a range of application-engineered loudspeaker enclosures designed to serve the corporate presentation, audio visual and theater markets. QLight enclosures use Turbosound's patented technology and feature optional onboard amplification in most models. The first QLight model to be introduced at AES is the TQ-440SP, which is a self-powered bi-amplified 12-inch three-way enclosure that features high-performance integrated amplifiation and system control electronics.

### Turbosound TCS Series

The new TCS Series from Turbosound is a range of 12 loudspeaker enclosures designed to provide system specifiers and contractors with Turbosound's legendary sound quality and reliability in installed applications. Engineered to deliver premium sound quality, and predictable dispersion pattern control, the TCS Series meets the stringent budgetary limitations so common in today's new construction and renovation markets.
2140 W. Greenview Drive
Middleton, WI 53562
608/831-8700; Fax 608/831-7100
www.turbosound.com

### Velodyne Acoustics HGS Series

There are four models in the series: 18/15/12/10 inch. The HGS Series represents the next wave in Velodyne technology, delivering powerful, low-distortion bass from an elegant, ultrasmall black gloss cabinet. The updated servo controlled system is linked to a unique dual tandem voice coil and is driven by a Class-D amplifier that delivers more than 3,000 watts of peak power.
1070 Commercial St., #101
San Jose, CA 95112
408/436-7270; Fax 408-436-6181
www.velodyne.com

### Westlake Audio Lc5.75

A two-way "mini monitor" that offers precise imaging and impressive low frequency response from a small enclosure. An ideal monitor for space-sensitive environments seeking high performance.
2696 Lavery Court, Unit 18
Newbury Park, CA 91320-1591
805/499-3686; Fax 805/498-2571
www.westlakeaudio.com

### Yamaha F25

Dual 15-inch two-way professional loudspeaker system. 15-inch cast frame woofers w/4-inch voice coils. 3-inch titanium diaphragm compression driver, 60°x40° CD-type, long-throw horn. 1,400 W program/2 800 W peak power handling. Easily bi-amipable. 98dB sensitivity. $1,599.
6600 Orangethrope Ave.
Buena Park, CA 90620
714/522-9011; Fax 800/826-3580
www.yamaha.com

## Microphone Preamplifiers

### ART Pro Channel

This pro-quality, tube-based mic/line recording channel combines three independent circuits: microphone preamplifier (Pro MPA), optical compressor (Pro VLA) and parametric equalizer (Tube EQ). In addition, it also includes our new Variable Mu compressor. Features include: selectable attack/release time; adjustable threshold/ratio; output level controls; 70dB of gain: phantom power; 20dB pad; 4-band EQ; selectable Q for two sweepable mid-bands; selectable high/low shelving; 1/4" insert points; backlit VU meter and tube character/gain reduction LED arrays. Price: $799.
215 Tremont St.
Rochester, NY 14608
716/436-2720; Fax 716/436-3942
www.artroch.com

### Audio Technologies Inc. ML 200

Dual microphone-to-line amplifier. Servo-balanced line outputs +22dBm. Switch selection of phantom power and preamp gain for high output microphones and line level inputs. XLR inputs and outputs. $289.
328 W. Maple Avenue
Horsham, PA 19044
215/443-0330; Fax 215/443-0394
www.atiguys.com

### AudioControl Industrial MP-200

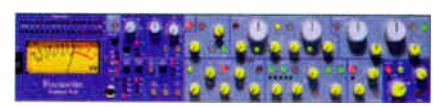
The MP-200 is a compact, portable, battery-powered, 2-channel measurement microphone preamp system with mic and line-level inputs, positive step gain selection switch, built-in digital pink noise generator and a CM-10 measurement microphone. The small size and battery power make it well-suited for computer-based analysis systems.
328 W. Maple Ave.
Horsham, PA 19044
215/443-0330; Fax 215/443-0394
www.atiguys.com

### Cutting Edge Technologies Omnia ToolVox

Full-featured mic processor, designed specifically to work in harmony with on-air broadcast processing. Includes AGC, compressor and noise gate; switchable phase rotation; flexible HP/LP and shelving filters; full parametric EQ; de-esser with psychoacoustically based detection algorithm; reverb from Waves; built-in mic preamp with phantom power; 24-bit converters; simple front panel interface for selecting presets and troubleshooting; networkable remote control facility for configuration, programming, and administration with advanced GUI for parameter adjustments.
2101 Superior Ave.
Cleveland, OH 44114
216/241-3343; Fax 216/241-4103
www.nogrunge.com

### Earthworks Inc. 104 Preamp

The Earthworks 104 Preamp is a 4-channel, 1-space unit with an internal power supply. It features zero distortion technology. By this we mean that distortion and noise are so low as to be for all practical purposes, unmeasurable. Distortion of all kinds is below 1 ppm to 20 kHz. Frequency response is linear and wideband. Each channel has stepped gain and variable gain feeding separate outputs.
P.O. Box 517
Wilton, NH 03086
603/654-6427; Fax 603/654-6107
www.earthwks.com



### Focusrite ISA 430 Producer Pack

Based on Rupert Neve-designed mic-pre/EQ and Class-A VCA technology, the ISA 430 also uses Focusrite's latest dynamic control technology and 24-bit digital connectivity. Retaining the classic look and sound of the ISA 110 and 215, the ISA 430 includes the following: transformer based mic-preamp; ISA 110 parametric EQ; Compressor with Class-A VCA design; Expander/Gate; De-esser; Multiband limiter; Optional 24-bit/96kHz output module with AES/EBU, Toslink and S/PDIF, 44.1kHz, sample rate selection and external word clock. Stereo A/D operation. Analog output stage is the classic Focusrite transformer-based design.



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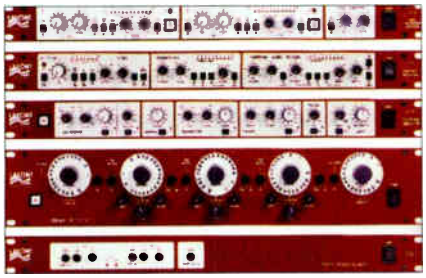
Disributed by Group One,
200 Sea Lane
Farmingdale, NY 11735
516/249-1399; Fax 516/753-1020
www.focusrite.com

### Lafont LP-21 Dual Mic Pre

The LP-21 provides 2 channels of high quality microphone preamplification, designed specifically for post production. The LP-21 delivers an exceptionally clean signal, at very high (75 dB) gain, with a wide frequency response and extremely low noise floor. All symmetrical components are matched to common specifications until optimum performance is achieved. $1,495.



### Lafont LP-22 ADR/Foley processor

The LP-22 is a unique processor designed specifically for Foley and dialog work in film and television post production. It combines a high-gain, (75 dB) low-noise (129 dB S/N ratio) mic preamp and a full dynamics section combines compression, limiting, de-essing, expanding and noise gate $1,495.
Distributed by Sascom,
34 Nelson St.
Oakville, Ontario
Canada L6L 3H6
905/469-8080; Fax 905/469-1129
www.sascom.com

### Langevin/Manley Dual Vocal Combo

Langevin by Manley Laboratories introduces a fully discrete transistor stereo processor that combines two mic preamps, two shelf EQs and two opto-compressors with two VU meters, front panel instrument inputs and phantom power. It is intended as a "biggest bang for the buck" vocal and instrument processor that enables musicians on a tight budget to record great-sounding tracks.
13880 Magnolia Ave.
Chino, CA 91710
909/627-4256; Fax 909/628-2482
www.manleylabs.com

### Millennia Combo Suite

Single channel "combo box" offering twin topology mic preamps, DI, line in, EQ, compression, de-essing, inserts, large analog VU metering, and more. Stunning audio transparency, beautiful new cosmetics, built like a battleship. Introductory priced at $2,495.

### Millennia HV-3D

Four- and 8-channel microphone preamp in a 2U chassis with internal power and high resolution gain controls. Options include 130V B&K mic inputs, 24-bit A/D converters, remote control. Millennia's lowest cost per channel mic amp ($3,995 for eight channels). Stunning new cosmetics. Illuminated pushbutton switching. Massive construction.
4200 Day Spring
Placerville, CA 95667
530/647-0750; Fax 530/647-9921
www.mi-media.com

### PreSonus MP20

The MP20 is a wonderful sounding 2-channel mic preamp featuring high quality audio transformers, dual servo gain stage and twin FET, Class A discrete input buffers. Left/Right summing bus allows for realistic stereo imaging. Servo balanced inserts support use of external processing and the front panel provides a 1/4" instrument input. Proprietery IDSS control adjusts harmonic distortion for tube circuit emulation. High output headphone amplifier and internal power supply. Retail: $649.95.

### PreSonus VXP

VXP combines a sonically superior mic preamp with a preset compressor, a de-esser with variable threshold and frequency and a downward expander with variable threshold and ratio. PreSonus completes the VXP channel strip by including a 4-band Semi-parametric EQ featuring low/high shelving, variable low/ high-mids, narrow Q select and a highpass filter. Separate peak limiter on the output section. Optional 24-bit digital output card. Retail: $699.95.
501 Government St.
Baton Rouge, LA 70802
504/344-7887; Fax 504/344-8881
www.presonus.com

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### Prism Sound Maselec MMA-4

Available now is the new Maselec MMA-4 4-channel mic preamplifier. The MMA-4 is of the usual high-standard now expected from products in the Maselec Master Series and has an extremely clean and transparent signal path. Four independent high-quality microphone preamp channels each having: Gain switchable from 0 dB to +60 dB in 3dB steps. Easy-to-read PPM bargraph level meter. Switchable high current +48V phantom power. Switchable phase reverse. Cut switch. Electronically balanced XLR analog input/output.
William James House
Cambridge, UK CB4 4WX
44/223/424-988; Fax 44/223/425-023
www.prismsound.com

### Sound Devices MP-1 Mic Preamp

The MP-1 is a high-bandwidth, portable, battery-powered mic preamp with phantom power ideal for critical 96k/24 radio, television and film production applications. Features include 48 volt and 12 volt phantom power, two position highpass filter, dual-stage peak limiter, and transformer-balanced input and output. Powered by two AA batteries with over 24 hour battery life (without phantom). List: $420.
300 Wengel Dr.
Reedsburg, WI 53959
608/524-0625; Fax 608/524-0655
www.sounddevices.com

### Summit MPE-200S Preamp/EQ

Summit Audio introduces the MPE-200S mic preamp and 4-band EQ, featuring a classic, discrete ClassA transistor and transformer coupled design with unique implementation of storage and reset capabilities allowing comparison of up to 25 settings in memory, copying of settings between units and MIDI control. The performance, specifications and size of the MPE-200S Slave is identical to the MPE-200 Master.
2636 South Rodeo Gulch Road, Unit C.
Soquel, CA 95073
831/464-2448; Fax 831/464-7659
www.summitaudio.com

### Vintech Audio Preamp

Housed in a 2-rackspace chassis, the Vintech Audio Preamp is a 2-channel unit based on a transformer balanced, Class A, all-discrete design using Neve 1272 components. List price is $1,595.
4905 Reagan Ave
Seffner, FL 33584
Phone/fax 1-877-4-mic-pre
www.vintech-audio.com

## Microphone Products

### ADK Tube Microphone

Audio Deutchkraft will unveil a high performance tube mic for studio applications. Features include a large-diaphragm capsule and infinitely-variable polar patterns.
P.O. Box 82282
Portland, OR 97282
503/772-3007; Fax 503/772-3097
www.audiodk.com

### AKG C3000B

Following the popular C3000, the C3000B condenser mic is the latest addition to AKG's family of true 1-inch large-diaphragm microphones. Features include a carefully tuned supercardioid polar response, a 10dB pre-attenuation pad, low-cut filter and advanced circuit design for improved specifications. The C3000B is well-suited for home and professional recording as well as sound reinforcement. An H100 elastic spider suspension is included. Price: $499.

### AKG Conferencing System

The AKG CS-1 Conference System comprises a CSBU1 Base Station that controls up to 100 microphone stations at a time. The CSBU1 is compatible with any recording and playback devices, amplifiers, mixers. The CS-1 features two different types of microphone stations: CSCU Chairman Station and CSDU Delegate Station. These microphone stations can be directly connected together in any order with the supplied cable. Each station uses AKG's modular Discrete Acoustics capsules.
1449 Donelson Pike
Nashville, TN 37217
615/360-0499; Fax 615/360-0275
www.akg-acoustics.com

### Alesis AM30 and AM40

GT Electronics, a division of Alesis, adds two new mics to its growing AM series. The AM30 and AM40 are slender, front-addressed mics designed for close miking of acoustic instruments and amplifiers. The AM30 uses Class A FET electronics, and the AM40 features tube amplification circuitry. The AM30 (MSRP $499) and the AM40 ($799), like the four other mics in the AM series, feature a 3-micron gold evaporated mylar diaphragm for increased sensitivity.

### Alesis AM11

Alesis expands its GT Electronics line with the AM11, a large-diaphragm condenser model based on Class A FET electronics. The AM11 features a 6-micron gold-evaporated 1-inch diaphragm, -10 dB pad and bass roll-off switch. Retail: $399.
1633 26th St.
Santa Monica, CA 90404
800/5-ALESIS; Fax 310/255-3401
www.alesis.com

### Applied Microphone Technology ERT

The ERT is designed specifically for the needs of hand percussion players. This new mic addresses some challenges hand percussionists face, such as reproduction of subtle low frequencies, mic placement, durability and noise handling. The unique design allows its clamp to accept rope and both tension rods and cable without movement or affecting the timbre of the instrument. The ERT features an LED power indicator and is terminated with an XLR connector for use with phantom power.
PO Box 33
Livingston, NJ 07039
908/665-2727; Fax 973/994-5139
www.appliedmic.com

### Astatic 203SM

This electret condenser suspended choir microphone is ideal for church choirs, orchestras, concerts, stage or other critical applications. All electronics are located externally in a housing that also contains the 3-pin XLR connector and operates on standard 9-52 volt phantom power. Its wide, flat response provides a superior natural, transparent sound quality. Cardioid pattern minimizes feedback when used close to sound reinforcement speakers and monitors, while rejecting unwanted off-axis sounds.

### Astatic 230 VP

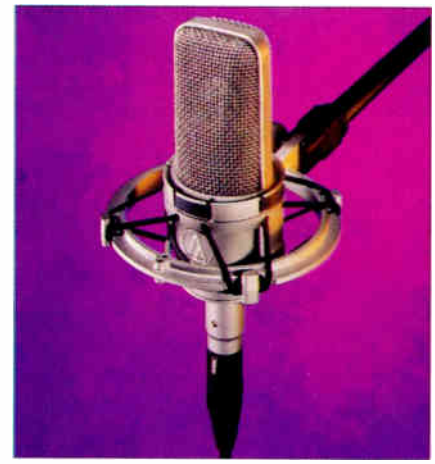
Variable pattern condenser boundary microphone offers cardioid, supercardioid, figure-8 and omni patterns. An LED in the switch bezel indicates when the microphone is on. Its pair of 200 Series electret capsules provides unsurpassed audio quality with high gain and low noise floor. Switchable 12dB/octave highpass filter standard.
2550 SOM Center Road, Suite 250
Willoughby Hills, OH 44094
440/943-0110; Fax 440/943-0104
www.cadmics.com

### Audio Engineering Associates R44S

The R44S functional "RCA 44" prop shell is a duplicate of the vintage RCA 44 ribbon microphone. Internal shock-mounted Rycote clips allow modern microphones to be easily hidden inside. A 2-meter cable connects the internal mic connector to the outside world. It is available in the standard range of RCA finishes. Major R44S parts interchange with original parts for repair and restoration projects.

### Audio Engineering Associates R44CX

The new R44 CX is a high-output version (+6db) of AEA's RCA 44 replica using NOS ribbon material. Current users of AEA's R44 series include Sony Records, Shawn Murphy, Oasis, Steve Kempster, Brian Setzer Orchestra and John Kurlander.
1029 N. Allen Avenue
Pasadena, CA 91104
626/798-9128; Fax 626/798-2378
www.wesdooley.com



### Audio-Technica AT4047/SV

The new AT4047/SV provides the sonic characteristics reminiscent of early FET studio microphones and delivers the consistent performance and reliability expected from A-T's 40 Series. Designed for professional recording and critical applications in broadcast and live sound, this contemporary replication of vintage condenser technology offers exceptionally low self-noise, wide dynamic range and high SPL capability. It features large, gold-plated dual diaphragms, floating-construction element mounting, a switchable 80Hz highpass filter and 10dB pad, and a timeless silver matte finish.



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### Audio-Technica AT895

The AT895 adaptive-array microphone systems provide a new standard in audio acquisition with the revolutionary DSP-controlled five-element microphone array. Unique, groundbreaking optimization of acoustic, analog and digital design produces unmatched directional performance with a maximum off-axis rejection of up to 80 dB. The AT895 functions equally well for handheld interview use or long-range sound pickup—in the field, in the studio or in security operations. Available as the AT895/RK Remote Kit or AT895/MK Mount Kit.
1221 Commerce Drive
Stow, OH 44224
330/686-2600; Fax 330/686-0719
www.audio-technica.com

### Audix ADX-50

The ADX-50 is a pre-polarized condenser microphone for live, studio and broadcast applications. Characterized with a cardioid pickup pattern and a smooth uniform response over a frequency range of 40 to 20k Hz, the ADX50 is precision-machined from solid brass and has a low reflective black e-coat finish. Low noise electronic circuitry and balanced output allow interference-free performance even with long cable runs. The ADX50 is roadworthy and capable of reproducing 132dB SPLs.

### Audix DP3

The DP3 is a complementary 6-piece microphone kit designed for drum/percussion miking for both studio and live sound applications. The highly acclaimed D series employs VLM (very low mass) and sub-impulse technology, resulting in a phase-coherent representation of the instrument in space and time. The DP3 uses a D1 for snare, two D2s for toms and a D4 for kick drum. Overheads, cymbals, goodie table, etc. are covered by two newly developed ADX-50 cardioid condenser mics. List: $1,755.
9400 SW Barber Street
Wilsonville, OR 97070
503/682-6933; Fax 503/682-7114
www.audixusa.com

### Countryman Isomax B6

Smaller than the head of a paper match, the B6 hides in plain sight. Forget about burying microphones under clothing with rubbing noise and muffled sound. Placing the B6 can be as quick and easy as pushing it through a buttonhole. The B6 has replaceable protective caps that shrug off sweat and makeup. Available in five colors and three degrees of high-frequency boost, these caps easily customize the appearance and response of the B6.
417 Stanford Ave
Redwood City, CA 94063
650/364-9988; Fax 650/364-2794
www.countryman.com

### Crown CM-700 Matched Pair

Crown is now offering its CM-700 cardioid condenser professional recording microphones in matched pairs. Each pair is guaranteed to be matched in sensitivity and frequency response within 1.5 dB. Several audiophile touches enhance the CM-700's pristine sound quality, including an ultralight diaphragm, humbucking transformer, polycarbonate capacitors and a gold-plated, three-pin connector. The pair also features a wide frequency response of 30 to18k Hz, smooth off-axis response and low self-noise of 21 dBA.
1718 W. Mishawaka Rd.
Elkhart, IN 46517
219/294-8200; Fax 219/294-8329
www.crownaudio.com

### CTI/CAD ME F3

The ME F3's advanced technologies provide vocal and instrument transduction with clarity and outstanding signal integrity. Featuring CAD's revolutionary Equitek servoed headamplifier and Optema Series™ 1.1-inch gold-sputtered diaphragm capsule, the ME F3 delivers extraordinary frequency response, low self-noise and high SPL capability.

### CTI/CAD ME V4

This end-address mic displays superior head amp design and is optimized for broadcast, live performance and recording. The ME V4 integrates the same Optema Series™ 1.1-inch gold-sputtered diaphragm capsule and Equitek servo condenser technologies found in the ME F3, with the additional benefits of CAD's pioneering VX2 valve technologies, resulting in the rich harmonic overtones associated with the very best classic tube microphones, vintage or new.
2550 SOM Center Road, Suite 250
Willoughby Hills, OH 44094
440/943-0110; Fax 440/943-0104
www.cadmics.com

### Curtis Technology AL-2

Curtis Technology offers the AL-2 stereo microphone system, a matched pair of tube mics with associated rack-mount power supply. Designed to be used as a pair, the mics feature an elongated cardioid pattern. They are flat from 20 to 30k Hz and accept maximum input levels of 125 dB SPL. Additional features include 22mm diaphragms, hand-picked audiophile-grade matched 12AU7 tubes, close-tolerance metal film resistors and special capacitors. Price for stereo AL-2 system, with two mics, cables, shockmounts, case and power supply: $2,995.
129 S. Phelps Ave. #526
Rockford, IL 61108
815/399-8453; Fax 815/399-2559
www.curtis-technology.com

### DPA Microphones Type 3541

The Type 3541 is a complete omnidirectional mic kit for high-quality soloist recordings such as vocals, strings or wind instruments. The kit includes suspension mount, windscreen, pop filter, DPA mic amp, Type HMA4000 and mic cable. High-sensitivity, enhanced SPL handling capability and environmental stability. $6,000/kit Cartridge Type: 1-inch condenser with stainless steel diaphragm. Principle of operation: Frequency range: 10 to 20k Hz +2 dB, with a 4 to 6 dB soft boost at 8 kHz. Sensitivity—Tube preamp: Nominally 85 mV/Pa +2dB. Solid-state preamp: Nominally 90mV/Pa +2dB. Equivalent noise level: A-weighted. Tube preamp: Max 10dB(A) re. 20µPa. Solid state preamp: Max 7dB(A) re.20µPa Max SPL - 144dB SPL peak before clipping.
Dist. by TGI North America Inc.
300 Gage Ave., #1
Kitchener, Ontario, Canada N2M 2C8
519/745-1158; Fax 519/745-2364
www.dpamicrophones.com

### Earthworks SR77

SR77 cardioid, 30 to 30k Hz (±1.5dB @ 6-inches), stealth black finish. Very popular among concerts tapers. Retail $599/each, $1,300 for matched pair in cherry box. Excellent for drums, guitar, voice, flute, sax, piano and many other applications, especially choirs.

### Earthworks SR78

SR78 hypercardioid, 30 to 30k Hz (±1.5dB @ 6-inches), stealth black finish. If you like hypercardioids you will love the SR78. The pick-up pattern is very open and uniform across the entire front hemisphere with incredible rejection from the rear. The SR78 is superior for almost all ap-

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plications. Retail $699, $1,500 for a matched pair in a cherry box.
P.O. Box 517
Wilton, NH 03086
603/654-6427; Fax 603/654-6107
www.earthwks.com

### Marshall MXL 2001

The Marshall MXL 2001 is a large-capsule condenser microphone, the first in the company's new series of recording mics. The MXL is machined brass with a gold-sputtered diaphragm. Frequency range is 30 to 20k Hz. Max SPL is 130 dB with a S/N ratio of 80 dB. Impedance is 200 ohm. Optional accessories include shock-mount and hard case. Price $199, including hard-mount.
P.O. Box 2027
Culver City, CA 90231
310/390-6608; Fax 310/391-8926
www.mars-cam.com

### Neumann KM180 Series

The Neumann KM180 Series consists of three compact, matte black or silver nickel miniature microphones. Two new models, the KM183 omnidirectional and KM185 hypercardioid join the KM184 cardioid unit, providing a variety of pickup patterns to handle diverse recording and live sound applications. Features transformerless circuitry. Output is balanced and phantom (48V) powered. Featuring the newly developed DC-to-DC converter, the microphones are not affected by the possible unbalanced inputs of equipment such as DAT recorders. Low noise and an increased sound pressure handling capability of up to 138dB. KM183 is $749; KM184 is $729; and the KM185 is $749.
1 Enterprise Drive, PO Box 987
Old Lyme, CT 06371
860/434-5220; Fax 860/434-3148
www.neumann.com

### Shure Beta 98D/S

Miniature condenser microphone designed expressly for toms, and featuring a maximum SPL rating of 160 dB and a specially tailored frequency response. Its consistent supercardioid pattern ensures excellent isolation and maximum gain before feedback. Includes a detachable phantom-powered preamp to facilitate rapid cable/preamp replacement or repair, and Shure's redesigned A98D Drum Mount, which allows mounting directly to the drum room to eliminate stage clutter. A protective, positive-locking windscreen is also included. List: $440.
222 Hartrey Ave.
Evanston, IL 60202-3696
847/866-2553 or Fax 847/866-2232
www.shure.com

### SoundField 5.1 Decoder

Allows recording and broadcast engineers to facilitate a complete 5.1 mix from a single, multiple-element microphone. The existing SoundField ST250 and MKV systems deliver a special, B-format output comprising four outputs representing X,Y, Z and W to define a complete three-dimensional space. SoundField's new 5.1 Surround Sound Decoder will translate X, Y, Z and W into L,C,R, LR, RR and mono subwoofer output. The combined capabilities of the existing SoundField ST250 and MKV microphone systems, added to the SoundField Surround Decoder, delivers 5.1, ProLogic or other surround formats from a single microphone source.
Dist. by Transamerica Audio Group
2721 Calle Olivo
Thousand Oaks, CA 91360
805/241-4443; Fax 805/241-7839
transaudiogroup.com

### Stedman Corp. PS100 Proscreen

The Stedman PS100 is an all-metal 4/6" dia. pop screen that is effective at eliminating bursts on vocals. The PS100 may be washed between use, includes a lifetime warranty and is $49.

### Stedman Corp. TR1 Transonic

The Transonic TR1 is a dynamic microphone with two response curves selectable via recessed switch. The two-position switch allows selection of flat response for recording and an enhanced position for live applications. The TR1 includes a rubber shock clip assembly to reduce vibration transfer to the mic. Two-year warranty. List: $159.
4167 Stedman Dr.
Richland, MI 49083
616/629-5930; Fax 616/629-4149
www.stedmancorp.com

## Mixing Consoles

### Allen & Heath WZ20S

The WZ20S has four mic/line inputs, with six auxes and acclaimed 4-band (two-sweep), MixWizard EQ. It has a generous eight stereo inputs, each with 4-band EQ and six aux sends. The stereo channels have dual A and B inputs with phono and TRS balanced jacks, respectively. Sources A and B can be selected individually or mixed together with independent gain control. The WZ20S provides a massive 40 inputs to the mix.
8760 S. Sandy Parkway
Sandy, UT 84070
801/568-7660; Fax 801/568-7662
www.allen-heath.com

### Amek 9098i

The 9098i designed by Mr. Rupert Neve is the latest in analog console technology. Available in a number of frame sizes, the 9098i provides 16 aux sends and up to 144 inputs with motorized faders in mix applications. Class A circuitry is used throughout and extended audio bandwidth to 200 kHz insures sonic excellence. Custom transformers are fitted to all track, stereo and main outputs and every audio access point is balanced. Pricing begins at under $500,000.

### Amek DMS Plus

The Amek DMS Plus is a fully modular totally integrated Digital Mixing System incorporating up to 32 tracks of seamless hard disk storage and waveform editing. Several versions intended for music recording and post-production offer up to 96 mix inputs w/24-bit I/O and 32 buses with multi-format panning and monitoring. Amek Supertrue automation provides dynamic and snapshot automation of all console settings and moving faders are standard. Pricing begins at under $100,000.
1449 Donelson Pike
Nashville, TN 37217
615/360-9488; Fax 615/360-0273
www.amek.com

### AMS Neve Libra Post

Libra Post harnesses the power and functionality of the company's flagship Digital Film Console (DFC) for the wider world of video post production. Optimized for a sin-

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# MEET DIGICART'S® NEW BIG BROTHERS.

360 Systems' new TCR recorders extend a tradition that has made DigiCart a favorite in television broadcast.

We've added time-code, 24-bit audio, and almost unlimited record-ing time. Not to mention 9-pin serial control, VTR emulation, and the instant synchronization you'd expect from a next generation design.

**360 Systems' TCR™**
*The next generation production recorder.*
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TCR recorders provide a great upgrade path from tape. Just attach your existing connectors to the rear-panel, drop it in and pick up the pace.

Two models let you match TCR's size to your studio needs: Our 4-track TCR4 provides the extra audio tracks that DATs and VTRs usually don't have. Plus, the speed and accuracy of a hard disk system. And with TCR, routine maintenance is a thing of the past.

The TCR8 recorder is positioned for the demands of today's taping, post-production, and sports play-out. Its eight tracks are also an ideal choice for the surround-sound requirements of DTV.

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*The broadcast standard for quality and reliability in digital audio play-out.*

Our new family of TCR recorders delivers the broadcast feature set, reliability, and sensible price you've come to expect from 360 Systems.

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360 Systems®

PROFESSIONAL DIGITAL AUDIO

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**SEE US AT AES BOOTH #1066**

For more information call (818) 991-0360 / Fax (818) 991-1360 / e-mail: info@360systems.com / Website: www.360systems.com

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gle operator, Libra Post is available in frame sizes of 12, 24, 36 or 48 faders, providing control of up to 96 fully-featured channels of digital audio. Format flexibility, from mono or stereo up to 8-channel surround, is provided, while a dedicated monitor panel provides inserts for a surround matrix/processing.
Billington Road
Burnley, Lancashire
United Kingdom BB11 5UB
44/1282/457-011; Fax 44/1282/417-282

### API Mini Legacy

A cost-sensitive API Legacy! A full featured API console with quality and function that are truly API, yet available to a wider range of studios.
9017-C Mendenhall Ct.
Columbia, MD 21045
410/381-7879; Fax 410/381-5025
www.apiaudio.com

### Audient ASP 8024

The new ASP 8024 mixing console from Audient is a full-feature, 24-track recording console that reflects Audient's core design philosophy of providing superior sound quality from optimized analog designs at highly competitive pricing. Designed by industry veterans Dave Deardon and Garath Davies, the ASP 8024 provides 4-band splittable EQ facilities, 24-track busing, long and short faders, 14 aux buses, 8 sub groups, comprehensive metering, accommodation for four pairs of control room monitors and a full featured stereo bus compressor. The ASP 8024 offers these impressive features and retails at only $27,750 for a 36-input desk.
2140 West Greenview Drive
Middleton, WI 53562
608/831-8700; Fax 608/831-7100

### Audio Technologies Inc. MX101

The MX101 Mono Field Mixer is a low-cost addition to its NanoAmp series of studio and field mixers. The MX101 combines three low noise Mic/Line inputs with phantom power, switchable low cut filters, limiter and headphone cue with a slate mic and tone generator and bright 3-color LED meter feeding a clean +22dBm XLR output in a tiny 1.25-pound package with several easily replaceable and rechargeable battery modules.
328 W. Maple Ave.
Horsham, PA 19044
215/443-0330; Fax 215/443-0394
www.atiguys.com

### Audio Toys Inc. Paragon II Monitor

ATI will feature the highly successful Paragon II monitor mixing console as well as an extremely compact version. Dubbed the "unplugged" Paragon, it provides 48 inputs in a frame size of less than 4.5 feet. With up to 20 stereo output mixes, VCA groups, output EQ, moving fader automation and 24 gates and compressors, it's the ultimate small tour/broadcast mix console. An extender frame is also available to increase channel capacity.
9017-C Mendenhall Ct.
Columbia, MD 21045
410/381-7879; Fax 410/381-5025
www.audiotoys.com

### Cadac C-Type Location Recording Console

Unveiled at AES, C-Type is the first Cadac recording console in production in 21 years, and is designed to provide location recording engineers with the purest achievable signal path. Rivalling the facilities of full-sized studio consoles, the C-Type offers sophisticated features for 2.0, 4.0 and 5.1 surround recording and monitoring and is available with 12, 16 or 24 input channels which can accommodate mic and line inputs, and includes 3-band EQ with HP.
Clive Green & Co. Ltd
One New Street, Luton, Bedfordshire
England LU1 5DX
44/1582/ 404-202; Fax 44/1582/412-799
www.cadac-sound.com

### Crane Song 8-Channel Preamp/Mixer

Crane Song will introduce a high-quality 8-channel Class A mic preamplifier/mixer with two types of digital outputs: stereo and 8-channel. The stereo mode is for recording engineers who do live stereo recordings and want a very clean audio path. The 8-channel mode is for use as an analog front end for DAWs, digital mixers and modular digital recorders. A digital signal processor will provide tape emulation. Sample rates to 96 kHz.
2117 E. 5th St.
Superior, WI 54880
715/398-3627; Fax 715/398-3627
www.cranesong.com

### Fostex Corp. VM 200

Model VM 200 is a 20 x 8 digital mixer with moving fader automation, 100-scene memory, Fostex advanced signal processing, 32-bit processing and mixing, 4-band parametric EQ, word I/O, ADAT and S/PDIF digital I/O. Retail: $1,499.
15431 Blackburn Ave.
Norwalk, CA 90650
562/921-1112; Fax 562/802-1964
www.fostex.com

### Geoffrey Daking Inc. All-Discrete Transformer Coupled Console

The new console is all discrete and transformer coupled. Available in buckets of 16 inputs, it uses the S2270 mic-pre/EQ as the center of its audio path, and buckets may be limited to create any size console. Each input has 8 mono EFX sends with pre/post and mute, 8 stereo sends and 24 multi buses.
2401 Pennsylvania Ave. #914
Wilmington, DE19806
302/658-7003
www.daking.com

### Graham Patten D/ESAM Digital Mixers

New D/ESAM digital audio edit suite mixer. New Model 8000 surround sound, 8 bus mixer.
PO Box 1960
Grass Valley, CA 95945
530/273-8412; Fax 530/273-7458
www.gpsys.com

### Harrison digital.engine

digital.engine is the name of Harrison's digital signal processing core for its MPC and SeriesTwelve console. Designed and developed to integrate with all existing Harrison SeriesTwelve and MPC Control surfaces, the digital.engine allows boards to function as fully digital, analog or hybrid consoles. Processing is 40-bit, 96kHz, with up to 576 channels with full processing, 136 buses, sub-millisecond console-wide latency. Up to 1,344 inputs and 1,344 outputs provide unmatched routing and monitoring capabilities.

### Harrison LPC-Live Performance Console

The automated LPC (Live Performance Console) applies Harrison's technological leadership and rich history of innovation in console automation to a large-scale sound reinforcement console design with an extremely small footprint. The LPC's control surface and signal path provide a comprehensive automated mixing solution for theater and large venue sound reinforcement applications. By providing automation and surface design technology previously available only to film, post-production and broadcast, Harrison's LPC advances the state-of-the-art in sound reinforcement consoles.

### Harrison TV5.1

Designed for surround broadcast applications, the TV5.1 audio broadcast console provides the advanced features necessary to transition broadcasters into the era of DTV. Frame sizes range from 24 to 64 modules. All inputs have 4-band parametric EQ, high- and low-pass filters, four mono and two stereo aux sends, stereo or 5.1 Surround panning and selectable patch points. Completely modular, systems are customizable to fit the needs of live and surround broadcast applications.
7104 Crossroad Blvd., Ste. 118
Brentwood, TN 37027
615/370-9001; Fax 615/370-4906
www.glw.com

### Intelix AVM Audio-Leads-Video Matrix Mixer

Externally controlled, mic or line level inputs, VCA audio matrix mixer/250MHz video switcher in a single chassis. Features include Windows 95/98 software for setup and live control, RS-232 serial control of crosspoints and/or 64 user presets, Vertical interval switching, multiple video formats compatible. Each includes eight mic/line channels standard; more optional.
8001 Terrace Avenue
Middleton, WI 53562
608/831-0880; Fax 608/831-1833
www.intelix.com

### Jim Gamble Associates DCX Series

DCX Showtime, 24 channels, 48 mic, 48 line inputs. DCX Event 40, 40 channels, 80 mic, 80 line inputs. DCX Event 60, 60 channels, 120 mic, 120 line inputs. Each with eight stereo subgroups, 16 stereo AUX, eight stereo matrixes, flat from 1 to 200k Hz, complete patchbay, XLR, Ramlatch computer controlled over 10BaseT, 12,435 on-screen controls, 3-foot-square workstation area, saves up to 30 seats in the audience.
890 Ward Creek Blvd.
Tahoe City, CA 96145
530/583-0138; Fax 530/583-5603
www.gambleboards.com



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### Mackie PPM Mixers

Mackie PPM Professional Powered Mixers have been designed for small-to-medium club bands, rehearsal rooms, club PA systems, houses of worship and corporate AV. FR Series High-Current, Fast-Recovery power amps are inside every PPM Powered Mixer. Massive toroid transformers and huge storage capacitors can run all night into brutally low impedances. 16 Enhanced Multiplication and Accumulation (EMAC) effects presets provide outboard studio-quality digital effects. Rugged composite injection-molded chassis withstands abuse. Three mono and two stereo models are available. Price: $599 and up.
16220 Wood-Red Rd. NE
Woodinville, WA 98072
425/487-4333; Fax 425/487-4337
www.mackie.com

### Manley Laboratories 16/2 Tube Mixer

Responding to the needs of pro workstation users, Manley Labs introduces its 16/2 Tube Mixer. This 16-channel, no-frills mixer built around superb-sounding channel electronics and Manley's vacuum tube summing system includes mic preamps, post-fader outputs, mute buttons and in-place solo buttons, besides basic mix and pan functions. It also has stereo tape and monitor outputs plus two large VU meters.
13880 Magnolia Ave.
Chino, CA 91710
909/627-4256; Fax 909/628-2482
www.manleylabs.com

### Miles Technology Paging Module

For use in Miles Technology amplifiers, MPR-P is a complete paging mixer with a microphone input, four stereo music inputs, a 2-bus mixer, remote volume control and up to six power output channels, all in one compact unit. DIP switches allow setup for each of its six outputs to receive any combination of paging and mix-bus signals. Page ducking can be enabled for one or both of the mix buses. List: $150.
1826 S. Third St.
Niles , MI 49120
800/280-8572; Fax 616/683-4499
www.milestech.com

### Nady Systems RM 1602 Mixer

Featuring low noise and transparent audio, this 16-input/2-output rackmount or desktop configurable mixer has four assignable subgroups, eight channel inserts, 3-band EQ with sweepable mids per channel (15 dB boost/cut), headphone out and talkback mic (both with dedicated controls), three aux sends, four stereo effects return, monitor send, 12 LED L/R output meter display, phantom power, mutes and solos, balanced XLR and 1/4" TRS jack outputs, power, clip, solo and mute LED indicators. Price: $859.95.
6701 Shellmound St.
Emeryville, CA 94608
510/652-2411; Fax 510/652-5075
www.nadywireless.com

### Oram Pro Audio Project 24

The Project 24 range of Oram consoles replaces the BEQ Series 8, used by many smaller studios and applications such as post-production and Foley. An analog console of supreme quality featuring individual modules and the same high quality mic pre used in all the Oram range. The project music studio gains the facilities of eight subgroups assignable to 24 outputs and with full 24-track monitoring. Two channels of Hi-Def EQ Magic and Sonicomp compression are features of the console mastering module. Manufactured in England to the highest standards using surface mount technology. Price: BEQ Project 24 from $24,750.

### Oram Pro Audio Series 48

The largest in the range of Oram consoles, the production model Series 48 console will be the center of the Oram stand. The Series 48 is a 48-bus digitally controlled analog mixer, affording the sound and feel of a true multitracking board, but with the flexibility of real-time automation of every function. The unique system developed by Oram, TOR (Total Operational Recall) is at the heart of this innovative product. All products are manufactured in England to the highest standard using Surface Mount Technology. Contact us for detailed brochure. Prices: BEQ48-24 $199,500. BEQ48-48 $292,640. BEQ48-60 $365,800. BEQ48-72 $438,960.
The Old Forge, Hook Green
Meopham, Kent
United Kingdom DA13 0JE
44/1474/815-300; Fax 44/1474/815-400
www.oram.co.uk

### Peavey AM4 Mini Automixer

A problem solver for churches, lecture halls and other facilities, the AM4's gain computer automatically reduces the gain of active mics to prevent feedback as additional mics are turned on. The AM4 also eliminates the swoosh-

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ing sound occurring when someone speaking into a wireless lapel mic moves near a podium mic. Two front panel mute switches avoid the difficulty of locating the tiny mute switch on wireless transmitters. Send and return jacks allow connecting an external graphic EQ to further reduce feedback and its small size permits installation with the sound system or in a podium for easy user access to the mute controls. Price: $259.99.
711A Street
Meridian, MS 39301
601/483-5365; Fax 601/486-1278
www.peavey.com

### Pioneer DJM-300 & DJM-300S

The DJM-300 and DJM-300S (same as DJM-300, just a silver model) are for DJs who need a very simple mixer. It still offers two channels with two inputs each, a mic channel, Auto BPM counter and the very popular Fader Start Play (when connected to the Pioneer CDJ Series). Both the DJM-300 and DJM-300S are ideal for those who are looking for a compact unit and who don't require many inputs. Price: $549.

### Pioneer DJM-500

The DJM-500 top-of-the-line DJ mixer offers, among others things, Auto BPM counter, onboard effects and the very popular Fader Start Play (when connected to the Pioneer CDJ Series). With all these features, the mixer still remains very user friendly. Price: $1,239.
2265 E. 220th St.
Long Beach, CA 90810
310/952-2108; Fax 310/952-2100
www.pioneerusa.com

### Oz Audio Headphone Monitor Mixer

The Qmax headphone system provides eight individual 8-channel headphone mixes for studios or in-ear stage monitoring and consists of a CR-8 master unit and up to eight SR-8 headphone/monitor/mix units, with 100mm faders, aux send for the on-board digital effects, talkback mic, two headphone outputs with separate amps and a phase reverse switch, which can be used to combine any input with a submix track to cancel any individual feed out of the headphone mix. All are linked via standard DB25 cables.
1102 Bonneville Ave, Unit B-2
Snohomish, WA 98290
360/568-3636; Fax 360/568-9747

### Solid State Logic SL 9000J V4

The legendary SL 9000J Series console just got better with the release of Version 4 software, which adds significant power to the console through new and enhanced features. V4 software focuses on additional machine control features. Timecode slave operation is tightened and, with further development of modular and disk based multitrack systems, V4 has optimized 9-pin serial control to allow closer integration of this emerging technology into the recording and mix process. Templates, version identification and screen displays are all newly revised.
Spring Hill Road
Begbroke, Oxford
United Kingdom OX5 1RU
44/186/584-2300; Fax 44/186/584-2118
www.solid-state-logic.com

### Sony Oxford Version 2.0

Sony is now delivering the Version 2.0 update for the OXF-R3 Oxford digital audio mixing console. This major update includes: an increase from 72 to 96 channels; the addition of three new EQ types and two new compressor types; GML-8200 EQ and GML-8900 compressor emulation plug-in options; enhanced multiformat operation with automated motorized joysticks and multiple record stems; MIDI capability; dynamic automation of all useful controls.
1 Sony Drive
Park Ridge, NJ 07656-8003
201/358-4197; Fax 201/358-4907
www.sony.com/proaudio

### Soundcraft Series Four

The new Soundcraft Series Four console is a fully modular, compact console available in 24, 32, 40, and 48 channel versions, each with an additional four stereo mic/line inputs with full EQ. The console features eight VCAs, eight mute groups and integral Showtime Automation. Four-band EQs on each input include two fully parametric mid bands. There are ten auxes, four of which are mono/stereo switchable with direct access to the built-in 16 x 8 matrix.
1449 Donelson Pike
Nashville, TN 37217
615/360-0471; Fax 615/360-0273
www.soundcraft.com

### SoundTech PC1650D

The SoundTech PC1650D is a stereo powered mixing console with 8 mono mic/line channels. The PC1650D has 128 digital effects and an active crossover. Each channel has solo/one capabilities. The microphone channels have a 3-band sweepable EQ. The master section has a 9-band graphic EQ. We use IsoKnobs to eliminate horizontal and vertical impact damage. The power output of the PC1650D is 250 watts per channel at 4 ohms.

### SoundTech ST3242

The SoundTech ST3242 has 24 mono mic/line channels, 4 stereo line channels and 4 buses. All faders are ultra-smooth 100mm. Each mic/line channel has a 75Hz low-cut switch, variable gain, 3-band sweepable EQ, solo and mute switches and four aux sends (2 switchable). The microphone preamps are ultra quiet for critical listening situations. All SoundTech mixers use IsoKnobs to eliminate horizontal and vertical impact damage to the internal circuitry.
Distributed by Washburn USA
444 East Courtland St.
Mundelstein, IL 60060
847/949-0444; Fax 847/949-8444
www.washburn.com

### Soundtracs DS-3 Digital Console

This 96-channel digital production console features 96 6-band equalizers, 96 dynamics sections, 25 motor faders, 24-bit A/D conversion, and 32 output buses, each with limiter, stereo, LCRS and 5.1 formats. DS-3 also features 32x8 monitor matrix with TFT touch screens, full dynamic automation, dual talkback system, comprehensive timecode facilities, extensive sync systems and 32-bit floating point DSP.
200 Sea Lane
Farmingdale, NY 11735
516-/249-1234; Fax 516/249-4854
www.soundtracs.com

### Spirit by Soundcraft 328 Interfaces

Spirit introduces three new interface boxes for use with the Digital 328 mixer. The AES/EBU Interface allows Pro Tools or multiple AES/EBU users to connect to the 328 in the digital domain. The Analog Interface permits analog multitracks or extra inputs to be connected to the console. And, with two mic/line interface boxes, the Digital 328 becomes a fully automated 32 mic/line channel console. Boxes connect to the console via its TDIF ports.
4130 Citrus Ave., Ste. 9
Rocklin, CA 95677
916/630-3960; Fax 916/630-3950
www.spiritbysoundcraft.com

### Studer D950 Version 2.0

The latest 2.0 Version of the Studer D950 Digital Console features a vast array of new features including an expanded surround sound panner, enhanced 2-person desk operation, new EQ display modes, additional Control Group options, new Project Management, faster access modes, and a new system diagnostic center. Also added was additional functionality in the multiformat monitoring system as well as new automation modes.
1525 Alvarado St.
San Leandro, CA 94577
510/297-2798; Fax 510/297-2785
www.studer.ch

### Twecomm

Redundant power supply adaptors for Yamaha, Ramsa and Soundcraft consoles.
1631 King James Drive
Pittsburgh, PA 15237-1573
412/369-8770; Fax 412/369-8338
www.twecomm.com

### Vestax PMC-400

Multi-purpose high-end mixer for installation, mobile DJ and various applications. Specs: Alps pro 45mm fader for input and master fader. VCA controlled cross fader is provided with variable curve control, rotary monitor select switch (split cue or stereo cueing), analog VU master level meter. Aux send, return and submaster output. List: $1,559.
2750 N. 29th Ave. Suite 115
Hollywood, FL 33020
954/926-6622; Fax 954/926-3304

### Zaxcom Cameo LRC

Zaxcom introduces an exciting new location system for non-linear editing and telecine bay usage. Cameo LRC "Location Recording Console" is designed primarily for use on location to record feature films, television programs and high-end audio venues. Cameo is constructed to be a high-performance, easy-to-use mixer. It provides a high-end professional touch that lower cost industry mixers cannot do. This mixer differs from our Cameo SV "Studio Version" in software and certain hardware aspects. It



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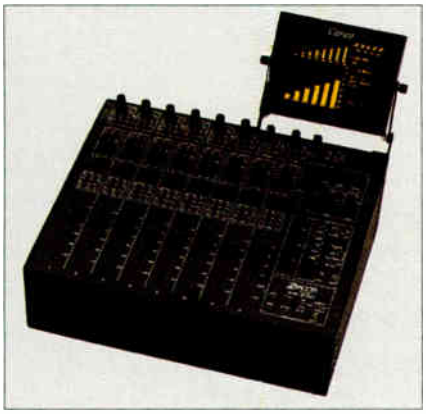

brings digital technology to an area of the television and film industries, which has always been analog only. Cameo LRC will start at $10,950.

### Zaxcom Cameo SV

Cameo SV "Studio Version" is a high quality, low-cost, easy-to-use mixer designed specifically for non-linear edit suites and telecine applications. This mixer differs from our Cameo LRC version in software and certain hardware aspects. Cameo is constructed to be a high performance easy-to-use mixer that provides a professional touch not available in lower cost music industry mixers. Ease of use and low cost make Cameo the clear choice over mixers designed for linear edit bays. Starts at $9,950.
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www.zaxcom.com

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### Akai MPC2000XL

Everything you'd expect from an MPC, plus these new features: Next Sequence key, Track Mute key, hinged LCD, multitimbral playback, device naming, multitrack recording, time stretch, resampling, simultaneous playback of a second sequence and folder file management. The MPC2000XL has a 16-bit sampling engine, 32-voice polyphony and RAM capacity of 32MB. Options: 8 output digital I/O; multieffects; 8MB FlashROM; SMPTE sync; 16MB SIMM expander. Retail: $1,649.
4710 Mercantile Drive
Fort Worth, TX 76137
800/433-5627; Fax: 817/222-1490
www.akai.com/akaipro

### Applied Acoustics Systems Tassman

Tassman is state-of-the-art sound synthesis software that produces professional quality sound in real time with minimal latency parameter control. Tassman is the first modular software to include physical models of analog hardware, acoustic objects and instruments that are easily controlled by an aesthetically familiar and ergonomically friendly user interface, which was inspired by analog hardware.
1030 St. Alexandre, Suite 900
Montreal, Quebec Canada
514/871-4963. Fax: 514/871-4964
www.applied-acoustics.com

### DigiTech RP-14D

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world's most popular guitar amplifier sounds, including British Stack, Rectified, Boutique, Twin, Class A Clean, Fuzz, High Gain and Acoustic Simulation. In addition to traditional 1/4-inch outputs, the RP-14D offers an S/PDIF digital output for use with hard disk recording workstations and other digital setups. The processor also includes an onboard expression pedal.
8760 S. Sandy Pkwy.
Sandy, UT 84070
801/566-8800; Fax: 801/566-7005
www.digitech.com

## DOD GS30

The DOD GS30 is a floor-based amplifier modeling processor for the guitar. Aside from its seven authentic-sounding amp/guitar models, the GS30 features a studio full of processing (including compression, wah and EQ, as well as digital effects like chorus, flange, tremolo, phaser, ring modulator, pixellator, pitch shift/bend, detune, delay, reverb and more), an assignable expression pedal and a chromatic tuner.
8760 S. Sandy Pkwy.
Sandy, UT 84070
801/566-8800; Fax: 801/566-7005
www.dod.com

## E-mu Proteus 2000 Expansion ROMs

E-mu has released five new expansion sound ROMs, including a dedicated piano ROM (Holy Grail Piano by Q-Up Arts, 16 MB, $295 list), a compilation of Proteus 1, 2 & 3 sounds (Protozoa by E-mu, 16 MB, $249 list), a dedicated B3 ROM (Niacin B3 by E-mu, 16 MB, $295 list), a techno ROM (Techno Construction Yard by Rob Papen, 32 MB, $395 list), and an orchestral strings ROM (Seattle Strings by E-mu, 32 MB, $349 list).
1600 Green Hills Road
Scotts Valley, CA 95067
831/438-1921; Fax: 831/438-8612
www.emu.com

## Johnson JT50 Mirage Amp

Johnson Amplification's newest and lowest-priced guitar amplifier, the JT50 Mirage, uses exclusive VTube digital technology to accurately emulate 12 modern and vintage amp models. Featuring a respectable 50 watts of power, the JT50 Mirage also boasts a comprehensive effects section offering six mod/pitch effects, delay, and two reverb types, each with individual controls that allow the guitarist to easily tailor their sound.
8760 S. Sandy Pkwy.
Sandy, UT 84070
801/566-8800; Fax: 801/566-7005
www.digitech.com

## Kurzweil Expressionmate

Kurzweil Expressionmate is a powerful MIDI processor that can be added on to any MIDI device. It comes as two parts: the desktop control box, and the 600mm ribbon controller fashioned after the K2500 long ribbon. The Expressionmate contains three arpeggiators, and provides for a variety of types of MIDI control inputs. Transmission on up to 3 discrete MIDI channels. Provides breath controller input, two footswitches, two programmable front panel buttons, three powerful arpeggiators, and can re-map MIDI controllers. 600mm length can be used as single zone or split into three discrete zones acting independently. US retail: $549, shipping now.

## Kurzweil K2600

The New Kurzweil K2600, synthesizer/sampler has 495 programs, state-of-the-art sounds, effects and the most flexible architecture available. Keyboard models offer real-time control over sounds including eight sliders, 600mm & 20mm ribbons, wheels, switches, pedals, mono-pressure, and more. Available in 88 weighted keyboard, 76 note or rack. ROM can be expanded to 44 MB, RAM to 128MB via 72-pin SIMMs. K2600 includes the acclaimed stereo grand piano, KB-3 mode, eight analog balanced (or unbalanced) outputs and dual 25 pin SCSI connectors. Sample option allows for 20-bit digital output and allows external analog or digital stereo signals to be processed. Reads most popular sample formats.
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13130 Yukon Ave.
Hawthorne, CA 90250
800/468-2677; Fax 310/676-6713
www.bgw.com

## Bryston Ltd./PMC 6B Pro

The Bryston 6B Pro is a 3-channel amplifier delivering 300 watts into 8 ohms and is bridgeable to a 2 channel amplifier delivering 1 channel at 600 watts with one at 300 watts into 8 ohms.

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— Rob Arbittier

just enough to be dangerous, and not enough to not need everybody else around me. So, I'm enjoying the freedom, the power that I get from something as user-friendly as the O2R."

— Clint Black

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— Mark Hammond

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Peterborough, Ontario, Canada K9J 7Y6
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### Chevin Research M Series

The Chevin M Series is comprises 4 PA standard stereo amplifiers capable of handling 300 to 1000 watts per channel. Lightweight (from 11 to 19 pounds- 4 to 8 kg.), the M Series delivers Chevin performance and sound quality in a one rackspace unit. Features include: Full front panel indicators of signal and protection status, high slew rate, discrete driver stage, high spec components, wide input voltage range, surface mount technology, XLR input sockets and Speakon output sockets.
1 Enterprise Dr.
Old Lyme, CT 06371
860/434-9190; Fax 860/434-1759
www.chevin-research.com

### Hafler C-Series

Hafler introduces three new amplifier series (two models in each series), known as the C-Series: commercial contractor (fixed installs) CCA; cinema (fixed installs) CX; and sound reinforcement (mobile) LSA. They are all based on the same basic amplifier platform and all maintain the same thermal performance at all impedances. Availability for the 300- and 600-watt units is scheduled for August/September. A third model, currently in development (1,200 watt) is planned for a year 2000 release, and will be Hafler's own twist on Class D technologies.
546 S. Rockford Dr.
Tempe, AZ 85821
602/967-3565; Fax 602/894-1528
www.hafler.com

### Miles Technology MPR-500

The MPR-500 is a modular 1U class-D power amplifier available with one, two or three output channels. Individual channels can produce 300W/4 ohms or 200W/8 ohms. Total audio output power from the unit can exceed 500 watts in two or three channels. Input module options for the MPR-500 include balanced barrier strip, XLR quarter-inch, or RCA-type connectors, as well as crossover filters and a mixer with ducking. List price: $1,329.
1826 S. Third St.
Niles, MI 49120
800/280-8572; Fax 616/683-4499
www.milestech.com

### Pass Labs X150

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### Pass Labs X5

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P.O. Box 12878
Reno, NV 89510-2878
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### QSC PowerLight 6.0PFC

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1675 MacArthur Blvd.
Costa Mesa, CA 92626
714/754-6175; Fax 714/754-6174
www.qscaudio.com

### Rolls RA170 70 Watt Amp

The RA170 amplifier is for the install and contractor market. It's a mono unit with a choice of an RCA or 1/4" unbalanced input. The 70 volt speaker outputs are provided via spring-loaded terminals—no transformer is required for speaker connection. The front panel includes a Power indicator LED, a volume control, and two clip LEDs that indicate circuitry overload. U.S. retail price is $200.
5143 S. Main St.
Salt Lake City, UT 84107
801/263-9053; Fax 801/263-9068
www.rolls.com

### Yorkville Sound AP6040

Yorkville's latest addition to the Audiopro amplifier line is the AP6040, delivering 2,000 watts per channel (at 4 ohms), making it the perfect solution for subwoofer applications such as a pair of two to four large format subwoofers per amplifier. The high headroom, three rackspace AP6040 incorporates the same great features found on the existing AP series power amplifiers including Ultra-Quiet front-to-back fan cooling, highpass filter, advanced protection circuitry, defeatable limiter and a stereo/mono/bridge switch. $1,799.

### Yorkville Sound CR5

Drawing on over 30 years of experience designing and building power amplifiers, Yorkville introduces the CR5. This value-priced amplifier has been specifically designed for the budget-conscious consumer, and will be a competitive alternative for commercial and rental applications. Featuring 250 watts per side at 4 ohms in a rugged three rackspace package, the quiet, passively cooled CR5 includes separate rearmount channel gain controls, stereo/mono/bridge switch, power, clip and protect LEDs, a defeatable limiter and circuit breaker.
550 Granite Court
Pickering, Ontario, Canada L1W 3Y8
716/297-2920; Fax 800/466-9329
www.yorkville.com

## Signal Processing, Hardware

### Antares AMM-1 Microphone Modeler

The AMM-1 studio DSP processor allows any reasonably full-range mic to sound like virtually any other microphone. Using patented Spectral Shaping Tool (SST) technology, Antares created precise digital models of a wide variety of mics, from historical classics to modern exotics, as well as a selection of industry-standard workhorses. The user simply tells the AMM-1 what microphone they are using and what mic they would like it to sound like. The AMM-1 references the stored models of both the source and target mics and processes the input to create the sound of the desired mic.
11768 Atwood Road #13
Auburn, CA 95603
530/878-4400; Fax 530/787-8577
www.antares-systems.com

### ADL 100-G Mono Tube Direct Box

Essentially half of the Anthony Demaria Labs popular stereo direct box, the 100-G Mono Tube Direct Box offers the same awesome performance but at a more affordable $599.
95 Dubois Rd.
New Paltz, NY 12561
914/256-0032; Fax 914/255-3202
www.adl-tube.com

### API Audio Products 245 De-esser

A de-esser in the API tradition, with floating-threshold circuitry.

### API 2252 Stereo Bus Compressor

A 19" rack unit that provides precision control of the stereo bus signal.
9017-C Mendenhall Ct.
Columbia, MD 21045
410/381-7879; Fax 410/381-5025
www.apiaudio.com

### Ashly Protea 2.24PS

The Protea Series 2.24PS has two independent channels of fully programmable, 12-band parametric EQ. Each parametric band allows for 1/25 to 3.3-octave Q. Other signal processing capabilities include high and low shelf filters, compressor/limiter, high and lowpass filters and delay. Other features include 24-bit AD/DA conversion, 24-bit digital processing, RS232 and MIDI interface, linkable channels, +6dB/-infinity master gain, 1RU chassis, and 128 preset locations. Retail $950.

### Ashly Protea 4.24PS

The Protea Series 4.24PS has four independent channels of fully programmable, 12-band parametric EQ. Each parametric band allows for 1/25 to 3.3 octave Q. Other signal



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processing capabilities include high and low self filters, compressor/limiter, high and low pass filters and delay. Other features include 24-bit AD/DA conversion, 24-bit digital processing. RS232 and MIDI interface, linkable channels +6dB/-infinity master gain, 2RU chassis, and 128 preset locations. Retail $1,400.
847 Holt Road
Webster, NY 14580
716/872-0010; Fax 716/872-0739
www.ashly.com

### Audient ASP 231 Stereo Graphic EQ

The new ASP stereo graphic equalizer reflects Audient's core design philosophy of providing superior sound quality from optimized analog designs at highly competitive pricing. Designed by industry veterans Dave Dearden and Gareth Davies, the ASP 231 provides 31 bands of 10dB cut or boost, adjustable highpass filter, proprietary tilt control and rear illumination. Balanced inputs and outputs are provided by both XLR and Klippon Phoenix-type connectors.
2140 West Greenview Drive
Middleton, WI 53562
608/831-8700; Fax 608/831-7100

### Avalon Design VT-747SP

The Avalon VT-747SP is a pure Class A, 100% discrete, stereo spectral opto-compressor with passive 6-band graphic equalizer and built-in 2-band parametric sidechain. The VT-747SP also features TSP, enabling the choice of three dual triode vacuum tubes in the signal path for warm tube tone, or all-discrete Class A transistor amplifiers for classic opto-compression. The VT-747SP is perfect for high-performance DAW input signal conditioning, stereo bus compression/EQ, stereo keyboards and mastering applications. $2,495.
PO Box 5976
San Clemente, CA 92673
949/492-2000; Fax 949/492-4248
www.avalondesign.com

### Bryston Ltd./PMC SP-1

The Bryston SP-1 is a balanced, discrete, multi-channel surround processor for professional use. The SP-1 will decode all multi-channel formats, including Dolby, and DTS.
677 Neal Dr.
Peterborough, Ontario, Canada K9J 7Y6
705/742-5325; Fax 705/742-0882
www.bryston.ca

### dbx Professional Quantum

dbx's new Quantum Digital Mastering Processor is the world's only 96kHz, 48-bit mastering solution. Quantum packs every necessary mastering resource into a single 1U unit, including a digital multi-band compressor, limiter, expander, gate, parametric EQ, de-esser, normalizer and dbx's proprietary Type IV conversion system, which makes digital signals sound like they came from the highest-quality analog source imaginable. AES/EBU and S/PDIF digital inputs and outputs are included as standard. Retail $1,999.95.
8760 S. Sandy Parkway
Sandy, UT 84070
801/568-7660; Fax 801/568-7662
www.dbxpro.com

### Demeter H Series Tube Direct

The H Series Tube Direct/Line Driver is a versatile new addition to the Demeter line of tube pro audio equipment. It takes the technology of the first commercially available Original Tube Direct Box by Demeter Amplification to a new level, incorporating the same tube-driven ultra-high-impedance input to prevent instrument pickup loading and adding a new balanced line-level output section. The unit can be used as both line-level direct instrument input or as a line-level driver to add tube warmth to line level digital interfaces. List $899.
15730 Stagg St.
Van Nuys, CA 91406
818/994-7658; Fax 818/994-0647
www.demeteramps.com


# Westlake Audio - and The Digital Studio

## The Pro Audio House Where Professionals Shop...

Westlake Audio has been in the business of selling pro audio gear since 1971. Before we take on a new product we test it on the front line at our world renowned Westlake Studios. Our experience in cutting edge studio environments gives us the first hand knowledge that our professional customers feel is invaluable when making a purchasing decision.

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7265 Santa Monica Blvd., Los Angeles, CA 90046 ▪ 213-851-9800 ▪ Fax: 213-851-0182 ▪ http://www.westlakeaudio.com

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### Dolby DP571 Dolby E Encoder

For DTV broadcast and post-production facilities, encodes and enables distribution of up to eight channels of high-quality audio, plus Dolby Digital metadata, via AES3 audio pair or two digital VTR audio tracks. Dolby E audio can withstand ten encode/decode cycles without audible degradation; color-black reference input matches audio/video frame rates for smooth editing. One-frame PCM audio delay keeps linear PCM audio in sync with Dolby E-encoded audio. List price $5,395.

### Dolby DP572 Dolby E Decoder

For DTV broadcast and post-production facilities, decodes single Dolby E encoded AES3 pair, two audio tracks on a digital VTR, digital audio tape or video server into up to eight PCM audio channels plus Dolby Digital metadata. Color-black reference input matches audio/video frame rates, assuring smooth editing. One-frame PCM audio delay keeps linear PCM audio in sync with Dolby E decoded audio. List: $3,995.
100 Potrero Ave.
San Francisco, CA 94103
415/558-0200; Fax 415/863-1373
www.dolby.com

### Drawmer DC 2476

The new DC2476 digital mastering processor is an all-in-one digital dynamic processor with full 24-bit 96kHz sample rate capability. Analog in/out and digital in/out, AES/EBU and S/PDIF connectors, full 24-bit word length and sampling frequencies of 32, 44.1, 48, 88.2 and 96 kHz. Other ports include a word clock in/out and MIDI in/out/thru. With automatic limiter input stage, dynamic "spectral" EQ, full band main EQ, three band expander, compressor, stereo width, tube modeling to mimic tube behavior, and band summing output stage. List: $2,995.
Distributed by Transamerica Audio
2721 Calle Olivo
Thousand Oaks, CA 91360
805/241-4443; Fax 805/241-7839
www.transaudiogroup.com

### Electrix Mo-FX

Electrix (a division of IVL Technologies) announces Mo-FX Time Synchronized FX, the first ever live-performance oriented multi-effects processor. Emphasis is placed on real-time control and extreme manipulation of the effects. Mo-FX contains four FX modules offering direct control of distortion, flange, auto-pan/tremolo and delay effects. An intuitive front panel interface offers direct control of the effects sections, tap tempo and momentary switches for effect blasts; no presets or programming. Mo-FX sends CCs and receives MIDI clock for synchronizing time based effects.

### Electrix Warpfactory

WarpFactory is the Ultimate Vocoder for DJs, remixers, musicians, producers and engineers. Using vocals, samplers, turntables, drum-machines or synthesizers, WarpFactory can combine any two signals to create 'out of this world' new sounds with human-like qualities. WarpFactory enables the user to superimpose the formant of the signal (to shape the sound) on to the source (the sound to be shaped) and adjust real-time parameters like Gender, Q, and Order. Front panel performances will send and receive MIDI messages.
6710 Bertram Place
Victoria, British Columbia, Canada V8M 1Z6
250/544-4157; Fax 250/544-4108
www.electrixpro.com

### Eventide Orville

The Orville Harmonizer brand effect processor features up to eight times the power of Eventide's legendary DSP4000 series. Orville provides up to eight simultaneous channels (four AES/EBU digital and four analog), making it ideal for DVD, digital TV and movie post-production, surround sound and music recording. Orville features a dual-engine, 24-bit/96kHz configuration, anything-to-anything routing and an on-board 174-second sampler. Orville's unprecedented power makes possible incredible new effects such as UltraShifter formant-correct pitch shifting, FourSided-Verb multichannel reverb and many more.
1 Alsan Way
Little Ferry, NJ 07643
201/641-1200; Fax 201/641-1640
www.eventide.com

### Focusrite Platinum Compounder

The Platinum Compounder is a dual mono/stereo compressor, limiter, gate with bass expander. Unit is designed for the quality-conscious studio owners, as well as live sound user/installation companies. The Compounder features a Class A amplifier, unique bass expander, opto-circuit gate expander with Class A low distortion design. Limiter features a matched pair of high quality optos. Mono/stereo independent stereo linking is provided for both limiter and compressor sections. Retail price $899.
200 Sea Lane
Farmingdale, NY 11735
516/249-1399; Fax 516/753-1020
www.focusrite.com

### Furman SRM-80

SRM-80 signal router/monitor provides signal routing and monitoring for four stereo devices (such as DAT, cassette, MiniDisc and CD-R) plus the main console output. Multiple copies can all be made simultaneously. Monitor with the built-in, high-power headphone amp, or three different speaker pairs (one self-powered, two passive), at the same loudness. Features an 80-LED, VU/PPM meter, MONO Sum and DIM. List $499. Optional SRM-RU remote unit, list $79.
1997 S. McDowell Blvd.
Petaluma, CA 94954
707/763-1010; Fax 707/763-1310
www.furmansound.com

### Gold Line EQ2

The Gold Line EQ2, a 2-channel digital parametric equalizer, provides 10 bands of parametric filters per channel, high- and lowpass shelving filters, two discrete delay lines, and is suited for correction of acoustical problems. Multi EQ2 equalizers can be programmed from a single computer via included RS232 serial port. Preset curves set via front panel mounted push button. XLR balanced inputs and outputs, or for unbalanced applications with optional gold plated RCA connectors. List price $1,250.
Box 500
W. Redding, CT 06896
203/938-2588; Fax 203/938-8740
www.gold-line.com

### Graham-Patten Avenue Signal Integration

Avenue Signal Integration System (in collaboration with Ensemble Designs). A complete audio and video signal processing solution for analog and digital facilities—for audio and video conversion, distribution and synchronization.
PO Box 1960
Grass Valley, CA 95945
530/273-8412; Fax 530/273-7458
www.gpsys.com

### Intelligent Devices Marshall Time Modulator

We are proud to announce the digital version of the famous Marshall Time Modulator, the richest sounding flanger and double tracker ever. The original Marshall Time Modulator has been licensed by ID for an impressive translation of this classic product that brought you everything from Stevie Wonder's vocal double-tracking to Darth Vader's voice in *Star Wars*. It is also the ultimate guitar sweetener. With used Time Modulators selling for up to $2,000, it's a bargain!
7 Hickory Ridge
Baltimore, MD 21228
410/744-3044; Fax 410/788-6370
www.intdevices.com

### JOEMEEK C2

The new JOEMEEK C2 is a stereo compressor in a 1U half-rack size, and offers the widest range of compression effects with that classic JOEMEEK sound, yet is extremely easy to use, due to a new design idea which makes the compression ratio vary with just the input gain control. The results are so good, you get full control along with the widest range of compression effects without a separate ratio control, and its compression goes as far as 14:1, making it into a limiter! The compression varies with frequency and tonal content, but most important, it's got the JOEMEEK sound. The C2 is a perfect addition for the many digital workstations now on the market to provide that "phat" vintage analog tonal content to the digital signal. Price $399.99.

### JOEMEEK SC4

The SC4 combines the original JOEMEEK light cells with a well-featured digital interface. The SC4 incorporates M&S (middle and side) signal encoding to achieve a unit that gives the true JOEMEEK sound in an extremely flexible package. The SC4 bridges the gap between the sound of the photo electric cell and the basic accuracy of the VCA compressor designs. This is coupled with the inclusion of M&S /Left/Right "superbal" analog inputs and L/R superbal outputs that may be run alongside the AES/EBU and optical interfaces. The digital I/O will also sync to any bit rate and resolution, but has the ability to perform "perfect" sample rate conversion (as the signal path is via analog).
Distributed by PMI Audio.
23773 Madison St.
Torrance, CA 90505
877/563-6335; Fax 310/373-4714
www.pmiaudio.com

### Klark Teknik DN1248 and DN9848

The Klark Teknik Group is pleased to announce the launch of two new products. The DN1248 active microphone splitter system, providing 12 inputs and 48 outputs in 3RU, each input featuring two transformer balanced and two electronically balanced ouputs. Secondly the new DN9848 loudspeaker processor, simply the most advanced unit of its kind available today, featuring 4 inputs and 8 outputs in just 1RU. Full demonstrations of both products are available.
Klark Teknik Bldg., Walter Nash Road
Kidderminster, Worc., England DY11 7HJ
44/1562/741-515; Fax 44/1562/745-371
www.klarkteknik.com



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### Lafont LP-23 Telephone Simulator

The LP-23 Telephone Simulator is a specialized processor designed to simulate telephone, radio and intercom sound easily, without patching in a multitude of outboard devices. The telephone filter section is equipped with extended range highpass and low-pass filters and a balance control for adjustment between direct and filtered signal. $1,495.

### Lafont LP-28 Theater Speaker Silencer

The LP-28 is designed to cut speakers to absolute silence in mixing theaters, ADR/Foley stages, broadcast studios, etc. It contains two independent channels with a nominal power capacity of 1000 watts per channel. Connection to sound source and amplifier inputs are via balanced XLR connectors and speaker outputs are via Speakon type connectors. $1,095.
34 Nelson St.
Oakville, Ontario, Canada L6L 3H6
905/469-8080; Fax 905/469-1129
www.sascom.com

### Leitch Integrator Update

The Leitch Integrator now offers four-to-one digital audio compression in a near-lossless system compatible with 16-bit digital audio devices. 16-bit transport broadens the range of compatible devices for expansion from 4 to 16 mono audio tracks. Leitch's Integrator now routes AES audio in matrices up to 128x128 in one 8RU frame. Choose unbalanced (coaxial) or balanced I/Os or a mix of both, and mix analog with digital audio for greater flexibility. Purchase an option for synchronous routing.
920 Corporate Lane
Chesapeake, VA 23320-3641
757/548-2300; Fax 757/548-4088
www.leitch.com

### Mercury Recording Equipment Model 66

The Mercury 66 is a variable-bias style, all-tube, all-transformer compressor that's similar to a Fairchild 660. Due to the shortage of original tubes and transformers, it is nearly impossible to recreate that circuit exactly, but the Mercury uses similar circuitry and custom transformers to provide that thick, warm and punchy sound. The 66 has an all-tube power supply and sequential serial numbered, matched pairs will be available with linking cable.

### Mercury Recording Equipment EQs

The Mercury EQ-H and EQ-P tube equalizers are tributes to early professional tube EQs such as Pultec, recreating that warm, distinctly rich tube sound desirable in analog and digital recordings today. The layout, functionality, build quality and features are the same as those vintage tube equalizers you have come to know and appreciate. All Mercury products are hand-wired and built with point-to-point circuitry.
Distributed by:
Marquette Audio Labs
510/581-3817; fax 510/581-3917
www.marquetteaudiolabs.com

### Millennia TCL-2 Twincom

Stereo compressor/limiter with twin topolgy. Opto-based dynamics processing with selectable vacuum tube or discrete solid-state studio signal path. Highly transparent audio performance. Introductory priced at $2,795. Stunning new cosmetics and design.
4200 Day Spring Ct.
Placerville, CA 95667
530/647-0750; Fax 530/647-9921
www.mil-media.com

### Oram Pro Audio Octa-EQ

To complement the "Octa" range of Dram outboard, the Octa-EQ adds 8 channels of British EQ from the Series 24 console range. The EQ has 4 bands with 2 filters and is housed in a 3U rackspace. The 4 bands can be split to provide two independent channels of EQ; therefore, 16 channels of EQ are available from this unit. In combination with the Octasonic mic pre's, the Octamix combining mix-amp and the newly launched OctaFade, the user can assemble a supreme quality mixer with 8 channels in a standard 19" rack. All Oram products are manufactured in England to the highest standard, using Surface Mount Technology. Octa-EQ $2,750.

### Oram Pro Audio OctaFade

The perfect complement to the "Octa" range of Oram rack-mounted signal processors, the OctaFade features conductive plastic 100mm faders for eight inputs and two additional faders for left-right master control. The channel's input to this module can be muted by large illuminated mute buttons and panned into the left-right bus or available on direct outputs. Balanced inputs and outputs and self-contained power supply make this a self-contained flat response audio mixer. All products are manufactured in England to the highest standard, using Surface Mount Technology. OctaFade List Price $999 .
The Old Forge, Hook Green
Meopham, Kent
UK DA13 OJE
44/1474/815-300; Fax 44/1474/815-400
www.oram.co.uk

### Peavey CAB Series

The new MediaMatrix® CAB Series audio bridges are designed to link analog audio to Ethernet networks using CobraNet technology and standard Ethernet hardware, adding to the flexibility of the MediaMatrix Mainframe.The CAB 8i (eight mic/line inputs) and CAB 8o (eight line outputs) use 24-bit analog-to-digital converters. They incorporate 8 5 V TTL logic outputs, 0-10 V control inputs, and N/O-N/C relays. An RS-485 port is also provided for external communication.
711 A St.
Meridian, MS 39301
601/483-5376; Fax 601/486-1678
www.peavey.com

### Pendulum Audio OCL-2

The OCL-2 2-channel compressor/limiter is designed for smooth dynamics processing without coloration. It utilizes an electro-optical gain control element in the input circuit of an all-tube, transformerless gain makeup stage. It features adjustable compression ratio, three sidechain modes (fast, presets or manual) and can be linked for stereo operation.
PO Box 339
Gillette, NJ 07933
908/665-9333
www.pendulumaudio.com

### Roland BOSS VF-1

Built in the tradition of the now-legendary SE-50 and SE-70 Stereo Effects Processors, the new BOSS VF-1 24-bit Multiple Effects Processor is a compact, ultra-powerful, extremely musical multi-effects processor with applications ranging from project studios to guitar rigs, live sound racks, DJ setups and more. This affordable 24-bit powerhouse features lush reverb, delay, chorus, guitar and COSM-based effects derived from Roland's legendary VG-8 V-Guitar system, V-studio workstations, and BOSS effects products—easily making it BOSS' most powerful and flexible effects processor ever.
5100 S. Eastern Ave., PO Box 910921
Los Angeles, CA 90091-0921
323/890-3700; Fax 323/890-3701
www.rolandus.com

### Signal Transport BOB-1,2,3 Breakout Box

A series of breakout boxes that connect to our flat wire cable (8 ch ribbon) via DB 25 IDC connectors and convert this format to convenient 1/4" TRS, male XLR or female XLR. Each of the 8 ch or 16 ch has a separate external ground lift switch. With optional rack kit two BOB's can be joined to form a single 19" rack unit. Projected list price $120-$160.

### Signal Transport Line Driver

A high-performance universal line driver that addresses commonly found problems in all types of facilities, namely, balanced to unbalanced -10dBV to +4dBV and ground isolation. Each of the Line Driver's 8 channels features a 1/4" TRS input, a ground lift switch and a -10dBV or +4dBV selector switch. With optional rack kit, two Line Drivers can be joined to form a single 19" rack unit. Projected list $495/each.
517 Marine View Ave. Ste. F
Belmont, CA 94002
650-593-9615; Fax 650-593-4261
www.sigt.com

### Sony DRE-S777

While most digital reverbs rely on Artificial Impulse Response, the DRE-S777 24-bit sampling reverberator uses Real Impulse Response reverberation algorithms, based on actual acoustic spaces. Another benefit is the ability to sample and recreate reverberation based on classic plate reverberators, which can then be optimized for low-noise performance. The DRE-S777 also offers surround or 96kHz expansion capability. Out of the box, the DRE-S777 supports mono in, stereo output and a 48kHz digital sampling rate. With Sony's DABK-S703 Expansion DSP board, the user can select 2-in/2-out stereo (up to 96kHz sampling rate) or 4-channel surround operation.
1 Sony Drive
Park Ridge, NJ 07656-8003
201/358-4197; Fax 201/358-4907
www.sony.com/proaudio

### Studio Technologies Inc. Model 81/82

The new analog distribution amplifiers are being shown. Based on the popular Model 80, the new models provide the performance and features requested by project studio, audio-for-picture and broadcast users. The Model 81 has one stereo input and eight stereo outputs. Two XLR-type connectors are associated with the inputs; two D-sub-miniature connectors are used with the outputs. The model 82 has one stereo input and four stereo outputs, all using XLR-type conntectors. Both take just one space in a standard 19-inch rack, and have a price of $549.
5520 W. Touhy Ave.
Skokie, IL 60077
847/676-9177; Fax 847/982-0747
www.studio-tech.com

### TC Electronic Intonator

The Intonator is a Vocal Intonation Processor that features high-end vocal processing tools including Pitch Correction, De-Essing and a special Adaptive Lo-Cut Filter designed specifically for vocal processing. The product is designed for the professional vocal recording engineer as a tool for reducing tedious engineering time spent on doing vocal re-takes. $1,500 list.
790-H Hampshire Rd.
Westlake Village, CA 91361
805/373-1828; Fax 805/379-2648
www.tcelectronic.com



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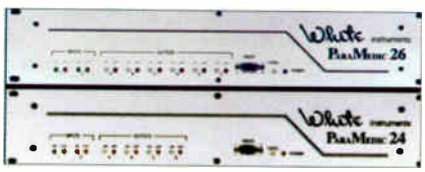
### TDM Designs 15GE-2
Stereo 15-band graphic EQ with 45mm sliders, XLR and 1/4 inch phone input and outputs, balanced or unbalanced operation, selectable 6 or 12dB boost and cut, 18dB/active HP filter and a hardwire bypass switch. Uses 2 rack spaces.
12800 NW Bishop Rd.
Hillsboro, OR 97124
503/647-5957; Fax 503/647-5953
www.TDM-design.com

### Telos Systems ISDN Hybrid
World's first dedicated digital hybrid that interfaces directly with ISDN BRI for improved caller voice quality and improved trans-hybrid loss. Lower noise, faster call setup and supervision can be attributed to ISDN, whose virtual 4-wire connection to the central office means that only the far-end analog caller lines need conditioning. Includes dynamic EQ with caller AGC, adjustable caller ducking, adaptive echo cancellation, and conferencing between callers on each B-channel. Price $2,480.
2101 Superior Ave.
Cleveland, OH 44114
216/241-7225; Fax 216/241-4103
www.telos-systems.com

### Universal Audio Classics
The new Universal Audio will debut at AES and unveil its line of classic analog products. Initial products will be all new—but true—versions of the industry's most revered compressors and limiters.
604 Cayuga Street
Santa Cruz, CA 95062
831/454-0630; Fax 831/466-3775
www.uaudio.com

### Waves L2 Ultramaximizer
Wave's first hardware is based on Waves L1 software, the most popular digital limiter in the world. The L2 takes everything further, to 48-bit resolution, 96kHz support, ninth-order noise shaping IDR (increased digital resolution) dithering, and the world's cleanest brickwall limiter. Add to this our superb A/D and D/A converters (24 bit, 96 kHz) and the L2 is an obvious choice for mixing, mastering and more. Hot levels, highest resolution, clean sound. 2U 19" rackmount. MSRP: $1,995.
6716 Central Ave. Ste. 8
Knoxville, TN 37912
423/689-5395; Fax 423/688-4260
www.waves.com




### White Instruments ParaMedic 24/26
Incorporating all the popular software features of the ParaMedic Digital line, the ParaMedic 24/26 beats AES 24 to the punch by offering logic inputs to receive 5V signals to change 12 memories or 31 presets even for the logic output of a different branded product. The logic input incorporates a contact closure switch for up to 5 preset selections. Logic output sends a 5V signal to trigger relays, light LEDs, etc. List price $2,335 for the ParaMedic 24; $2,499 for the ParaMedic 26.
1514 Ed Bluestein Blvd. #108
Austin, TX 78721
512/389-3800; Fax 512/389-1515
www.whiteinstruments.com

### XTA Electronics DS800
The DS800 is an 8-input, 32-output self-contained audio distribution system. In standard format, each input is split into two transformer-isolated outputs and two actively balanced outputs. The unit can be internally reconfigured to yield more than the standard four outputs per input—up to 31 outputs total. Each input features remote activated pad, adjustable input gain, mic/line switch, 48V phantom power, 5 segment LED metering and "listen" factility for cueing. Retail $2,795.
200 Sea Lane
Farmingdale, NY 11735
516/249-1399; Fax 516/753-1020
www.xta.co.uk/xta

## Signal Processing, Software

### Arboretum Harmony
Generate up to eight separate harmony voices from a single sung or played melody line. Features automatic pitch correction and formant-preserved pitch shifting for the utmost realism. Standalone program for Mac OS.

### Arboretum Restoration-NR
The most transparent and selective hiss reduction software available. Uses more than 4,000 bands of gated EQ, with special automatic adaptive filtering and artifact reduction technologies. DirectX plug-in for Windows 95/98.
75 Aura Vista
Pacifica, CA 94044
650/738-4750; Fax 650/738-5699
www.arboretum.com

### Cedar Dethump for SADiE
Cedar Dethump for SADiE removes the low frequency thumps and pops that conventional declick and descratch processses can not. Capable of restoring thumps of up to 50,000 samples (exceeding a full second of audio) this is a unique product and another world "first" for Cedar.

### Cedar Soundscape Declick/Auto Dehiss
Cedar Audio introduces new audio restoration options—Cedar Auto Dehiss and Declick—for the Soundscape platform.
9 Clifton Ct.
Cambridge, UK CB1 4BN
44/1223/414-117; Fax 44/1223/414-118
www.cedar-audio.com/cedar/audio

### Cycling 74 Pluggo
$74 buys 74 plug-ins from the traditional to the hallucinatory for VST-compatible sequencers and audio programs, the ability to host and modulate other VST plug-ins' parameters, a free plug-in Manager for managing application plug-ins like the Mac Extensions Manager and the pluggo-the-month club. Max/MSP users can hack or craft their own pluggo plug-ins. Power PC processor, 150MHz 604 min. OS 7.5.5 or later. A VST-compatible sequencer or audio application. 64 MB memory.
1186 Folsom
San Francisco, CA 94103
415/621-5743; Fax 415/621-6563
www.cycling74.com

### Kind of Loud Plug-Ins
Kind of Loud Technologies will demonstrate its line of surround sound production tools. Products will include: SmartPan Pro Surround Sound Panner for Pro Tools; Tweetie Monitoring and Calibration Plug-In for Pro Tools; Woofie Bass Manager Plug-In for Pro Tools; Axis Joystick (by Gallery) hardware joystick for SmartPan Pro and Pro Tools.
604 Cayuga Street
Santa Cruz, CA 95062
831/454-0630; Fax 831/466-3775
www.kindofloud.com

### Metric Halo ChannelStrip
ChannelStrip—world-class mixing console processing for Pro Tools. 6 Band, 48-bit precision EQ. Full featured compressor. Expander/gate. Channel polarity reverse. Channel delay control. MSRP $1,000.
41 Top O Hill Road
Wappinger Falls, NY 12590
888/638 4527; Fax 914/462-4865
www.mhlabs.com

### Power Technology Virtual Pack V6.3
DSP-FX Virtual Pack 6.3 adds the Stereo Widener and Vocal Eliminator plug-ins. The Stereo Widener allows the stereo and mono audio components to be independently manipulated in space and time. The Vocal Eliminator removes the vocal track for purposes of remixing and sampling. The *Mix* TEC Award-nominated Virtual Pack now includes 13 DirectX Plug-Ins including studio-quality reverbs, effects and mastering tools. A demo version and free plug-in is available from www.dspfx.com. Price: $299.
100 Northill Dr., Bldg. #24
Brisbane, CA 94005
415/467-7886; Fax 415/467-7386
www.dspfx.com

### QSound Labs QSys/TDM v2.2
QSys/TDM v2.2 brings the power of the legendary QSystem II 3D audio hardware processor to the Digidesign Pro-



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Tools 24 audio editing system, in the form of an easy-to-use, fully automated plug-in. Each channel of QSys/TDM is a dynamically pannable locator that can move your tracks far beyond the bounds of mere stereo. Now you can position any track exactly where you want it in 3-D space. $279.

### Q Sound Labs QX/TDM v2.2

Add the professional high-fidelity stereo soundfield enhancement of QSound Labs' patented QXpander algorithm plug-in for Digidesign Pro Tools I24. Transparent and natural enough for your carefully crafted final mix, QX/TDM can also be used to process your favorite reverbs, add space to submixes and stereo instruments, or provide outrageous panning on individual tracks. Create a rich immersive, panoramic soundfield. Price $129.

### Q Sound Labs QTools/AX v1.0

QTools/AX is a suite of digital audio processing tools designed to transform your music and sound effects into captivating, multidimensional audio. Based on QSound Lab's patented 3-D audio technologies, QTools/AX can process any mono or stereo audio file to create a dramatically widened 3-D soundfield. QTools/AX works with any DirectX compatible Windows 95, 98 NT audio editor. $79.95.
Suite 400, 3115-12 Street N. E.
Calgary, Alberta, Canada T2E 7J2
403/291-2492; Fax 403/250-1521
www.qsound.com

### SEK'D Samplitools De Clicker Plug-In

Samplitools De Clicker is a DirectX plug-in for Samplitude 2496, SAM studio, and Red Roaster mastering software. The De Clicker removes clicks and pops from LP recordings. The De Clicker allows the engineer to monitor the clicks and pops only, then adjust the parameters very effectively. List price $199.
407 Stony Point Road
Santa Rosa, CA 95401
800/330-7753; Fax 707/578-2025
www.sekd.com

### Steinberg Mastering Edition

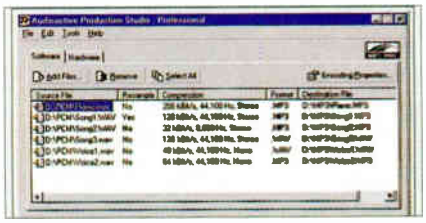
A collection of six high-quality VST/Wavelab/DirectX plug-ins for a variety of host-based applications, designed to meet today's ever-increasing demands in music production. It includes: Loudness Maximizer: dynamic processor. Spectralizer: increases clarity and presence by adding the second and third harmonic. ME Comp: multiband compressor. FreeFilter: linear phase real-time 1/3-octave equalizer with a learn function. PhaseScope: a Goniometer with integrated Correlation Meter. Spectrograph: a real-time sonogram, giving precise verification of even the smallest details in a recording. $499.

### Steinberg Prosoniq TimeFactory Mac/PC

High-quality time stretching and pitch shifting with practically no loss in sound quality. It can achieve time scaling amounts of up to one third the original length, corresponding to a time stretching factor of 133% and more (or pitch scaling of up to 5 semitones) without unpleasant harmonic distortion, timing inconsistencies and echoes. Whether you wish to time scale individual sound or a final mixdown TimeFactory is a simple click-and-go. It even supports 24-bit 96kHz files. $599.
21354 Nordhoff St., Ste. #110
Chatsworth, CA 91311
818/678-5100; Fax 818/678-5199
www.steinberg.net

### Symbolic Sound Kyma 5.0

Kyma 5.0 is a software environment integrating sound synthesis, processing, sampling and hard disk recording. Kyma runs under Mac and Win operating systems (including laptops) and uses a 28 DSP outboard accelerator called the Capybara-320 for real time response and 8 channels of digital and analog 24/96 I/Os. The new software features user-configurable virtual front panels and a timeline editor.
PO Box 2530
Champaign, IL 61825-2530
217/355-6273; Fax 217/355-6562
www.symbolicsound.com



### Telos Audioactive MP3 Production Studio

High-quality, fast solution for compressing audio files using studio-reference quality MP3 encoding. Ideal for professionals wanting to send/post audio files in electronic format, or require efficient file storage without compromising quality. Files can be compressed to WAV, MP3, ASF or Shockwave formats. Designed for optimal encoding at all bit rates between 8 kbps and 256 kbps. Enhanced functionality includes batch encoding, command-line interface, ID3 tagging, CD-ripping and light watermarking.
2101 Superior Ave.
Cleveland, OH 44114
216/241-7225; Fax 216/241-4103
www.telossystems.com

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### Tracer Diamond Cut Live
Diamond Cut Live is a complete set of noise reduction, audio enhancement tools with full real-time capabilities. Noisy audio in...clean audio out...in real-time. The full noise reduction toolkit includes hiss removal, click removal, surface noise removal, de-esser, as well as new paragraphic equalizer and a full workbench of filters, enhancers and other restoration tools. Diamond Cut Live also offers Virtual Valve, a set of "virtual tubes" which help add warmth to your final sound. List price $999.

### Tracer Diamond Cut Millennium
Diamond Cut Live is newest version of the popular Diamond Cut noise reduction product line. With Millennium, users now have the ability to customize multiple filters and process multiple files simultaneously in addition to the incredible number of tools already included.
2101 Pennsylvania Ave.
York, PA 17404
717/843-5833; Fax 717/843-2264
www.tracertek.com

### Waves Enigma
One-of-a-kind effects processor, combining phaser-like notch filter networks, stereo-ization from PS22, feedback looping with early reflection techniques, LFD modulation, and band-limiting filtering on the notch processor. Achieves totally new phaser/chorus effects, but is not classifiable as either. Enigma is much more. A new tool based on proprietary Waves architectures. TDM ProTools III and MIX systems supported. Contained in the Pro-FX Plus bundle.

### Waves Gold Bundle (Pro Tools NT)
Full support for all Waves processors on Digidesign's Windows NT version of Pro Tools. The Gold Bundle includes 19 processors with preferential pricing to add any new processors. Pro Tools mix systems. See web page for pricing info and other bundles.
6716 Central Ave., Ste. 8
Knoxville, TN 37912
423/689-5395; Fax 423/688-4260
www.waves.com

## Sync, Automation and Control Systems

### Akai Digital EtherViewPC Machine Control Room Software
EtherViewPC runs on standard Windows (95/98/NT) computers and allows control of multiple DD8 Plus 8-track digital dubbers and DD16PB Plus 16-track players from a single computer screen, via standard Ethernet. EtherViewPC controls functions from system setup to sophisticated session management. The user can display and quickly edit settings of individual machines, store/recall templates, load projects from disks and monitor the status of the whole system from one centralized location. Price: $995, including Ethernet card.

### Akai RE32
A powerful new multitrack remote controller, the RE32 allows real-time control of transport, recording and editing functions for up to 128 tracks of audio and comes equipped with Akai's new SuperView graphic display driver (up to 32 tracks with Waveforms on VGA). It brings complete remote tracking and playback control to the Akai DD8 Plus and DR16 Pro recorders. The RE32 is the total solution for multitrack, multimachine control. Price: $2,495.
7095 Hollywood Boulevard PB 652
Hollywood, CA 90028
818/762-3094; Fax 818/762-2348
www.akai.com/akaipro/postpro/

### Audio Vertrieb Peter Struven Stramp DA801
The Stramp DA801 translates Sony 9-pin commands into Tascam sync protocol, enabling the selection of up to 48 tracks in a network of six DTRS-compatible MDMs, such as the Tascam DA-38, DA-88, DA-98 or Sony PCM-800. This network can be controlled as easily as a single machine by designating the Sony 9-pin RS-422 source as a master.

### Audio Vertrieb Peter Struven Stramp Lister
Stramp Lister software offers convenient operation of Tascam MDMs via PC control, enabling the administration of up to 999 locate and edit points, as well as track arming/transport control of up to 48 tracks. Edits and locate points can be stored for later use, and the system controls up to six DTRS transports.
Am Muhlenberg 26
D-25451 Quickborn, Germany
49/4106-4094; Fax 49/4106-69895
www.stramp.com

### Audiomation Systems Ltd. Audiomate 64
Low-cost automation, moving fader, 32-channel. Only $13,516.

### Audiomation Systems Ltd. Audiomate 96
Audiomate 96: now up to 96 channels for console automation (moving fader)—48-channel only $19,674.
Southside Business Park
2334 E. Rt. 100, Box 7
Bunnell, FL 32110
904/446-2908; Fax 904/446-1016

### Crown International Inc. IQ-PIP-USP2
The new IQ-PIP-USP2 module features full 24-bit signal processing and load supervision. A major upgrade to the original IQ-PIP-DSP module, the USP2 module features an enhanced graphical user interface (GUI) that allows on-screen graphical editing of audio filters, such as EQ and compression. The IQ-PIP-USP2 is attractively priced while offering the full range of features available with Crown's IQ System.
1718 W. Mishawaka Rd.
Elkhart, IN 46517
219/294-8200; Fax 219/294-8329
www.crownaudio.com

### Uptown Automation Winmix for Windows
Uptown will feature Winmix Fader Automation Software. Designed by former GML engineer, Tom Schlum, Uptown Winmix is easier to use and has a user-friendly interface that continues to make it the world's most popular moving fader automation system.
9017-C Mendenhall Ct.
Columbia, MD 21045
410/381-7970; Fax 410/381-5025
www.faders.com

## Tape Recorders and Media

### MD Report
At only five pounds, the MD Report turns a portable MiniDisc or DAT recorder into a rugged fully professional Nagra-style portable recording system. The recorder can be easily removed by unplugging three short cables and lifting it out of its Velcro housing for even greater portability when needed. By providing balanced XLR mic/line inputs, XLR output, phantom power, rechargeable battery, headphone amp, and many more features, the MD Report will make any portable unit work in a professional environment. Includes carry case, AC adapter and heavy duty rechargeable battery. Retail: $679.99.
Dist. by PMI Audio
23773 Madison St.
Torrance, CA 90505
310/373-9129; Fax: 310/373-4714
www.pmiaudio.com

### Mann Endless Cassette Hold-A-Call
The new Hold-A-Call 4-track player is ideal for musicians, jingle writers and 4-track Portastudio operators to produce "on-hold" programs for the telephone in up to 4 languages while callers are waiting "on-hold." You can selectively play any one of 4 language programs. Using the Mann Endless Loop (self-cleaning) cassette, you can offer 3 to 48 minutes of continuous play in automatic or manual select mode. Player & tape: $99, list.
3700 Sacramento St.
San Francisco, CA 94118
415/221-2000; Fax: 415/387-2425
www.holdacall.com

### Rolls RS74
The RS74 is a dual cassette player and recorder designed to the install and contractor market. Each deck has these standard functions: Play, Stop/Eject, Rewind, Fast Forward, Pause and Record. Also included is a headphone output with Level control, variable speed control, tape counter, monitor select switch and noise reduction switch for each deck. Individual Right/Left RCA inputs and outputs are also provided for each side. Indicator LEDs include Record, Clip and Signal presence. U.S. retail: $333.

### Rolls RS271 CD/Cassette Combo
The RS271 has an individual CD player and cassette player all in one three-rackspace and single power supply unit. The CD player features Program Search, Continuous Play, A-B sampling, ±8% Variable Speed, remote control (included) and a headphone output with level. The cassette deck has variable speed, tape/source monitoring, noise reduction, tape counter, and headphone output with level control. U.S. retail: $520.
5143 S. Main St.
Salt Lake City, UT 84107
801/263-9053; Fax: 801/263-9068
www.rolls.com

### Sonosax Stelladat II
The new options available on the Stelladat II, unique DAT portable recorder include 2 and 4 tracks with a true 4-channel audio mixer and all features for films are now implemented. This includes the RS-422 Sony 9-pin protocol. Available now.

### Sonosax Stellamaster
The first post-production DAT tape recorder fully compatible with the Stelladat II (2 or 4 tracks, 44.1, 48 or 96kHz sampling rate) including the Sony 9-pin protocol. This unit is in a 2-rackspace chassis. Stellamaster will be available in fall, 1999 and priced at $6,433.
5417 Cahuenga Blvd. #C
N. Hollywood, CA 91601
www.sonosax.com



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TEAC Canada Ltd., 5939 Wallace St., Mississauga, Ontario L4Z 1Z8 Canada (905)890-8088
TEAC Mexico, S.A. de C.V., Privada Corina #18, Colonia del Carmen, Coyoacan, Mexico, D.F. 04100. (525)658-1943

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### Superscope/Marantz PMD511

Superscope Technologies debuts the Marantz PMD511 pro dual-well cassette deck, the "step up" model to the very popular Marantz model PMD510. Key features of the PMD511 include 1/4" mic inputs plus mixing circuits, automatic record level control, a GPI (General Purpose Interface) port for remote control applications, and 2x recording speed for high performance cassette mastering and high-speed duplication. The PMD511 provides a convenient way to mix down audio cassettes and mic inputs to a second cassette tape without the hassle and expense of an outboard mixer.

### Superscope/Marantz PMD520

Superscope Technologies announces the Marantz PMD520 pro 3-head independent dual-well cassette deck. Key features of this rackmount deck include tape monitoring while recording, precision auto bias system, overlap record, and fully independent operation. Other features include 2x high-speed record, loop-through outputs, fine speed motor adjust on the front panel, tape stop alarm, auto rewind, and a 25-pin GPI port for custom control. Convenience features for the duplicator include direct tape insertion/removal (no tape doors), removable tape mechanisms and a detachable AC cord.
2640 White Oak Circle, Suite A
Aurora, IL 60504
630/820-4800; Fax: 630/820-8103
www.superscope-marantzpro.com

### Studer A827 "Gold Edition" 24-track

Studer announces a special limited edition, A827 analog, 24-track recorder. Studer's A827 "Gold Edition" is a top-of-the-line, handmade machine which includes a test generator, RS-232 card, stand, audio channel remote and autolocator. A newly-designed record headstack provides the ultimate in analog performance. Visit Studer's booth at AES to see this stunning machine with its beautiful black finish, gold editing block and commemorative numbered gold deck plaque.
1525 Alvarado St.
San Leandro, CA 94577
510/297-2798; Fax: 510/297-2785
www.studer.ch

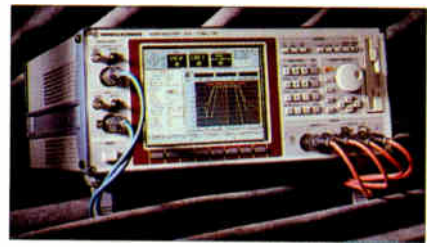
## Test Equipment

### Gold Line/TEF Acoustic X Software

Acousic-X Software Corporation and the TEF division of Gold Line have announced a strategic agreement for distribution of acoustical modeling software in the USA. Developed by the architectural acoustics firm, Pilchner & Schoustal, the software provides ray tracing (for reflections), loudspeaker boundary interference, modal response and RT60 times. With an acoustical calculator for common acoustical parameters. Microsoft Windows-based program allows sophisticated graphics, custom reports and compatibility with Windows 95, 98 and NT. List: $399.
Box 500
W. Redding, CT 06896
203/938-2588; Fax: 203/938-8740
www.gold-line.com

### Tektronix TDS3000

Tektronix TDS3000 Series of digital phosphor oscilloscopes provides service and repair professionals in the TV and video industries the unique visual insight that only DPO technology provides. The TDS3000 Series displays video content of signals like an analog oscilloscope, a video module provides line select capability for easy viewing of vertical interval test signals (VITS).



### Tektronix UPL Audio Analyzers

The UPL series of audio analyzers can now playback arbitrary sequences, giving users the capability to input a variety of user-defined signals for customized test applications. The Extended Analysis Function option has been expanded to include third-octave analysis, a function of vital importance for all acoustic measurements. The UPL Audio Analyzer Series was developed by Rohde & Schwarz, Germany, and is marketed and supported in North America by Tektronix under a strategic alliance formed in 1993.
P.O. Box 3960
Portland, OR 97208-3960
800/426-2200; Fax: 503/222-1542
www.tek.com/measurement

### TerraSonde The Audio Toolbox+

The Audio Toolbox + is the next generation of the popular Audio Toolbox. It incorporates all of the features of the Audio Toolbox, including acoustic analysis (RTA, SPL), test functions, session helpers, and utilities, plus an all-metal case, built-in rechargeable battery system, integrated power supply, and complete accessory kit, including a carrying case, PC/Mac interface, and mic stand adapter. The unit includes the latest software, which adds an impedance meter, distortion meter and more. Booth 980.
1751 Redwood Ave.
Boulder, CO 80304
303/545-5848; Fax 303/545-6066
www.terrasonde.com

### Logitek Electronic Systems Tru-VU Meter

Curved face LED stereo meter with the familiar feel and size of analog mechanical meters. Incorporates a curved LED display with expanded dynamic range scale to show both true 300ms. VU ballistic and instantaneous peaks. Enclosure is a 2-rackspace metal case with fully enclosed power supply. These are the same meters found on the ROC Broadcast Consoles now available in a separate package. Available with analog or digital inputs. Input sensitivity reference is adjustable from -10 to +24 dbu. List: $575.
5622 Edgemoor
Houston, TX 77081
800/231-5870; Fax 713/782-7597
www.logitekaudio.com

## Wireless Products

### AKG "MAX"

The AKG WLS6060 ("MAX") wireless powered loudspeaker incorporates a frequency agile wireless receiver and three-channel mixer with an output power specification of 60 watts. It has built-in smart management rechargeable battery with LED indication that provides up to 14 hours of independent operation. It is available with two wireless transmitter versions. The HT60 hand-held transmitter with three different microphone options and a PT60 body-pack transmitter with three lavaliere microphone options. Retail: $1,740.

### AKG WMS61 VHF

The AKG WMS61 VHF wireless microphone system offers contractors and consultants time-tested transducer quality and proven wireless performance.Just a few of the features that make the AKG's WMS61 the best choice for installed sound applications are 15 selectable frequencies with 10 system operation, interchangeable microphone elements, tone code squelch, battery status display on the transmitter and receiver, and optional active wide-band antenna splitter and central power supply unit. Retail: $750.

### AKG WMS81 UHF

The AKG WMS81 UHF wireless microphone system offers contractors and consultants time-tested transducer quality and proven wireless performance. Just a few of the features that make the AKG's WMS81 the best choice for installed sound applications are 15 selectable frequencies with 10 system operation, interchangeable microphone elements, tone code squelch, battery status display on the transmitter and receiver, and optional active wide-band antenna splitter and central power supply unit. Retail: $864.
1449 Donelson Pike
Nashville, TN 37217
615/360-0499; Fax 615/360-0275
www.akg-acoustics.com

### Applied Microphone Technology Interface

The interface lets the artist use AMT mics with most wireless transmitters. AMT microphones need a minimum of 6VDC, the interface power supply is 10VDC. It uses a 12V battery that can deliver over 80 hours of intermittent use. This extends the battery life in the transmitter. There are many makes and models of wireless systems, each one is different in some way, whether it be power, the mic connection, input threshold, etc. The interface can accommodate all the wireless parameters in a small highly reliable container.
PO Box 33
Livingston, NJ 07039
908/665-2727; Fax 973/994-5139
www.appliedmic.com

### Azden 311DRH True Diversity VHF

The new half-rack true diversity 311DRH VHF receiver is similiar in function to the existing 311DR, adding an on/off switch and an RF/Audio/TD display to the front panel, plus squelch control and detachable antennas on BNC connectors to the rear. Output level control, balanced and unbalanced output connectors, and the 12VDC input complete the features. Available in June '99, the 311 DRH will retail for $375. Optional HR-1 and HR-2 rack kits are also available.
147 New Hyde Park Rd.
Franklin Square, NY 11010
516/328-7500; Fax 516/328-7506
www.azdencorp.com

### Lectrosonics Inc. PT3

Lectrosonics is pleased to introduce the PT3 Protocol Translator. The PT3 is a software/hardware package, commonly known as the "Rosetta Stone," which simplifies the setup and programming of the remote control systems used with Lectrosonic's LecNet™ audio components. The PT3 is armed with an intrinsic knowledge of AMX, LecNet



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and MIDI protocols. As such, the PT3 is simultaneously an AMX-compatible peripheral, a LecNet controller and a MIDI receiver. Price: $475.
581 Laser Rd. NE
Rio Rancho, NM 87124
505/892-4501; Fax 505/892-6243
www.lectro.com

### Nady Systems UHF 760

Cost effective, high performance 160-channel synthesized UHF wireless mic system featuring: halfrack size receiver, operation on selected bands 20MHz wide (746 to 952 MHz), microprocessor controlled DigiTRU Diversity, 20 system simultaneous operation in each band, rugged all-metal handheld, lavalier and instrument bodypacks and plug-in transmitter, 2-color 5-segment AF and RF level displays, and full-featured controls and outputs on receiver, 120dB dynmic range and up to 500+ feet operating range. List price $995.99-$1,169.95.
6701 Shellmound St.
Emeryville, CA 94608
510/652-2411; Fax 510/652-5075
www.nadywireless.com

### Sabine True Mobility Wireless

True Mobility Wireless Systems (UHF or VHF) are PLL synthesized True Diversity receivers and have Targeted Input Processing: patented FBX Feedback Exterminator (includes fast and quiet auto-setup Turbo mode), Auto De-Esser and Compressor/Limiter. True Mobility means total freedom of movement without feedback, plus increased gain and clarity! Dual NiMH battery charger built into receiver gives you virtually unlimited battery life!
13301 Highway 441
Alachua, FL 32615-8544
904/418-2000 x319; Fax 904/418-2001
www.sabineusa.com

### Sennheiser Evolution Wireless

The new Evolution Wireless Microphone Series offers the same great sound and rugged design as the wired Evolution Series. The Evolution Wireless Series is priced between $500 and $1500 bringing a new level of performance freedom to musicians and vocalists who recognize quality and value.
1 Enterprise Dr.
Old Lyme, CT 06371
860/434-9190; Fax 860/434-1759
www.sennheiser.com

### Sony MB-806A

The MB-806A is a very sturdy, 1U high, modular UHF tuner frame, which holds up to six UHF diversity tuners (the new WRU-806 or the earlier WRU-801A modules) and features six individual XLR connectors, plus a composite mix output of all six channels. The MB-806A features a global mic/line switch for all outputs, a built-in antenna divider that can remotely power the optional active UHF antennas and an antenna gain switch to compensate for distance and RF environment conditions.

### Sony WRT-807A

The WRT-807A dynamic hand-held UHF mic is compatible with all 800MHz-range Sony receivers and features a 10mW output transmitter stage, 94 PLL-synthesized UHF frequencies, rugged, an informative LCD display and locking on/off switch. On a single AA alkaline battery, the WRT-807A provides 5 hours of continuous, full-power operation, with the use of a DC-DC converter circuit, which reduces battery ramped-down performance. The WRT-807A uses the same Sony F-780/9X, high-quality, dynamic element used in broadcast and on major tours, for optimum sound quality.

### Sony WRU-806A (ch) UHF Module

The WRU-806A (ch) Diversity Tuner Module offers 94 channels of selectivity and improved RF performance. The back-lit LCD shows all operating status, including: RF strength, audio level, transmitter battery status (most Sony UHF transmitters send a battery status signal), group and channel settings. The WRU-806A, when used in conjunction with the MB-806A, allows a user to automatically set all the channel models loaded into the frame to the correct coordinated group-plan frequency.
1 Sony Drive
Park Ridge, NJ 07656-8003
201/358-4197; Fax 201/358-4907
www.sony.com/proaudio

### Telex S.A.F.E. Wireless

The new S.A.F.E. (Secure Audio Frequency Encryption) system brings airtight security to wireless transmissions of confidential information. Each and every matched S.A.F.E. system has its own unique security code encryption. Based on technology adapted from the Telex intercom used by the National Football League, S.A.F.E. is ideal for transmission of restricted or classified information over a wireless system. Preliminary price: $1,695.
9600 Aldrich Ave. S.
Minneapolis, MN 55420
612/884-4051; Fax 612/884-0043
www.telex.com

### Zaxcom Wireless

Zaxcom Wireless are designed for the film and television industries. Other than the mic preamp circuitry, the entire system is digital from the A-D converter to the receiver's AES/EBU output. Zaxcom Wireless Transmitters are remote controllable (pat. pend.) via a handheld control device similar to a television remote. Once the transmitter is placed on the talent, there is no need to touch that person until the battery dies or the show is over. All transmitter parameters are controlled with an easy-to-use keypad and LED display on the transmitter.
140 Greenwood Dr.
Midland Park, NJ 07432
201/652-7878; Fax 201/652-7778
www.zaxcom.com

## Other Products

### Anthro Corp. AnthroBench

AnthroBench! Combine your need for strength and flexability with our exceptional eye for detail and the Anthro Lifetime Warranty. Available in heights and widths that work for you. Add shelves and adjust them in one-inch intervals. Perfect for mixing consoles and multimedia applications. 48"-wide, 60"-wide, and 72"-wide models avail-

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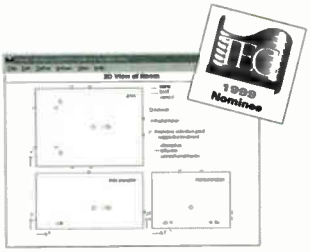


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create

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able. Prices start at $999.
10450 SW Manhasset Drive
Tualatin, OR 97062
800/325-3841; Fax 800/325-0045
www.anthro.com

### BASF/EMTEC ADAT Care Video

EMTEC Pro Media and Alesis Corporation have produced a comprehensive 45-minute instructional video, "Care & Feeding of Your ADAT." The video demonstrates basic cleaning and maintenance procedures for ADAT recorders, emphasizing the importance of using the highest-quality ADAT tapes for best recorder performance and longevity. The video also covers proper handling and storage of ADAT master tapes. It is available from Alesis for $12.99 at www.alesis.com or 1-800-5-ALESIS.
25050 Avenue Kearny Suite 203
Valencia, CA 91355-1256
805/295-5551; Fax 805/295-5554
www.emtec-usa.com

### Bertsch Electronics "The TAIL"

A stand-alone CD mastering and duplication system with true RMS look ahead envelope detection. The TAIL comes standard with an 8.4 GB hard drive, 2x CD burner and 4 bands of dynamic processing. Records in 24 bit and 16 bit, will automatically dither to 16 bit for burning CDs (from 24 bit). 4bands stereo (8 total), 4 bands compression, 4-band saturator plus a stereo normalizer, 4-band expander and stereo limiter. 8.4 GB gives you 13+ hours of stereo recording time and 3 hours and 8-track record.
1860 B. Campbell Crescent
Quesnel, British Columbia, Canada V2J 5Z9
250/992-9298; Fax 250/992-6362
www.quesnelbc.com/bertsch

### BGW Rackmount Trays

The family of rackmount trays, which was 10 models strong, now includes the VLCRMT-2 and VLCRMT19-2. These two trays are 2 rack spaces high, vented on the bottom, 14" and 19" deep, respectively, and are made out of 16FA CRS. VLCRMT-2 $53.95. VLCRMT19-2 $63.95.
13130 Yukon Ave.
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800/468-2677; Fax 310/676-6713
www.bgw.com

### Canford Audio Level-Limited Headphones

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Crowther Road,
Washington, Tyne & Wear,
UK NE38 0BW
44/191/418-1000; Fax 44/191/418-1001
www.canford.co.uk

### Denon Electronics DCM-5000

The new Denon DCM-5000 is a 100-disc CD changer featuring two independent CD drives to provide seamless transitions from one musical selection to the next. Simultaneous playback from both drives is also possible in Multi-zone mode. The DCM-5000 can be used as a stand-alone unit, or as the master controller for a CD changing system of up to 600 total discs when a maximum of five DCM-5001 slave units are daisy-chained to it.
222 New Road
Parsippany, NJ 07054
973/396-0810; Fax 973/396-7459
www.del.denon.com

### Furman HDS-6 system

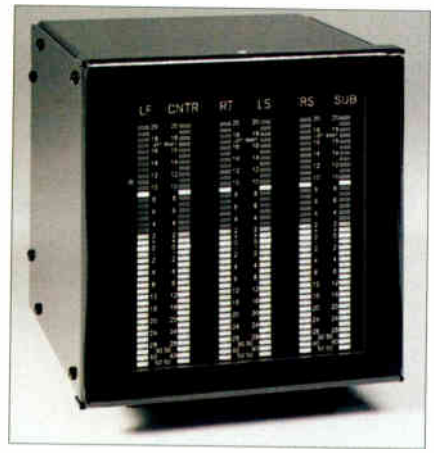
HDS-6 headphone/audio distribution system connects to console. Allows up to eight custom mixes to be created by driving a chain of HR-6 mixers. Every artist can have a personalized headphone/monitor mix without any adjustments at the board. $220.

### Furman HR-6 mixer

HR-6 personal headphone/audio mixer clamps to any mic stand. Provides one stereo pot plus four monaural pots. Stereo pot can be used for the main mix, or stereo effects. Four monaural pots allow a custom mix of four other channels or busses. A "submixes included/excluded" button mutes the monaural controls. $129.
1997 S. McDowell Blvd.
Petaluma, CA 94954
707/763-1010; Fax 707/763-1310
www.furmansound.com

### Lafont LP-25 Meters

The LP-25 offers eight high resolution bargraphs and a phase correlator. It is intended for tape machine and mixing console monitoring in control or machine rooms. Applications include multitrack recording, film and TV post production, transfer and mastering in various formats including 8-channel discrete, LCRS, 5.1, DTS, SRD, 7.1, and SDDS. $3,395.
34 Nelson St.
Oakville, Ontario, Canada L6L 3H6
905/469-8080; Fax 905/469-1129
www.sascom.com




### Logitek SV51

Medium resolution 5.1 meter with 40 segment LED displays. Adjustable reference point with true 300 ms. VU ballistic and simultaneous peak indicator with adjustable hold characteristics. Available with analog or digital inputs. Based on the Super VU series of meters with the same specifications. Also available in high resolution 62 segment desplay for 5.1, 7.1 or 5.1 + stereo monitoring based on the Logitek Ultra VU meters. Power supply is in a separate package that can be mounted away from other equipment. List price $2,095 for SV 51, $2,900 for UV51 and $3,700 for UV71.
5622 Edgemoor
Houston, TX 77081
800/231-5870; Fax 713/782-7597
www.logitekaudio.com

### Middle Atlantic Products Edit Center

Edit Center studio furniture is optimized for audio and video editing and production. Offering a number of options, the system can be configured to suit a wide variety of applicaitons. Edit Center desk systems combine the elegance and features of custom furniture, but are configured from in-stock components for fast delivery.
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973/839-1011; Fax 973/839-1976
www.middleatlantic.com

### Omnimount Systems ARC

Omnimount Systems, the world's premier manufacturer of speaker mounting systems for consumers and audio/video professionals announces the launch of its new, revolutionary, ARC TV mounting system. Omni-Mount's futuristic ARC is a fully adjustable framing support system designed to mount TV monitors of all sizes in a safe, simple and stylish manner.
8201 S. 48th St.
Phoenix, AZ 85044-5355
602/829-8000; Fax 602/756-9000
www.omnimount.com

### Omnirax Force 12

The Force 12 is an elegant and expansive workstation for video editing and music composing. Acajou Mahogany High Pressure Laminate surfaces with matching T-Molding combine with Black Melamine Laminate to create a durable and beautiful environment. Basic features and dimensions: 95.5" desk will accommodate 88 note controllers and peripherals; 12 total rack spaces in three banks of 4 spaces at arm's reach with clear sight lines; 74" wide bridge has capacity for several video monitors plus near field monitors; Hi-end adjustable keyboard mouse shelf. Overall dimensions: 39.7" H x 45" D x 95.5" W. Price: $1,450.
P.O. Box 1792
Sausalito, CA 94966
800/332-3393; Fax 415/332-2607
www.omnirax.com

### Pioneer CDJ-100S

Pioneer, manufacturer of the innovative CDJ-500II and CDJ-700s digital turntables, introduces the CDJ-100s. Its front-loading design, industry first onboard "Digital Jog Break" effects, Master Tempo and low price point make



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### Pioneer CDJ-700S

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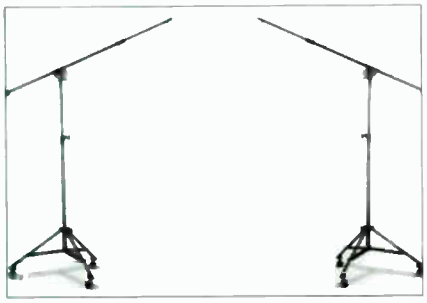
2265 E. 220th St.
Long Beach, CA 90810
310/952-2108; Fax 310/952-2100
www.pioneerusa.com

### Precision Laboratories Earplugs

ER-15, ER-9 and ER-25 Musician's Earplugs were designed for musicians and sound engineers as a necessary companion during live performance and recording. Their unique design allows each level of protection to be worn comfortably even during extended periods of high sound pressure levels. Sound is attenuated by specialized filters that provide equal levels of protection at all frequencies. MSRP $119/pair.
830 Sunshine Lane
Altamonte Springs, FL 32714
800/711-7317; Fax 407/774-8133
www.precisionweb.com

### Quik-Lok Pro Studio Stands

Quik-Lok Systems, (dist. by Music Industries Corp.), the world's largest manufacturer of musical instrument stands, is proud to introduce the new Optimum line of designer studio stands and furniture. Designed in Italy, the Optimum product lines offers sturdy, versatile, functional and reliable support for computer systems, near-field monitors, rackmounted equipment, and mixing consoles of all makes and models. The Optimum line uses glass or wood counter tops and shelves. Optional wood counter tops and shelves are also available. $159 to $699 suggested lists.



### Quik-Lok A-50 Studio Boom

The A-50 Studio Tripod Boom Microphone Stand is perfect for any recording, broadcast, sound stage or live miking application where additional boom length and height is required. It weighs only 28 pounds and is height adjustable from 53.5" to 91.5" high. The 46.5" to 87" telescopic boom arm, with adjustable counterweight, can extend up and over any obstacle to reach any subject. Standard microphone cable clips on the boom and upright

—LISTING CONTINUED ON NEXT PAGE


# Bass Management for Surround Sound

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The Model 65 provides a 5.1 input, along with five main and two subwoofer outputs. Using conservative filter design, the all-analog circuitry redirects bass energy from the main inputs to the desired subwoofer outputs. While you can use the Model 65 right out of the box, we've made certain that you can "tweak" it to meet the needs of your specific application. Want to try 10.2? No problem with the Model 65!

Of course, the Model 65 is directly compatible with Studio Technologies' StudioComm for Surround products, as well as being easily connected with other surround sources. Visit us at AES '99 in NYC and see the Model 65. Or if you can't make it, call us or check out our website for more information.

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—LISTING CONTINUED FROM PREVIOUS PAGE

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Operating on the 2.3 and/or 2.8 MHz sub carrier frequencies, the new SZI 1015T and SI 30/SZI infrared systems were designed to avoid the problem of interference from electronically ballasted fluorescent lights. The SZI 1015T is a single-channel, wideband, CD-powered system incorporating array of 72 transmitting diodes covering 4,000 sq. ft. The SI 30, medium-area modulator/emitter combination, covers 750 sq. ft. in the single-channel mode. The SZI 30 medium emitter panel complements the SZI 1015T or SI30. SI30 and SZI 30 are $275.
1 Enterprise Dr.
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860/434-9190; Fax 860/434-1759
www.sennheiser.com

### SKB Cases Mini Gig Rig

The second in the line of "Gig Rigs," the Mini-Rig is perfect for transporting and operating a mixer and rackmount gear. The case features SKB's unique pop-up ratchet system that allows you to adjust the mixer to the perfect angle; with a click of a button, the mixer lays down flush for easy mobility. Below the mixer is 6U of rack space to accommodate amps, EQs or effects. The Mini-Rig has side handles and lockable lids and is designed to sit on top of the SKB line of rackmount cases; matching grooves ensure secure stacking.
8811 N.W. 23rd St.
Miami, FL 33186
305/592-8383; Fax 305/592-9566
www.skbcases.com

### Sony MDR-7509 Headphones

The MDR-7509 is a high end studio headphone for critical recording applications; the MDR-7505 is a studio headphone and the MDR-V700DJ is designed for the club DJ. The MDR-7509 features large 50mm drivers and provide superior power handling and bass response. The MDR-7505's new closed ear design offers wearable flexibility for isolation and bass response in the studio and club environments. The MDR-700DJ's new sleek enclosed ear design allows for superior isolation and excellent bass response for DJ and dance club applications and also features a rotating ear cup for off head monitoring.
1 Sony Drive
Park Ridge, NJ 07656
201/358-4197; Fax 201/358-4907
www.sony.com/proaudio

### Sound Ideas Ambience SFX Library

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134 Bay Street
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www.panasonic.com

### Telex Audiocom MS-2000

The Audiocom MS-2000 is a complete 2-channel master station and system power supply in a single unit. You simply plug it into any AC power outlet, add a microphone or headset, connect intercom stations to the back panel and you are ready to communicate. List Price: $930.
9600 Aldrich Ave. S.
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www.telex.com

### THAT 1200 Series

THAT Corporation's 1200 Series of balanced line receivers offer superior input stage performance by maintaining high interference rejection under real-world conditions. Unlike conventional balanced inputs, the THAT 1200 "InGenius" inputs continue to provide excellent common mode rejection even when driven from unbalanced sources. Look for products with InGenius balanced inputs beginning late 1999.
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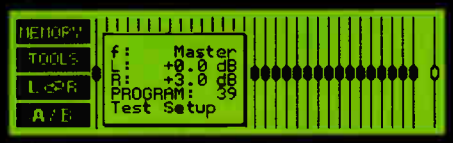
# EVERY PICTURE TELLS A STORY

## The new ULTRA-CURVE PRO DSP8024

**24-bit dual DSP stereo Mainframe with 31-band Graphic EQ, Real Time Analyzer, Auto-EQ function, Parametric EQ / Notch Filter, Feedback Destroyer, Limiter, Noise Gate, precision Level Meter, high-resolution 24-bit converters, complete MIDI implementation, Delay function with up to 2.5 seconds of delay, optional extra 24-bit AES/EBU interface, and much more ...**

### LIMITER, NOISE GATE, DELAY

The digital "brickwall" limiter with adjustable threshold and release time reliably protects your setup against overload. The integrated IRC (Interactive Ratio Control) noise gate eliminates unwanted noise and hum during signal pauses. The DSP8024 can also be used to implement a delay line for your live applications.




### DIGITAL STEREO 31 BAND GRAPHIC EQUALIZER WITH AUTO-Q FUNCTION

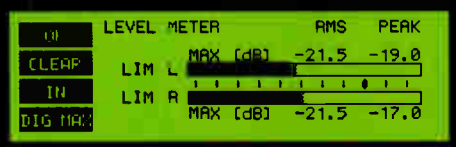
The true response characteristic of each filter gives the exact frequency response, which you adjust using the faders. All settings can be stored, copied, compared, added and subtracted. The Auto-Q function allows for a perfect correction curve to match any room's acoustics.

### FEEDBACK DESTROYER / PARAMETRIC EQ

In addition to the graphic EQ the DSP8024 features six fully adjustable parametric filters. Any of these six filters can automatically "seek and destroy" unwanted feedback frequencies. The perfect solution for all feedback problems in your live applications.

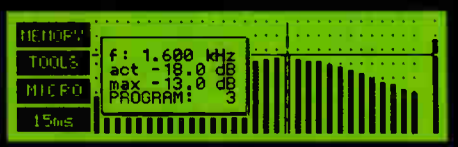
### COMPLETE MIDI IMPLEMENTATION

The ULTRA-CURVE PRO also has a complete MIDI implementation, which allows for remote control via a MIDI sequencer software. In addition to that you can use our free EQ-DESIGN editor software to control the ULTRA-CURVE PRO from your PC.




### INPUT / OUTPUT LEVEL METER

The DSP8024 offers high-precision input/output metering capability. These can of course show R.M.S. or peak to peak values with selectable reference levels. Additionally, the limiter activity is also indicated.

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World Radio History

BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

# I HAVE SEEN THE FUTURE OF FILM MIXING . . .

**by Larry Blake**

Over the years, I have become better at foreseeing how technology could change my work, although initially I had no clue.

In 1975, I was proofreading the *Daily Reveille* newspaper at LSU in Baton Rouge on a dedicated computer typesetting system that stored the data on punched tapes. Even though I was often proofreading copy that I had written on a manual Underwood typewriter (and that had been subsequently edited and entered into the computer by others), I still didn't connect the dots that a computer could be used for writing. Nor did I realize, as I was sneaking in 11th-hour tweaks on my columns and reviews, that I was making my first "printmaster fixes."

Five years later, I remember being thrilled by a friend's IBM Selectric that had one-page memory! Around the same time, I started writing on film sound for *Recording Engineer/Producer* magazine, and I vividly remember getting comments on my first feature article from the people at Dolby Labs in late 1980. They kept saying, "You should be using a word processor." I could only stare blankly back at them, not really knowing what they were talking about.

Now, of course, I am forever tied to a computer, if not to write, then to check e-mail or to edit and mix sound for films. The latter, especially, has seen incremental leaps in the importance of computers and digital audio workstations.

Computers initially were only used to synchronize and edit with tape machines, which was an improvement over editing with mag film in some ways, and a step backward in many others. When workstations entered my radar in 1991 (using the Solid State Logic ScreenSound system to cut sound for *Kafka*), I was thrilled at the precision that they offered. The ease of revision was, by this time, clearly analogous to what I had come to expect of word processors.

COMPOSITE IMAGE: WENDY SHIRAKI

Once edited, all material was strung off to multitrack tape or MDMs for delivery to the mix; the benefits of DAWs were left back in the edit room. For the next five years, I would be mixing from multitrack to multitrack during the premix, using printed cue sheets—in other words, standard operating procedure that continues to this day on most mixing stages.

The next plateau for me would occur in 1995, when I started mixing directly from the workstation. (By this time I was using Pro Tools.) By extending my edit sessions onto the dub stage, I could make changes on the spot, in the context of the premix. I also 86'd cue sheets, preferring to this day to see the sounds scrolling by.

However, final mixing still remained a machine-to-machine mix. Nothing at the finals, except perhaps for sweetener elements or the music, took advantage of the workstation's power.

This whole process—indeed all re-recording as has been practiced for the past 25 years—presumes that premixes are recorded on multitrack tape (or digital dubbers), which are then welded onto the final mix stems. Mixers use bus/tape (or PEC/direct in film sound parlance, although the order is reversed) and record on/off switches on the console to go in and out of record only when "matched." You walk away from a reel knowing that any EQ, level, reverb or dynamics processing is documented once and for all time on that recording.

The film re-recording process has, of course, benefited from console automation. Fader automation was standard in the industry for over a decade when complete dynamic console automation started appearing in the mid-'90s. No amount of automation, however, will remove the need to record premixes and final mixes. There are just too many things to go wrong: If analog playback mag dubbers or multitracks are in

—CONTINUED ON PAGE 236



World Radio History

*Howard Schwartz, CEO of Howard Schwartz Recording*

# NEW YORK POST

## SURROUNDED BY PRIME TIME

**by Eric Rudolph**

It doesn't take an insider to see that the New York post-production industry is booming. New shops are opening up, commercial mixing facilities are moving south on the island, and everyone seems to be building new rooms. The economy is doing well, and it shows.

This television season has seen a 100% increase in prime-time dramatic and comedy television programming produced in New York, with six new network and pay cable shows joining the six already produced in town. (This is believed to be the largest number of prime-time programs produced locally since the Golden Age of live television in the 1950s.) While many of these new programs will do their audio post in Los Angeles, some are staying in New York, and that is sending a restrained ripple of excitement through the town's audio post community. Sync Sound is already on board to post the new UPN mid-season police show *The Beat* from *Homicide* producer Tom Fontana.

The new New York-based shows include UPN's *The Beat* about street cops; CBS's *Now & Again*, about a middle-aged man whose brain is transplanted into the body of a twenty-something; NBC's *Law & Order: Special Victim's Unit* spinoff and *Third Watch* about cops, firefighters and paramedics; ABC's mid-season entry *Bellevue*, about the famed psychiatric ward; and *Talk to Me*, about a radio talk show host.

This big production news is, however, only the tip of the iceberg. The box that brought the country highly regarded live drama from New York in the '50s has mutated. The networks continue to lose viewers as the cable networks gain them, and original cable programming is (along with commercials) the bread-and-butter for the town's audio post houses.

While this shift of viewers from broadcast to cable networks has been on the radar screen for a while, the difference lately is that these cable programs have actually become solid successes. That new prominence translates into bigger audio budgets for the shows, as well as for the seemingly endless streams of promotional spots.

Two other recent driving forces have been the proliferation of DVD and surround sound programming. With surround-in-a-box systems available at every discount store and wholesale club, and with DVDs finally approaching the staging area for attaining critical mass, surround mixing has boosted the bottom line of New York's post facilities.

And then there's the economy. Any visitor to popular Manhattan neighborhoods, such as the Union Square area or the Upper West Side, will find chic restaurants situated cheek-by-jowl and will likely find most of them jammed at 11:00 p.m. on any given *weeknight*. The town, like the rest of the country, is booming, and that means more goods to sell to more affluent consumers. And with New York still the center of the advertising universe, that spells plenty of work for audio post houses that specialize in commercials. Many facilities told *Mix* that the spot business has been quite good this year, and several even said they didn't see the traditional summer slump in that cyclical segment.

One by-product of the robust economy is that there is money to spend, and everyone seems to be adding rooms, particularly living room-style mix suites with a casual openness that includes windows—you know, the glass variety that look onto the outside world. The reason for this trend is informative. *Mix* was told, time after time, that there are so many choices among top post facilities that clients are

*—CONTINUED ON PAGE 238*

PHOTO: JULIAN JAIME

*Soundhound Studio D: standing, Jeff Berman, owner/president, and, seated L-R, Gail Nord, general manager, Damon Trotta, audio engineer/sound designer*



World Radio History

PHOTOS: WOLSCH/POLLARA PHOTOGRAPHY

*Left: Irving's Place's Studio A features Digidesign Pro Tools|24, Power Mac and a Yamaha 02R digital console.*
*Below: Pictured in Irving's Place's Studio C are, L-R, Jill Cheris, Marjorie Stewart, Adam Roth, Doug Di Franco and owner Chris McHale. Not pictured is co-owner Joe Barone.*

# IRVING'S PLACE

**by Gary Eskow**

When Chris McHale and his partner Joe Barone drew up plans for their new facility, Irving's Place, they kept the ad market firmly in mind. "We had been working in studios for years, first as creatives at DDB Needham, and later as principals of McHale/Barone, our own creative services shop," McHale says. "We know the pressures that exist in the advertising world, and how big a part a comfortable environment plays in making a session go smoothly."

McHale, a music producer and copywriter, and Barone, a copywriter and in-house voice talent, had worked in countless video and editing facilities across the country, as well as numerous audio studios. By and large, they found, audio rooms lacked comfort. "Margarita Mix in L.A., however, is set up more like a house than a facility," McHale says. "The equipment is great and the staff is first-class, and that combination is what we're going for here at Irving's Place."

The New York advertising community, feeling the squeeze of high rents in Midtown, continues its southerly migration, as facilities servicing the agencies are increasingly populating lower parts of Manhattan. Irving's Place, located on, that's right, Irving Place, just off 14th Street and Park Avenue, is set up in a prime location. "We're really pleased to be down here; it's an exciting, growing area for our business," McHale says. Although the owners consulted with several studio design professionals, McHale says that the bulk of the plans were drawn up by the two principals and their architect, Peter Wormser. "Peter's an interesting dude, he has a real SoHo vibe," McHale says. "He designed Crew Cuts, and that studio felt very different for me when I worked there—it was just the style I was looking for.

"We talked with him about the idea of having lots of windows and light. We've got a lot of space [10,000 square feet], and we wanted to have the studios sitting in a circle in the center of the space, with an outer ring that people can walk around," he continues. "This place, which turned out just as we planned, is bright and airy. The acoustically treated spaces are on the inside, including the live, floating room, which sits at the very center of our facility.

"No traditional studio designer would advise having windows in the rooms themselves, but the sonic purity was something we were willing to trade for comfort. The rooms are connected visually; it's kind of like a honeycomb. You're not working in an isolated environment, but an open one that has lots of creative cross-currents. Plus, we think the rooms sound great!"

Most of the monitoring that takes place in audio post, it seems, turns on near-field work at low decibel levels. "We're not looking to create hit records here," McHale says, "and so a lot of the dynamics issues that studio designers were talking to us about were unnecessary. We simply don't listen to work at 110 dB—most of our listening takes place at about the 50dB level. We're using an Atlantic Technologies 371 monitoring system, which is set up for 5.1 mixes. As of yet, we've not gotten much call for surround sound mixes, but that day will come."

Irving's Place was designed so that all of the three main rooms have Pro Tools MIX Plus systems (with Yamaha 02R consoles and Pro Control front ends) that feed into the studio's machine room, where all of the facility's Mac G3 computers reside with Digital Betacam and D2 video playback machines and hard drives used to digitize picture. Cutting out clutter in the work spaces was an important part of the design, as was having the hub act as a router for any of the studio's total of 64 Pro Tools tracks. "Again, the idea is to create as pleasing a space as possible," McHale says. "Tripping over computers and racks of gear is counterproductive. When you work in our rooms, all you have is a keyboard and monitor—everything else functions out of your line of vision. We may have one room where voice-over is being recorded over a stereo pair of stock music tracks. In that case, we'll assign a modest amount of Pro Tools tracks to that room, leaving the rest available for the more track-intensive sessions that may be taking place in other rooms." In addition to the three main mix rooms, Irving's Place has three MIDI rooms, each set up with Logic Audio and Pro Tools.

Staff members, always available to Irving's Place clients, include Doug Di Franco, a highly successful audio post engineer who has put in stints at East Side, Superdupe and National Sound. Casey Cheater writes, produces, engineers and plays on a variety of projects (his dad, Gary, is an engineer who has worked with Phil Ramone, as well as Sinead O'Connor and a host of other major recording artists, and his grandfather played on Van Morrison's "Brown-Eyed Girl" and Jim Croce's "Bad, Bad Leroy Brown"). Recording

*—CONTINUED ON PAGE 236*



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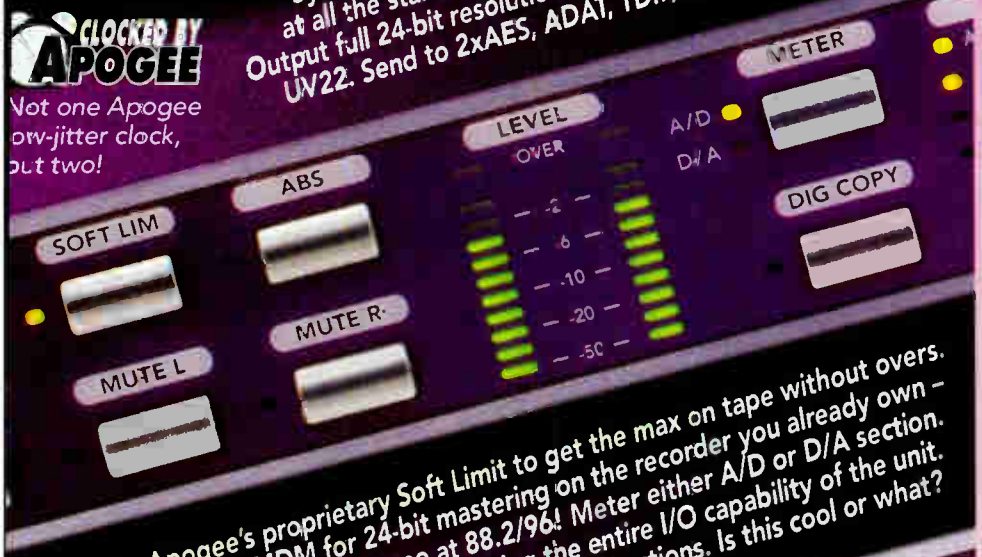


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—FROM PAGE 234, IRVING'S PLACE

engineer/mixer Tim Leitner, who has been with McHale/Barone since 1996, has a catalog that includes work for Paul Simon, Bruce Springsteen and Stevie Nicks. All of this talent, plus the skills of the two principals, is available throughout the day—and often into the nights.

"Collaboration is what it's all about," McHale says. "Stock music, original scores, sound design—if you're a producer at an advertising agency, you're never quite sure what you're going to need at a particular moment. We find that a client may come in to record a voice-over one time, and the next time they'll be asking for a second, and then a third service that we offer. The Discovery Channel recently asked us to write some copy for them. They came in as a mixing client of Doug Di Franco's, had us compose a piece of music for a film they were doing, then got in trouble with their agency and asked us to write that piece of copy. That's how things work."

—FROM PAGE 232, I HAVE SEEN THE FUTURE

use, are they and their associated noise reduction units aligned and patched in correctly? (All told, one can expect to find dozens of patch cords in use at a complicated final mix.) Are the recorders aligned properly? If you're using mag, are the start marks dead on? What about mid-reel offsets to mag or multitrack units (that prevent real-time playing of the whole reel)? What about outboard equipment? (Most don't allow automation of any kind, especially dynamic.) If you're playing back from a workstation, is it playing back the same file in the same manner, with the correct outputs assigned and with its internal automation running? On top of all this, is the console automation itself following properly?

For years I've heard mixers talk of recording automation only and not audio, printing to tape (or disk) only after the mix is done (a.k.a. virtual mixing). For all of the above reasons, it would be complicated enough to do virtual premixes, after which virtual final mixes would be primarily sourced from "rendered" premixes. The idea of doing virtual final mixes from scratch, going straight from cut elements to a truly virtual premix to a truly virtual final, with the console automation for a reel snowballing along the way ...there's no question that a complex feature film mix, as practiced in Hollywood today, could not be accomplished in this manner.

Until now.

If you had asked me two months ago, I would have repeated the same old gotta-record, gotta-match mantra. And then I mixed sound for a film at our Ultrasonic Digital facility back home in New Orleans, and my whole POV changed. I've eaten my words before, but never with such glee. (The film is *Kitchen Privileges*, a psychological thriller directed by a friend and fellow New Orleanian Mari Kornhauser.)

In planning our approach to the film at the beginning of post-production last fall, we realized that the complexity of the track was going to tax our then-current setup of two 02Rs, each mated with a source Pro Tools and stem DA-88 recorders. We had been toying with the idea of converting our mix room completely to a Pro Tools control surface approach, removing all external consoles from the equation. Everything—all fader movement, EQ, reverb processing, you-name-it—would happen within the TDM environment. The approach had its attractions, but clearly there was a risk that everything wouldn't come back the same way every time. We planned to get around this by simply recording the premixes and final mixes, all the while hoping not to have to use them. But we felt the need for that safety net.

I then went to Los Angeles last fall and winter to do a film, and during that time the music recording part of Ultrasonic had converted over to using Digidesign's ProControl for all recording and mixing. Though there were some sticky moments learning the quirks of the system, there was a definite thumbs-up consensus that this was superior to their previous console-and-multitrack. Hmm, I thought.

When I got back to New Orleans this past May to start the sound edit and design phase, I was still intending to record as I mixed. In Los Angeles, I had used TDM to automate temp dubs and the EQ during the dialog premix and was intrigued by the potential, but remained far from convinced.

At the beginning of the five-day *Kitchen Privileges* premix this July, I proceeded with caution to make sure that all automation data was being written, and what I was hearing now was what I would be getting in the finals. At the beginning of the effects and Foley premixing, we had a full day of down time while we were setting up the template that we would be using. "Down time" is perhaps not the right phrase, since it was time well-spent teaching ourselves the rules of the TDM game with regard to session layout and DSP allocation. (More on all of this next month, when I will focus on the Pro Tools-specific parts of the mix.)

However, once we established templates for our two mother Pro Tools sessions—one running the dialog, ADR, music and special voice effects, the other handling hard effects, backgrounds and design sound effects—there was no looking back at the final mix. We could go between reels during finals in the time it took to save and open up sessions on the two systems. If I had to make a simple fix that didn't require picture, I would simply open up the session, make the adjustment right there, and close it. At one point just prior to having to spit the mix out to tape to screen the film, I made something like 15 fixes in the five reels in 25 minutes. When we were making this screening printmaster, we discovered a fix that had to be made to the final mix. We were able to jump back to the final mix mode in a matter of minutes, needing only to change presets in our AES router in addition to going back to the final sessions.

Where a final mix usually feels like a big piece of machinery that is winding up, with all parts having to stand on one leg and face north at the same time, this time it felt lean and mean. We had three 8-track patchcords taking the outputs of the 24 tracks of stems from the Pro Tools 888 units into the PicMix monitor, and that was it—*no* single-pair patchcords. Not a one.

I am not just saying that it's cool that we were able to use no outboard equipment and no patchcords, I'm saying that this is part of the reason why virtual mixing can work in a workstation control surface environment. You are eliminating a huge number of variables if you don't have to record and play back premixes at the final mix. (I average around 64 tracks, where some films these days go up to almost three times that number.) There were only 24 connections that had to be made to the outside world, and that was to monitor the stems.

When it came time to record the stems for once and forever (three weeks after we had begun the premix), we brought in a third system and recorded all 24 stems tracks simultane-



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ously to Pro Tools and to three DA-88s. While it would be possible to go directly from units to printmaster, I feel safe in predicting that even in my newfound zealotry, I will always print the mix to proper stems. You must always have "rendered" stems that are the starting point for all delivery items such as printmasters and M&E mixes. It's one thing to come back the next day and hope that everything will follow; you should NEVER, EVER walk away from a film without recording stems as wide as you can afford to go.

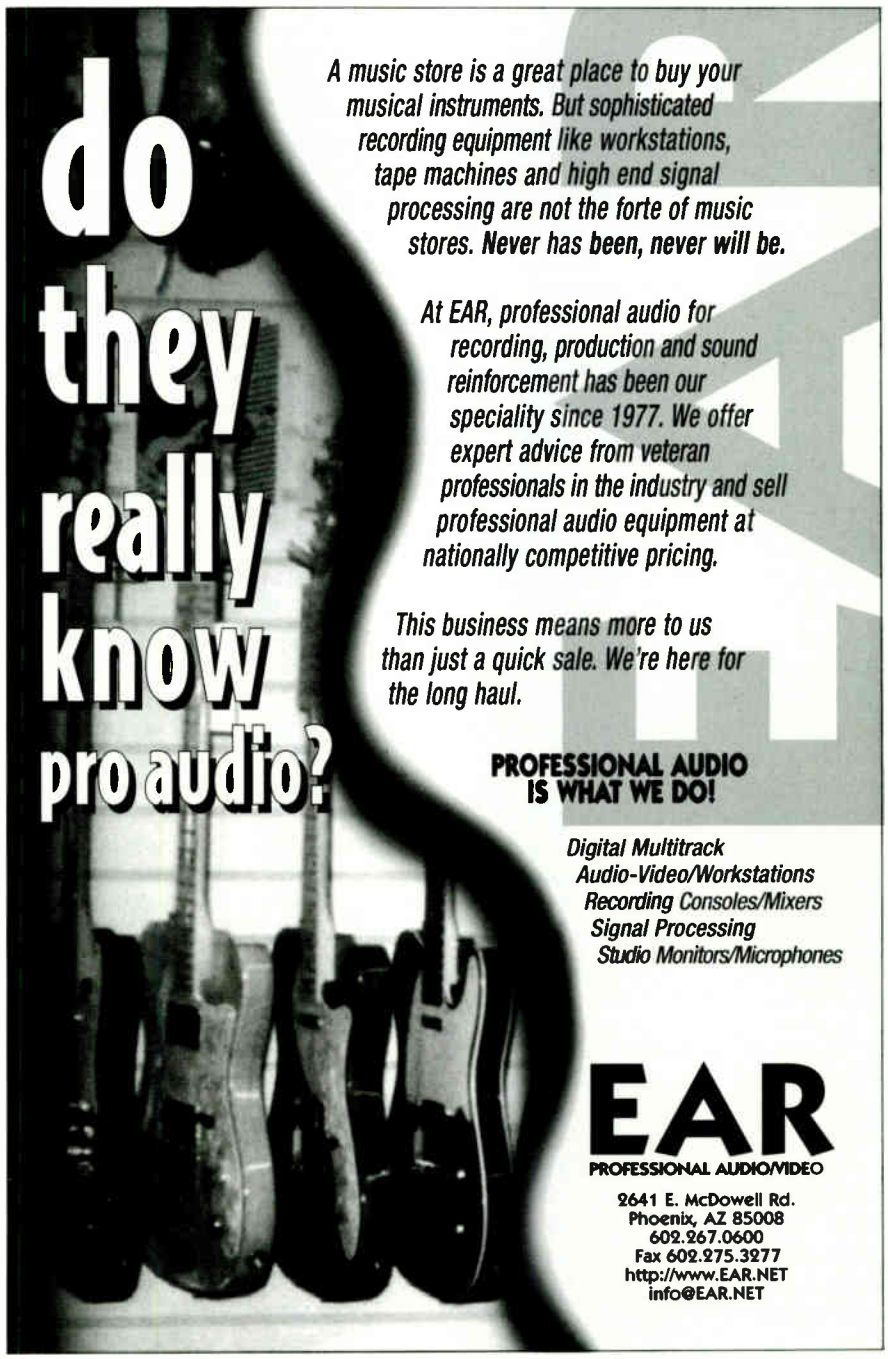
Okay, you must be saying, what's the catch, what's wrong with workstation control surfaces? (I'm trying to speak generically here, although I'm essentially talking about my experience in the Pro Tools environment.) The first problem that comes to mind is that you cannot have a control surface shared by more than one session. As a result, you have to create large mother sessions combining, as we did, dialog and music, and effects and Foley, each with its own control surface. (We had a Pro-Control for all premixes and the DX/MX side during finals and a HUI for the FX/FO side.) The goal is clearly to have a large control surface fed by four-plus separate workstations running separate, smaller sessions with individual food groups kept separate. This way you can premix them separately and are able to do offline or off-stage fixes easily, without requiring a high-horsepower system to open up a session.

For this whole operation to work, it would be essential that the facility have at least one edit room on DSP steroids in order to prep sessions for the stage. This room would, of course, have the same complement of processor, RAM, plug-ins, plug-in setting (both library and current project) and DSP power that would be found on the mix systems. We ate up a lot of stage time in setting sessions up, especially during the head-scratching when creating the master templates. Granted, this was the first time around the block and was not something that we could have put off to assistants. But give me another movie and we'll have it down to a science.

My second request would be for the Mark II version of the control surfaces to have dedicated knobs for EQ, dynamics and time-domain processing. Of course, different plug-ins have different parameters, but it wouldn't be too hard to come up with a pretty complete and all-encompassing set that would be accessed by individual faders. The arrangement and number of the knobs on both the HUI and the Pro Control are such that I would rarely use them, preferring instead to interact directly with the visual feedback of the monitor, viewing the EQ, fader level and reverb as a cohesive group.

My third request would be to automate the final parts that are not automatable, and which have to be set once per reel: pre/post switches on aux sends and the output assignments. Film mixing requires that double-, etc. busing be allowed, something that is, of course, *verboten* during standard premixing and final mixing but is extremely useful when printmastering and mixing M&Es. It's also a big help (I know this sounds silly) when doing pops at the head and tail of a reel—you should always be sending the "god" dialog pop to all recorders. Yes, I'm aware that creative use of sends can create multiple buses, but this is a kluge. And, needless to say, the busing should also take into account surround panning of multiple stems without requiring special plug-ins or delicate DSP management.

I should say that I initially thought that the inability to change buses in mid-reel was going to be a real limitation, but it soon became apparent that

CIRCLE #148 ON PRODUCT INFO CARD

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because we were going right to stems, we had fewer "places" to go. Where in a standard premix you might want to bus a given track according to the needs of the moment in order to have the greatest flexibility in finals, if you're playing back those original units at the final mix, you have complete control to change the level of a given sound.

This is the essence of the advantage of workstation-based virtual mixing: You have the benefit of workstation editing, complete console automation and automated outboard gear in one, simple package. Similarly, by premixing in automation only, you simplify the final mix by adding control of the smallest detail; you never have to do a delicate dance between premixes and sweeteners, nor do you have to load in premixes into a workstation for fixes.

Indeed, the biggest obstacle in the way of this approach being adopted in the industry is not technical or operational, but instead concerns the time-honored division of labor. Sound editors edit and mixers mix, and fewer than a dozen people in film sound speak both languages fluently. For control-surface mixing to make sense, the person behind the console *must* be extremely facile with every aspect of the system. Otherwise, the whole process would get very frustrating, through no fault of its design.

The other obstacle is a simple financial one: Many of the top mixing stages have just put in fully automated analog and digital consoles that cost hundreds of thousands of dollars, and I'm sure they wouldn't look too kindly on replacing them with control surfaces at one-fifteenth the cost.

No claims or opinions expressed here should be construed as this being the first virtual film mix or the first entirely automated in TDM. Rather, I view this column like a pro-audio version of the "letters" that are printed in *Penthouse*: "I have always heard of virtual mixing, but never thought it would happen to me..." Tune in next month for a peek under my TDM kimono.

Until then, I can be reached at P.O. Box 24609, New Orleans, LA 70184; fax 504/488-5139, or e-mail swelltone@aol.com. ■

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*Larry Blake is a sound editor/rerecording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that he first experienced the true power of workstation mixing there.*

*—FROM PAGE 233, NEW YORK POST*

now demanding not only cutting-edge technology but also a comfortable, fun place to work. Imagine that!

Los Angeles still has a firm grip on the glamorous world of feature film post, but when it comes to television audio, New York is still the center of the universe.

### HOWARD SCHWARTZ RECORDING

Howard Schwartz virtually invented modern television audio post in New York in the late '70s, and the elder statesman (he's 52) is still thinking like a pioneer.

Schwartz says the business is "more competitive than ever," which is leading to some big changes. "The trend is doing business, by which I mean one can no longer stand on creative ability alone," he says. "You need client services, technical excellence and creativity, in equal parts."

In a boom town where clients have lots of options, the one who can "provide a fun atmosphere in which to get the job done wins," Schwartz says. "The best restaurant in New York is the one where they know your name. The client will call the facility where the staff remembers their name. The old days of 'I have to work with so and so' are gone. I can buy the same consoles as everyone else, and so what? At Howard Schwartz Recording, clients are treated like they're a big deal."

People also like to associate with success he adds; therefore, they want posh rooms that make them feel like they're working with the leader. "Threadbare is no longer hip," Schwartz notes.

Along those lines Schwartz recently expanded into the *Smithsonian* space on the same floor, adding 10,000 square feet (for a total of 25,000) and 16 post rooms. Schwartz added a new "living room-style" 5.1 room 19 floors above the breathtakingly refurbished Grand Central Terminal. Windows overlook the landmark; in the room is an Avid AudioVision/SSL package. The room also has niceties like multiple plug-in fast Internet connections for clients.

Schwartz did the ADR for the Julia Roberts/Richard Gere film *Runaway Bride* and still does the audio post for *Cosby*, which is shot on video at Kaufman Astoria studios in nearby Queens. Other regular clients include Budweiser, HBO and *The Simpsons*.

Schwartz's outfit includes SSL consoles, four Avid AudioVision workstations, five SSL ScreenSound workstations with SoundNet networking, AMS AudioFiles, Synclavier Post Pro SDS, Sonic Solutions workstations and Fairlight MFX-3 systems.

### SYNC SOUND

Sync, one of the longtime leaders in New York television audio post, launched a major initiative into the feature film mixing business in early 1998, building a big, beautiful film mix theater for a sister company called Digital Cinema (*Mix*, "Post Script," June 1998) around the corner from its West 56th Street home base. Oscar-winning mixer Rick Dior (*Apollo 13*) was onboard, and things looked promising. Then tragedy struck with Dior's unexpected death late last year.

"You can't replace Rick Dior," says Sync partner Bill Marino. "There's no easy fix for the situation." However, the boom in surround mixing for television and DVD has led to a refocus, at least temporarily, of the posh Digital Cinema facility on high-end television work.

A key addition to the Digital Cinema mix theater is double-stack video projection (in addition to the room's full 16mm and 35mm capability). "We've got two projectors throwing the same video image on our big screen, thereby doubling the brightness," Marino says, adding that it makes a big difference in the quality of the experience for the client and mixer.

Curtis Drake was hired to supplement the mixing staff, which includes Graham Maxwell and partner/founder Ken Hahn. "Curtis is an expert on the AMS Neve Digital Film Console, which is the centerpiece of Digital Cinema, having worked extensively on the console's product development team from the operator's standpoint," Marino explains.

Tom Fontana's hour-long police drama *The Beat* will be posted at Sync, taking up the slack left by the cancellation of NBC's *Homicide: Life on the Street*, which had been posted at Sync for years.

The new Fontana show will likely use the Digital Cinema room, Marino notes. "Longform is our focus and will continue to be," he says, pointing out that Sync does a great deal of work for HBO and MTV networks.

At press time, it was premature to announce some new projects, but Marino expects to land at least one more of the new prime time television projects emanating from New York. "The business climate is good, production is up," Marino says.



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Sync recently added three Pro Tools Mix Plus systems and upgraded its AudioFile editing capability with three 24-bit systems.

### SONY MUSIC STUDIOS

The Sony Music Studios post facility, which comprises four rooms, was built (like the rest of the massive complex) to service Sony's own output. However, it has grown into one of the leaders in the overall New York post community.

At Sony the specialty is music programming and, to a lesser extent, cable comedy and children's shows. "We don't go after dramas or sitcoms," explains John Alberts, a New York audio post veteran and multiple TEC Award-nominee. Music, cable comedy and children's programming make up 90% of Sony's post business, he says.

But DVD work is the big news. "We're very involved in surround mixing for DVD, which has been going strong over the past year," Alberts explains. They, of course, have done all Sony releases, nearly 40 to date. Projects in-house at press time included DVDs from Natalie Merchant and The Bee Gees.

"We do most of VH1 and MTV prime time programming, as well as a great deal of work for Comedy Central, including mixing *Upright Citizen's Brigade* and the voice recording for *South Park*," Alberts says. PBS's *Sessions from West 54th*, which is shot in the facility's big sound stage (where, in a much earlier incarnation, scary scenes from the film *The Exorcist* were shot), is also posted at Sony.

PHOTO: A. MICHAEL HOILAND

*Studio F in the Audio Post Department of Sony Music Studios*

The facility recently made a significant Pro Tools hardware and software upgrade; the company is now running five Pro Tools stations and adding the Pro Tools|24 MIX system with 16 outputs and 64 voices, as well as "every


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*Mixed Nuts: L-R, Taro Naruse (assistant engineer), Joe Vagnoni (audio engineer), Domenica Gargone (assistant manager), Mark Schultz (audio engineer), Peter Buccellata (audio engineer), Brian Heidebrecht (assistant engineer), Barbara K. George (manager), Francis Garcia (assistant engineer)*

Pro Tools post-production software plug-in available," Alberts notes. Mixing takes place on Euphonix, Neve and SSL consoles.

The ascendancy of Pro Tools has also presented new competition. "There are a lot of small, single Pro Tools facilities being built," Alberts notes. "However, it comes down to people; no matter how many people buy the latest gear, there is always a shortage of excellent mixers."

## NATIONAL SOUND

The big news at National Sound is that Peter Fish, composer and creative director, is no longer with the firm. National's vice president of entertainment and production, Russell Best, says Fish left in mid-summer after a "long and very creative stint, during which he helped build National Sound into a first-class facility. He wanted to pursue his own ventures. We'll miss Peter, but we're actively looking to take National to new heights by restructuring that division under powerful, diverse industry players."

Business prospects are looking good, as "audio becomes more important each year," says vice president of technology and engineering Jonathan Applebaum. "Television used to be a throwaway; people would leave an online suite with a documentary-style program and say, 'We're done!' Now, more and more people are going from the Avid room to a mix facility, and this is, of course, a necessity with surround mixing."

As evidence of the greater importance of television audio to consumers in the real-world environment, Applebaum notes that he is seeing mix rooms being designed without the traditional tiny Auratone speakers for single-speaker/small speaker TV reference. "With the growth of easy-to-use surround home systems, overall, consumer's speakers have improved, which is truly great news for facilities such as ours."

National mainly handles a mix of long-form, promotional and PBS work, with a bit of broadcast and cable network business. Clients include *Nature* from PBS, VH1 and MTV promos, A&E longform and promos, and Lifetime, Nickelodeon and ESPN promos. The facility has five mix suites for sound to picture, three prelay suites, as well as two each for music composition and music/sound effects search, and one duplication room.

New gear includes three 5.1 Euphonix consoles added in the past 18 months, with one new room featuring the recently popularized living-room-with-windows configuration. "The days of the dark, windowless room with only task lighting are coming to an end," says Applebaum. "Our windowed room has natural wood trim and an open, homey feel. If you're going to spend eight to 16 hours in a room, you might as well be comfortable."

National handles sound editing and mixing and has networked the facility so that editors and mixers can share the data files. The company also has divisions called 101 Original Music, which composes and records television music, and Those Music Babes, a team that creates fresh-sounding music on a budget from library material.

## NEW YORK MEDIA GROUP

Surround sound is booming at the audio post-production divisions of the New York Media Group, which includes Superdupe Recording, Mixed Nuts, East Side and Lower East Side.

Nine of the various divisions' 16 post suites are equipped to handle the complex mix requirements of multichannel work. "Surround is being driven by the boom in home theater systems," says Piers Plaskitt, marketing director for NYMG. A recent high-profile project was the surround audio for the DVD release of the Oscar-winning film *Sense and Sensibility*.

The facility, now in the process of updating each of its rooms one at a time in a rotating cycle, recently completed a new John Storyk-designed living room-style surround suite at its Lower East Side operation. "The new room is a bit like visiting a downtown loft that has a studio. No one wants to be locked in a dark room without windows anymore," Plaskitt says.

The New York Media Group has made a huge commitment to Soundtracs DPC II consoles with a total of eight throughout the various divisions: Five are at Superdupe, two at Lower East Side and one at East Side. That facility also recently obtained four Fairlight MFX-3 systems and a Fairlight Media Link network.

Superdupe is beginning its second season of doing the audio post for ABC's popular *Spin City* and expects to be posting at least one more of the six new network prime time shows now in production in New York.

The *Spin City* assignment is notable because that task includes laugh sweetening, which has always been a solidly West Coast business. "We convinced DreamWorks we could do it here," Plaskitt says proudly.

Also, the DVD business has exploded, making it one of the busiest summers ever and helping to compensate for the summer slowdown in spot work.

## AROUND TOWN

Business has been good at Soundhound, which handles a mix of spots and cable network promotion. "The cable promo world is a staple in New York, and it is a 12-month-a-year business," says owner Gail Nord.

The facility also does a lot of work on new narration and M&E tracks for longform cable network programs. "The



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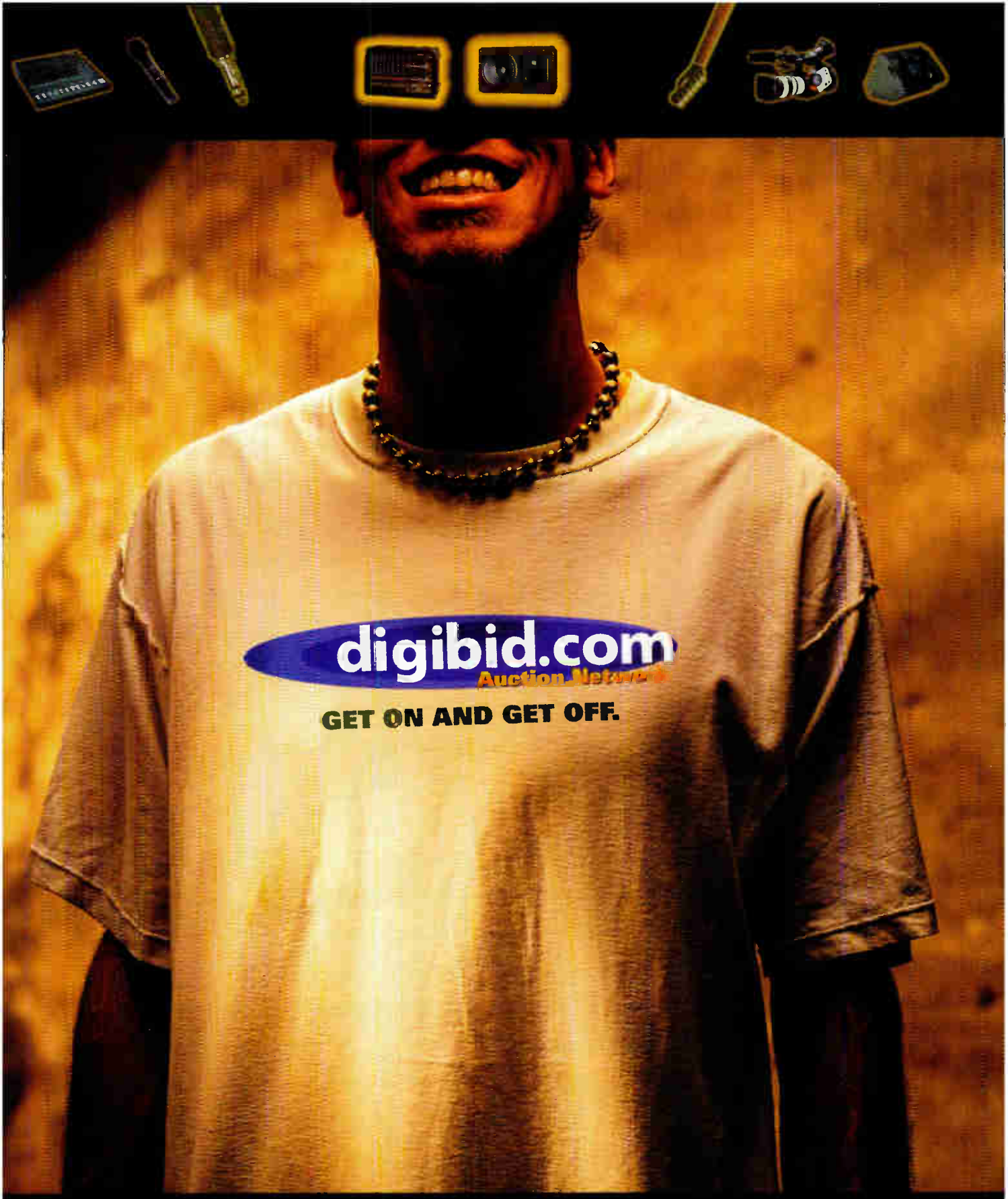


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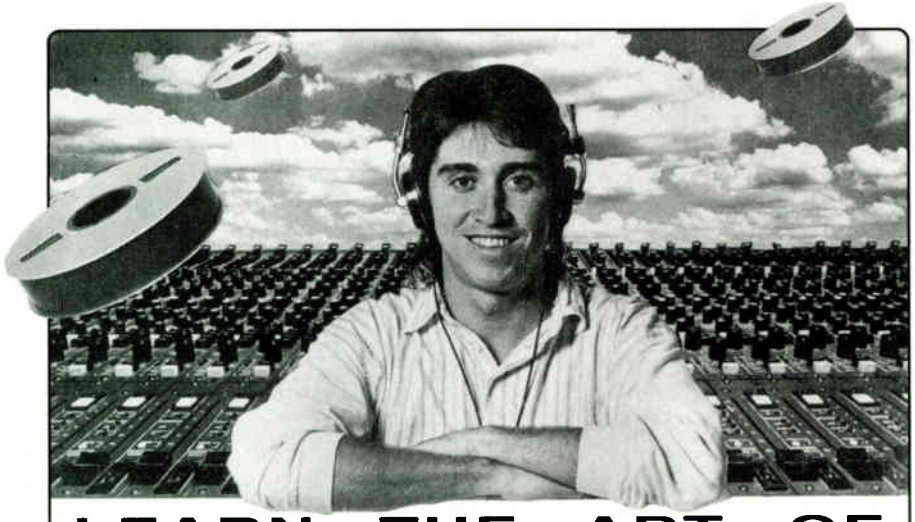

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cable nets buy programs from overseas and redo the narration in English, or English without an accent, or rewrite narration to update the piece," Nord explains.

Soundhound has six studios, all with digital picture capability, mainly using Pro Tools|24 with Pro Control. Studio D uses Doremi V1 digital video for random access.

A new 5.1 room is expected to be open this fall. "We took down a studio and built a living room-style facility," Nord says. "It's high-tech with a low-tech feel. There's no separation between the producer and mixer." Soundhound expects to add two new rooms in 2000 by acquiring more space in its current building; however, plans are not yet final.

**Pomann Sound** specializes in cartoon work and spots. The success of the company's work on Nickelodeon's hit *Doug* has led to post assignments for the new show *Courage the Cowardly Dog* for Cartoon Network, *Little Bill*, the new Bill Cosby tooner from Nickelodeon, and the new *PB&J* from *Doug*'s producers for the Disney Channel.

"The influx of longform work we've been getting helps even out the ebb and flow of the agency work," says Darryl Jefferson, studio manager.

Pomann is planning a new studio with a 24-bit DSP Postation editing/mixing system, bringing the room total to six. "The new DSP will give us more speed and flexibility and more powerful editing capabilities. It's the cutting edge," Jefferson says. The room should be operational in early 2000.

**Broadway Sound**, a division of Lorne Michaels' Broadway Video, is currently doing audio mixing and sound design for Noggin, a new Nickelodeon network, specifically for a live action and animated longform show called *Phred on your Head*. Broadway is also posting all of Noggin's on-air promotional spots.

The team of Ralph Kelsey and Michael Ungar is also doing work for Showtime Networks, mostly with an image campaign for the new venture Showtime Beyond. Several small, independent feature films have also been mixed there recently.

Broadway has four post rooms; Studio 4 was added in the last 18 months and was specifically designed to handle longform programming. There are plans to expand the facility, including the purchase of two new digital consoles, but nothing had been solidified at press time. ■



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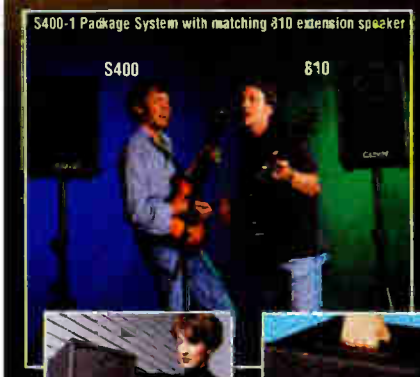

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# SOUND FOR *FOSSE* AND *ANNIE GET YOUR GUN*

PHOTO: CATHERINE ASHMORE

PHOTO: JUNICHI TAKAHASHI

Because so many in our little industry gather in the Big Apple for the October AES convention, I decided it would be appropriate to profile two of the current top Broadway musicals. Long before the 1999 Tony Award nominations were announced in May, I had picked out *Fosse*, the all-dance tribute to Broadway's greatest choreographer, and *Annie Get Your Gun*, which originally opened in 1946 with Ethel Merman playing the title character. Surprise, surprise—though sound design is not yet recognized as a Tony Award-worthy category, both of my selections won big at the June 6 awards ceremony. In fact, *Annie Get Your Gun* won two Tonys (for Best Musical Revival and for leading actress Bernadette Peters) and *Fosse* won three (for Best Musical, for orchestrations by Ralph Burns and Douglas Besterman, and also for Andrew Bridge's lighting design). But in many other respects, the two productions could not be more different. Perhaps this article will help you decide which of these fine productions you will treat yourself and a friend to when you're next in New York.

## ANNIE GET YOUR TONY

The current revival of *Annie Get Your Gun* opened last February in the 1,584-seat Marquis Theater, located on Broadway at 45th Street. Loosely based on the true story of Annie Oakley, an illiterate hillbilly markswoman who shot to fame with Buffalo Bill's Traveling Wild West Show, *Annie Get Your Gun* features one of Irving Berlin's finest scores and opens with one of Broadway's best-known songs: "There's No Business Like Show Business."

Though the Marquis stands on a street lined with classic theaters, its acoustics more closely resemble those of a modern casino showroom. In fact, the room is so dead that sound designer Tom Clark of Artec Consultants decided to create a surround reverberation system to compensate for the lack of reflected energy from the walls, floor and ceiling. Clark positioned nearly four dozen EAW UB-12 surround speakers on the theater's side and rear walls, feeding them from a Lexicon 300 (run through a compressor to keep it under control on loud passages).

Clark employs Stage Accompany's E-24 ribbon driver speakers as the main orchestra-level vocal system and uses 20 of SA's small F-7 units for front fills and two rows of under-balcony speakers. A further pair of E-24 speakers is positioned on the sides of the stage for foldback. All of the SA speakers are powered by Yamaha H5000 amplifiers.

Clark discovered the E-24 during a six-hour benefit several years ago. "At the end of the night I realized my ears weren't fatigued at all," he recalls, and he went on to use the E-24 for vocal P.A. for a production of *Jane Eyre* in Toronto and *Side Show* on Broadway.

For reinforcement above the orchestra level, Clark specified a pair of Meyer Sound self-powered CQ-1 speakers positioned on the proscenium at the balcony level and a center cluster comprised of three Meyer self-powered UPA-2Ps for the main floor, plus two more CQ-1s for the balcony. "It takes a lot more power in this room than you'd think because of all the absorbent surfaces," Clark explains. "It's a long throw upstairs, and we wanted to be sure we didn't run out of steam before we get to the back of the balcony."

## INTUITIVE SOFTWARE

Sound equipment for the show was supplied by Promix, Inc. (Mount Vernon, N.Y.), and the system was tuned by SIM guru (and *Mix* contributor) Bob McCarthy using XTA's AudioCore software to remotely configure 13 XTA DP200 Series digital signal processors,

BY MARK FRINK

—CONTINUED ON PAGE 253



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# THE BOSS IS BACK!

## *Bruce Springsteen & the E Street Band Hit the Road Again*

PHOTO: NEAL PRESTON

Bruce Springsteen worked with the E Street Band for close to 20 years before he dissolved the unit in the late '80s to explore other musical settings for his songs. The new group that recorded and toured with Springsteen in the early '90s never achieved the same public recognition as the E Street Band and was, some would say predictably, short-lived. Next, as if to further distance himself from the E Street days, Springsteen embarked on solo acoustic tours that focused on the material from his most recent album-length recording, the spare *The Ghost of Tom Joad*.

However, late last year, word came of a reunion tour by Springsteen and a re-formed E Street Band that would feature not only original guitarist Steven Van Zandt (who had left to front his own band just as Springsteen was reaching his greatest popularity) but also his replacement, Nils Lofgren. Original members drummer Max Weinberg, bassist Garry Tallent, keyboardists Roy Bittan and Danny Federici and Bruce's main visual foil, Clarence "Big Man" Clemons on saxophone, would all return, and, with the addition of Springsteen's wife Patti Scialfa on vocals and guitar, the reconstituted E Street Band would consist of eight members.

PHOTO: ERIC RUDOLPH

*FOH engineer John Kerns*

Springsteen fever made show tickets the hottest in the country. Following 36 European tour dates, the initial five U.S. dates at the 20,000-seat Continental Airlines Arena in East Rutherford, N.J., sold out within two hours. Another five shows were immediately added and then another five, all of which sold out; the final total of 15 Jersey shows would draw approximately 300,000 people. Dates in Boston, Washington, D.C., Detroit, Philadelphia and Chicago followed a similar multiple show/sell-out pattern. (West Coast dates had not yet gone on sale at press time.)

*Mix* attended an East Rutherford show on a bright day in August. The Continental Arena's parking lot was filled with minivans, lawn chairs, charcoal grills and boom boxes blasting "Jungleland" and other old Springsteen favorites. A wretchedly weak and off-key Springsteen imitator yelped a mangled version of "Born to Run" from a boardwalk-style attraction that had been set up, mercifully, on a distant edge of the lot. Inside, the mostly older crowd seemed psyched to relive the most memorable and resonant pop cultural experiences of their youth. Much of the audience was made up of couples about the same age as the star; many had brought excited pre-teen and teenaged children.

After a long delay, the E Street Band finally took the stage one by one, with Springsteen emerging last. The first part of the show featured straight-ahead, no-nonsense renditions of one favorite after another, including "Badlands" and "Two Hearts," before Springsteen moved into his special brand of engagingly dopey showbiz shtick. For example, during the intro to "Tenth Avenue Freeze-Out," Springsteen climbed atop Bittan's grand piano and urged the crowd to belt out the song's introductory notes with increasing fervor. Over and over, Springsteen good-naturedly cajoled the audience as the band vamped, displaying exaggerat-

BY ERIC RUDOLPH

—CONTINUED ON PAGE 248



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# Dixie Chicks

TEXT AND PHOTOS BY STEVE JENNINGS

The Dixie Chicks: Martie Seidel - vocals, violin, mandolin; Natalie Maines - lead vocals, guitars; Emily Erwin - vocals, lead guitar, dobro, banjo

One of the hottest acts in country music, The Dixie Chicks toured throughout the summer, both as support for Tim McGraw and as headliners. They also appeared on the multi-act Lilith Fair and George Strait Country Music Festival tours. Winners of two 1999 Grammy Awards, the Chicks have now sold over two million of their major label debut record, *Wide Open Spaces*, and show no signs of slowing down—a new album, *Fly*, should be in the stores as you read this. *Mix* caught two of their California shows, an outdoor show at the Oakland Coliseum, and an indoor show at Sacramento's Arco Arena.

Monitor engineer Johnnie Branham's mix position, under the stage. In addition to the Yamaha PM4000, which is "maxed out" at 52 outputs, Branham's setup includes a Summit ACL 200 Dual compressor limiter, Drawmer gates, an Aphex 900, Klark Teknik DN410s, a TC Electronic M2000, an Eventide 3000 and a Yamaha SPX 990.

FOH engineer Fernando Alvarez Jr. has been with The Dixie Chicks since June of 1998. "In the past I've been using the Yamaha PM4000, but for this show I'm using a Soundcraft Series Five," says Alvarez, citing "English" EQ as his favorite. "The board is a 48-input, and I'm using 37 inputs right now." Alvarez has nothing but praise for P.A. company MD Systems/Clair Bros. Audio, and singles out John McBride for his personal touch. "He's always making sure everyone's happy," Alvarez says.

Alvarez's FOH racks include two Yamaha SPX 990s, an Eventide 4000 and eight channels of 900 Series dbx dynamics processing. "For Natalie's vocal I'm using the BSS 901 and a Summit 200, which is perfect—it warms it up a little bit, and it's exactly what I've been looking for."

MD Systems/Clair Bros. Audio has been providing sound services for the Tim McGraw/The Dixie Chicks tour.

Johnnie Branham mixes from under the stage and relies on TV monitors to follow onstage cues. He runs in-ear mixes for all three of The Dixie Chicks. At present, "the girls" are using Shure E1 earbuds with custom molds, though Branham is eager to try the new Shure two-way earpiece or Westone UE-5s. "I'm using the PSM600 system right now, but I should be getting the 700 system soon so I can try that out," he says, referring to Shure's Personal Stereo Monitor Systems packages.

"I put the 31-band EQs on the fiddle, the banjo, the dobro and the acoustics," explains Branham. "The girls are real particular; they want it to sound as close as you can get it."



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Martie Seidel

Natalie Maines

Emily Erwin

Guitar/banjo/violin/mandolin tech "Crash" takes care of Seidel's two violins, which are run through a Samson wireless unit. Maines plays Taylor acoustic guitars, and a Fender Telecaster through a Fender amp. Erwin plays a Taylor acoustic, a Dearing banjo and a Shearhorn dobro. "Everything's run wireless to DI," explains Crash.

PHOTOS: STEVE JENNINGS

# FLAMING LIPS PRESENT THE MUSIC AGAINST BRAIN DEGENERATION REVUE

Thanks to the Flaming Lips, headphones were on everyone's minds, and ears, at a San Francisco stop on the Music Against Brain Degeneration Revue tour. The Oklahoma City band passed out 500 headphones and Walkman-style radios to audience members at each stop on their tour in an effort to replicate/enhance the lush '60s psychedelic sound of their new album, The Soft Bulletin.

"Usually when you go to shows, honestly, the sound is horrible," says Michael Ivins, bassist for the band known for its boombox sonic experiments and Zareeka (a four-CD release designed to be played simultaneously). "I think it came about when Wayne [Coyne, the Lips vocalist] went to one of those big multiplex theaters where they give you hearing-impaired headphones. You have the sound right there in your ear, and that's basically the idea. You get all the little nuances that you really do miss live, that you hear on records or in the car or in the house—reverb tails, a little bit of the high intelligibility of the vocals."

The process is simple. Audience members trade an ID for a set of Megabass MDR-W08 headphones, a radio and a card with instructions. They then tune into a broadcast of the concert's stereo mix.

Some listeners bring their own "high tech" Sony 75 or 76 headphones, but the headphones you stick right in your ear, that don't block a lot of exterior sound, actually work better, says FOH engineer Chris Chandler. "With those, you get a lot of stage sound and headphone sound together," he says. "You don't lose all the bottom."

"That's the idea, enhancing not replacing," says Ivins.

The headphones seem a good fit for the tour, which Ivins compares to the "old-style Motown revues." (The tour will resume this winter with a different lineup of bands.) "The whole idea behind Music Against Brain Degeneration is: If you listen to complex music and concentrate on it, it supposedly will help you think better," he says. "So hopefully you listen to all the complex music that's going on here and leave the show, if not smarter, at least not dumber than when you came in.

"The headphones really concentrate things. You know, when you're walking down the street and someone has headphones on, you don't f—with them," he says with a laugh. "If you're in a club and you don't want to talk to anyone, you just put the headphones on. And you can't get away from it, it's right there."

When the revue rolls into town, tour manager Darryl Bascom finds the biggest gap between stations for broadcast. The signal only extends 100 to 150 yards, and they haven't had any problems with interference yet.

On the road, Chandler uses the house console but also carries an effects rack with a Lexicon PCM 200 and 41, an SPX900 and a "Big Bottom" effects box. He mixes the music for broadcast down to a "lo-fi" Yamaha 4-track MT120. Chandler and Ivins then broadcast the entire show on a Ramsey SM100 FM transmitter, which the Lips assembled from a kit. The transmitter's homemade PVC pipe antennas also need to be moved around the venue to avoid buzz.

At the Fillmore in San Francisco, the experiment seemed only partly successful. This audience member could hear more sonic definition, trebly details and some of the panning effects when the Flaming Lips and Sonic Boom's E.A.R. performed. But the effect was negligible during the more spare sets by Robyn Hitchcock and Sebadoh, and the loud house sound demanded an equally high volume from the radios. As a result, listeners were advised to only use the headphones for 10 minutes at a time, according to the instruction cards passed out with the headsets.

The variety of musical styles seem to offer an engineering challenge, but Chandler says the tour is easy because almost all the bands don't use live drums. (Sebadoh, which does, has their own engineer, Miles Kennedy.)

Chandler's main challenge, he says, is getting vocals up over the stage volume. Recently acquired Audix OM5 mics have cut down on bleed from overall stage volume, he explains, "but it's definitely a chore to get the vocals up without feeding back. So if you want to hear the vocals better, you just put on the headphones."

"And you can go to the bathroom and not miss the show," adds Ivins.

—Kimberly Chun

FOH engineer Chris Chandler

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*—FROM PAGE 245, BRUCE SPRINGSTEEN*

ed disappointment with the crowd's reaction until they had reached a sufficient level of volume and enthusiasm.

Mid-song, Springsteen segued into a Talking Heads-influenced version of "Take Me to the River" and then went into a story about how he'd long ago sought advice from a gypsy fortune teller to help him conquer his fear of crossing an unnamed river. His problem was, the gypsy dramatically revealed as she loomed over her crystal ball, that he was trying to make this epic journey alone.

Springsteen used the soothsayer's prescription, outlining the specific kinds of help he needed to complete the journey (love from Scialfa, brotherhood from Clemons, etc.) as an opportunity to lovingly introduce each band member, finally going back into "Tenth Avenue." As the singer joyously belted the concluding lyrics—"when the change was made uptown and the big man joined the band"—Clemons wailed a variation on his basic trademark sax riff, and the crowd erupted into a rousing, hand-waving ovation.

### DUAL FOH CONSOLES

The man behind the knobs at the FOH position during all this excitement was John Kerns of Audio Analysts Inc. in Colorado Springs, Colo. Audio Analysts also provides sound reinforcement for neo-country knockout Shania Twain (both Springsteen and Twain are managed by Jon Landau), and the large FOH mix area contained equipment cases stenciled "Shania Twain," indicating that the gear for both acts is essentially the same. "We find what works and then use it," Kerns acknowledged.

However, in spite of the similar sound systems, the two acts are worlds apart. "Shania's show is note-for-note, must-sound-like-the-record every time," Kerns noted. "Bruce's is more like just a bunch of guys grabbing guitars and hopping on stage and playing."

To accommodate the 65 inputs from the stage, Kerns was using two consoles, Midas XL-3 and XL-4 models, with the smaller XL-3 console set at 90° to the larger XL-4 (the "A" board), which faced the stage. "Other than the kick, hi-hat and snare, I've got the drum kit on the XL-3," explained Kerns. "I return the drum sub-mix to the main board on a stereo module, the same with the keyboards, so that the faders I need are right in front of me, on the A board."

Unlike many rockers who play the same exact set night after night, Springsteen always varies his show, sometimes wildly, so Kerns has bypassed the XL-4's VCA moving fader automation. "We have significant set changes, sometimes as many as half-dozen or more, every night," Kerns noted. "It would take me too long to scroll through and find the automated cue for a song that has suddenly been added to the set and hit 'go,' so I mix manually. That works for me, although sometimes I get caught flat-footed!"

### HIGH DEFINITION STEREO

88 Audio Analysts Aalto High Definition speaker cabinets were arranged in nine zones to provide stereo coverage throughout the house. Because almost every seat is being sold for the U.S. arena dates, including those behind the stage, the P.A. was set up in a 360° configuration. In fact, Springsteen and the band gave special attention to those seated in back, at one point walking up ramps on the simple stage and playing a few feet from the first row of the behind-the-stage patrons.

"The Aalto speakers are high-pack, low-pack boxes that are very similar to the JBL HLAs," explained Kerns, adding that for the European stadium dates (the only outdoor shows on the entire tour) the speaker complement was increased from 88 cabinets to 112. In East Rutherford, the front of house audience was covered by four columns of five Aalto cabinets each, with the auditorium sides covered by four columns of three cabinets each. The audience behind the stage got four columns of two cabinets each.

The nearest audience sectors were covered by the bottom row of speakers in each column; the lowest cabinets were aimed down toward the seats, a simple process since the Aalto cabinets can be tilted within their frames. Kerns also had 12 underhang boxes in a left and right configuration shooting straight down from the main left/right speaker hang and had placed center front fills in a one-foot gap at the front of the stage, between the thrust and the main deck, to fill the first half-dozen rows. Twelve double 18-inch Aalto Baritone subwoofer cabinets were placed directly under the stage, in left and right clusters, firing forward.

Finally, eight JBL HLA speakers were hung in a mono delay cluster about ten feet behind the mix position. "They're just for some added clarity in the extreme reaches," Kerns said. "They are used so minimally you'd never notice them unless I was turning them on and off." The entire system was powered by



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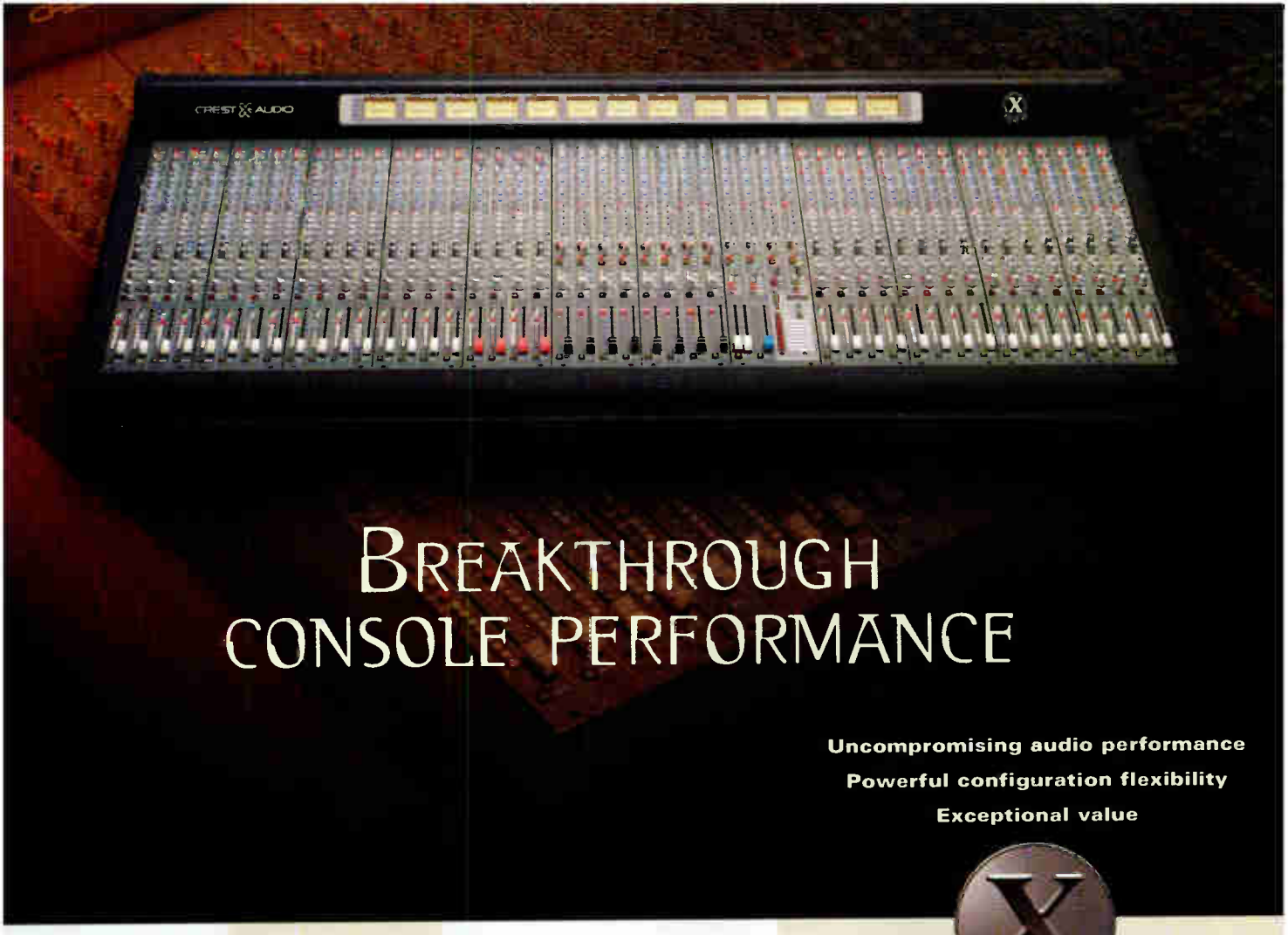


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fifteen racks of Crown amplifiers, all controlled by Crown's IQ control program and a laptop computer.

### MIC CHOICES

With the exception of the lead vocal mic, all the vocal mics were wired Audix OM 3s. Springsteen's vocal mic was an Audix OM 3 capsule specially fitted in the newest Sony wireless shell. "Audix milled some adapters for us to fit their capsule onto the newest Sony wireless. We liked the reliability of the Sony shell and electronics, but their mic capsules were not our first choice for Bruce," Kerns explained. "Bruce has used the Audix OM 3 since 1992, and he really knows how to work it. The capsule has amazing presence; I don't know how to describe it except to say it is really right there. When he goes into his stories, he doesn't always project that strongly so we needed a mic that could get the intelligibility and gain we needed. With its nice tight pattern, the Audix OM 3 capsule keeps a lot of background stuff out, and gave us the gain without feedback."

Springsteen's guitar amp is miked with a Shure SM 57 and a Sennheiser 421. "These are the first two guitar amp mics I always pull out, especially for this older rock band style," Kerns said. "I take the signals from both guitar amp mics but depending on the night I try to figure out which one fits the night's mood better and favor that one, primarily relying on the Sennheiser. I bring in the other mic for solos, so we have both running then. This gives the solos a slightly different tone and, of course, a volume boost."

Lead guitarists Lofgren and Van Zandt's guitar amps were miked with the newer Audix CX 111 large-diaphragm condenser mics; Scialfa's occasional electric guitar playing was miked with an old Sennheiser 409. According to Kerns, the various cabinet mics were chosen because "we put a couple of things up there, and those mics just seemed to work best."

For his harmonica, Springsteen used a Shure bullet mic run into a small Fender amp miked with an SM 57. Clemons had wireless SM 98s on both his baritone and tenor instruments. Bittan's acoustic piano (which is wired to send out a MIDI sample) was miked with two Shure SM 91s taped inside. Tallent's electric and acoustic basses (the stand-up bass was used during a brief acoustic set) were taken directly via Countryman DIs.

Federici's electronic keyboards were also taken direct, but the Hammond B3 Leslie organ speaker cabinet got three mics—two Shure VP 88 stereo mics on top and a Sennheiser 421 on the bottom. Kerns' Leslie set-up was as follows: one of the Shure stereo mics was set in its widest pattern directly in front of the Leslie rotor, and the stereo signal was panned wide left and right at the console. "However, on one of the sides of this stereo mic, it doesn't matter which, I flip the phase on the console," Kerns said. "The other Shure VP 88 is set on the narrowest pattern possible, and I turn it 90 degrees so both the stereo mics are capsule-to-capsule about a half-inch apart. However, I only take the side from this second stereo mic that is facing the rotors, and keep that signal panned dead center. With this setup, I get more of the swirling effect of the rotating speakers in the cabinet. Usually with a mic on a Leslie, the sound of the rotating speakers is there and then gone, but this way you hear it coming, there and going, and get a much wider sound. You can do this more easily with one figure-eight mic; just take the signal and flip the phase, but we had these stereo mics so I used them."

Kerns selected a Shure Beta 57 on top of the snare and a SM 57 on the bottom for powerhouse drummer Weinberg (on leave from his job as musical director of *Late Night with Conan O'Brien*). The toms both got SM 98s and, for the sake of sight lines, traditional overheads were replaced with the new Shure KSM 32s placed underneath the drum set. The hi-hat got an AKG 391, and the kick had a Beyer M88, as well as an SM 91 for the monitor mixer.

Perhaps the most unusual thing about the drum setup was that no gates whatsoever were used. "Max told us during the rehearsals that he did not want gates on the drums," Kerns said. "We put up our normal arguments—I've always used gates, and I tried to explain that on a 115 dB show we'd have to do some radical EQ without them. But Max plays with such great dynamics that gates weren't helping at all, plus he has such good technique—such a solid idea of a drum sound and his drums are tuned so well, individually and as a set by his tech—that we really didn't need gates. Instead we do as little EQ as possible, 2 to 3 dB taken out anywhere at maximum, so we can hold down the ringing. The gates are there, but they're not being used at all."



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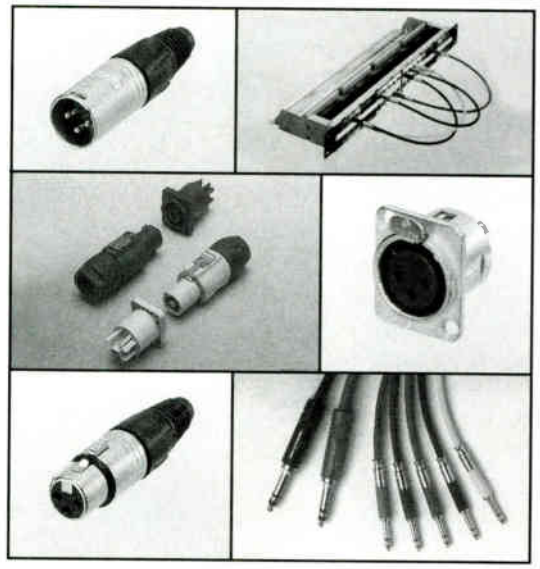

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### HIDDEN WEDGES

Half of the band was using in-ear monitors (Westone ear pieces with Shure PSM-600 transceivers); however Springsteen and the front-line guitarists Lofgren, Scialfa and Van Zandt were working from wedges hidden below the stage under grids. "The entire band was on wedges at the start, but we've slowly converted half of them to the in-ear approach," Kerns said. "Audio Analysts has been doing a lot of work with Westone, fitting Shania Twain and her entire band with them, and they're all really happy with the in-ears."

The tour is carrying two Soundcraft Series Five monitor mixers, positioned on either side of the stage. "This is not a common thing," Kerns explained. "It happened because the level of attention the nine people onstage needed was simply too much for one person." The monitor mixers, Monty Carlo and Scott Pike, both managed a combination of in-ear and wedge speaker foldback systems.

### A GREAT HUMAN BEING

At FOH, Kerns used an AMS 16 as the main reverb effect on Springsteen's vocal and two TC Electronic 2290 delays and an Eventide H-3000SE Harmonizer for backing vocals and sax. He also has three PCM 70s available, which he uses for drum and backing vocals reverbs. "I've tried a couple other reverbs on this tour, but the PCMs worked best," Kerns noted. A TC Electronic 1210 Spatial expander helped spread out the acoustic guitars.

Kerns had quite a complement of compressors and used 16 channels of Drawmer DL-241 stereo limiters for background vocals, kick, snare and bass guitar, and four dbx 160 compressors on the guitars. For Springsteen's vocal, Kerns picked a Manley Variable Mu, and he also strapped a Solid State Logic compressor across the stereo mix bus. The composite mono mix to the delay cabinets was processed via a TC Electronic 1280 and a BSS Omnidrive. Finally, for cue monitors, Kerns had set up two big wedge speakers on each side of his main XL-4 board. "Some people put Yamaha NS-10s or something on the FOH board; I tried that and shredded them the first night!" he recalled. "I don't like to use headphones at all. When I cue something up, or if there's some funny noise, or for line check, it



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is much easier for me if I just have a couple of real cabinets. They're delayed so when I do solo things up it's in time."

So what's it like handling the sound for Springsteen, who is legendarily demanding on the audio front? "It's a great gig. He's an extremely nice guy who is highly focused as to what he wants and can tell you precisely what that is," Kerns said. "He's pretty particular about sound. He'll say, 'On this, we need a certain drum sound, and this part needs to be favored.' He's very aware of everything that is going on and has certain ideas in his head and doesn't have any problem expressing them. It's great to work with someone like that—you know exactly what they want and exactly how they want it and when. Bruce is a great human being, as is everyone on the tour." ■

*New York-based writer Eric Rudolph grew up near the Jersey Shore, where he went to high school with Steven Van Zandt and saw Bruce Springsteen perform at teen dances, clubs and concerts with his bands, including The Castiles, Child, Earth, Steel Mill, and Dr. Zoom and The Sonic Boom.*

—FROM PAGE 244, THEATER SOUND

which provide parametric EQ, delay and gain adjustment for each speaker zone. This method allowed McCarthy and Clark to "SIM" the room quickly and efficiently from a single location in a single overnight nine-hour session. "The AudioCore software is very intuitive," says Clark. "But the most important thing is that you can track changes and experiment with fine-tunings of delay, EQ and level without losing the ability to restore previous settings." The result is an unobtrusive sound that feels natural and comfortable. In fact, perhaps the greatest compliment for a Broadway sound design, it almost sounds as if there are no speakers at all.

An emphasis on "natural" sound runs throughout the sound design. Sound engineer Bob Biasetti mixes the show manually on two Cadac J-type consoles. "There's no automation, except for mutes and VCA assigns, no moving faders, and it's about as straight-ahead as you can get," Biasetti explains. As in many traditional shows, the chorus has few individual lines, and, apart from one music cue played through an upstage speaker, there are no sound effects.

### THE COWBOY ORCHESTRA

However, *Annie Get Your Gun* is unusual in that it features an orchestra split into three sections, with two of the sections actually playing on bleachers on either side of the stage, dressed in cowboy outfits and in view of the audience. Brass instruments, drums, bass and keyboards are on stage right with conductor Marvin Laird, while the reeds, guitar and percussion are on stage left. The string section is placed traditionally, in the orchestra pit, which offers a degree of isolation from the rest of the band. A Yamaha ProMix 01V sends monitor submixes to Mytek mixers for each of the onstage orchestra sections and the conductor, and these in turn feed the musicians' ear-buds or headphones. Because of the spread-out orchestra plan, the only way the musicians can all hear each other is through this relatively sophisticated monitoring system.

Fortunately, the acoustic realities of performing in a "traditional cowboy band under the big-top" has led the musicians to balance themselves; solo instrumentalists generally play out at the right moments and play down otherwise. "It's interesting having both the actors and band onstage," Biasetti com-

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ments. "Certain instruments are acoustically louder than others, so both for foldback and in the house, there are the traditional balancing considerations of sound reinforcement."

Because the set designer wanted to minimize the look of the mics on stage, several pencil-like condensers with small profiles are hidden behind the railings of the bandstands. The mic selection includes Sennheiser MKH-60s for acoustic guitar and banjo, MKH-40s on trumpets, reeds and on some of the drum kit, and MKH-50s for the violins in the pit. "We snuck in a couple of E-V RE-20s on the trombones," notes Clark, "and told the scenic department that they were hat stands." A total of 38 wireless mics are in use, a combination of Sennheiser SK-2012 and SK-50 systems, with B&K 4061s on principal actors and Sennheiser MKE-2s for the chorus members.

### HAT HELL

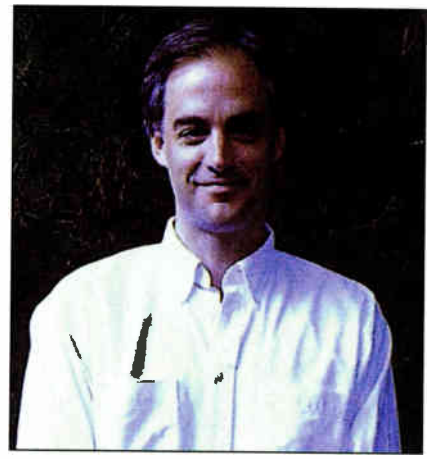
As one might expect in a musical Western, there are lots of cowboy hats in the show—40 in all—creating a special corner of audio hell for Biasetti. In fact, there are more hats in the show than characters, and they feature prominently in the choreography. "Hats are constantly coming on and off during numbers, especially [on lead actor] Tom Wopat, and the word from on high was 'We don't want to see any mics,'" notes Biasetti. However, he has devised a method for compensating for the hats' sonic effects on a moment-by-moment basis: a set of XTA DP-200 programmable equalizers on the chorus vocal subgroup and the principals' input channels respond instantaneously to MIDI commands, switching between "hat on" and "hat off" curves.

But, these unusual problems aside, *Annie Get Your Gun* is a fairly straightforward show. "It's fun to come in every night and mix Miss Peters' numbers—she's both brilliant and very consistent," says Biasetti, who has mixed *Swan Lake*, the revival of *The King and I* and the opening of *The Wizard of Oz* some years ago. "She's conscious of sound and understands the relationship between her voice and the technology. And it's a great book, great songs and great talent on stage. How can you go wrong?"

### MULTICHANNEL FOSSE

A far cry from the cowboys and cowgirls of *Annie Get Your Gun*, the Livent production of *Fosse* is a sophisticated dance revue. After starting out last year in Toronto, the show was then shoehorned into the Broadhurst Theatre on West 44th Street. (The 1,186-seat Broadhurst was home to a previous Livent Tony winner, *Kiss of the Spider Woman*, and Bob Fosse's *Dancin'*, which ran there for three years.) Compared to *Annie Get Your Gun*, *Fosse* is quite a technical extravaganza, and a prominent feature of the Broadhurst production is a multichannel sound system designed by Jonathan Deans (see the *Mix* interview, May 1999).

In fact, Deans' sound design resulted in the development of a new speaker system, the Jason Sound R23. "The design called for speakers that could provide full-range sound from any individual speaker location, capable of reproducing any instrument for every seat in the house," explains Jason Sound's Jeff Berryman. "This dictated wide dispersion, high power-handling, and—with a view toward budget and wiring—a simple system that did not require a dedicated controller."



*Sound designer Tom Clark*

Purpose-built for this application, the JBL-loaded R23 employs a 10-inch woofer passively crossed over to a 2-inch compression driver on a 110 x 60-degree horn. Due to its wide dispersion, there is no need to array the speakers horizontally, and the enclosures are cylindrical, reducing baffle reflections. For *Fosse*, sound equipment supplier Westsun Show Systems built dozens of R23s into the proscenium arch, both up the sides and across the top, supplemented by several Jason Sound R22 subwoofers. Two more R23s are built into the top of the clever onstage sets that look like the backstage view through another proscenium. These two R23s are mounted on pivoting yokes with MIDI-controlled pneumatic armatures, and can be aimed to address the audience from both their stored and open positions.

Arrayed across the front of the stage are a set of P80 front fills, which Jason Sound also custom-designed for this application. Containing a pair of JBL's high-power 5-inch woofers (angled outward to prevent beaming) and a Community 1-inch driver on a 100 by 40-degree horn, the P80 offers only a 6-inch profile, slim enough to fit under the stage deck. "We designed the systems for a lot of high-frequency headroom," says Berryman, noting that there are almost three dozen large-format compression drivers in the theater.

Mounted in the balcony box seats nearest the proscenium are two Jason Sound J31 push-pull, double-18 subwoofers. "We tune them a little higher than other subs, so they don't get so woofy as they go louder," says Berryman. He notes that the pots on the Yamaha M5000 amps, which are used throughout the sound design, are detented in 1dB increments, which allows for fine adjustments to individual speaker zones, a useful feature for theater applications. Of course, because the *Fosse* sound system is made up of passively crossed over speakers, it requires no special controllers between the mix outputs and the speaker inputs and is also economical in terms of amplifier channels.

### 88-INPUT MATRIX MIXER

Sound engineer David Gottwald mixes the entire show through the 88 inputs and 88 outputs of 11 linked Level Control Systems LD-88 mixers, using LCS's SpaceMap™ capabilities and the multichannel speaker system to move voices and instruments almost anywhere around the proscenium and stage. Though a Cadac F-Type console is on hand as a backup mixer, the primary controller for the LCS mixers is a six-fader RIFF Jr. controller mounted into the center section of the Cadac. Associate sound designer Peter Hylenski has programmed the LCS/RIFF Jr. interface so that the controller's first three faders are dedicated to the band's reverb, the full orchestra and drums/percussion, while the remaining three faders change on a scene-by-scene basis. "Sometimes they do nothing, sometimes we break out sections like brass and reeds, or solo instruments like clarinet, sax or flute, depending on what the number requires," Gottwald explains.

Since the LD-88 is a digital matrix mixer, mic inputs are boosted to line level via Aphex 107 Tubessence mic pre-



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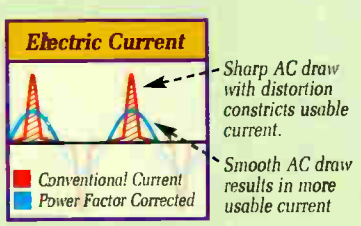


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amps, which are shoe-horned into the basement behind the orchestra pit, along with the sound system's Yamaha amplifiers. A CM Automation PM-216 MIDI-driven audio switcher controls drums and guitar mic inputs, switching them among outboard processors on a song-by-song basis so that, for example, the drums are gated on the rock tunes. When, at the end of the show, an eight-piece dance band appears on stage, another switcher changes mic input assignments from the pit to the bandstand.

Gottwald praises the multichannel sound system, pointing out that having a large number of speakers helps improve gain before feedback. "There are a couple of numbers where actors are literally right next to a speaker, and it can be turned off for that mic because there are so many others providing coverage," he explains. Gottwald also notes that the system was tuned the old-fashioned way—by ear.

## NEWSFLASHES

**Clair Bros. Audio** (Lititz, PA) provided sound services for the three-day Woodstock '99 production. The custom P.A. included 534 loudspeaker enclosures loaded with more than 2,800 JBL speakers...The 12th annual **Elkhart Jazz Festival** (Elkhart, MI) used a sound system comprising an Electro-Voice X-Array loudspeaker system with EV P1200, P2000 and P3000 power amps, EV T221M monitors and a DDA QH 48-channel console front of house. Equipment was provided by Corporate Sound Inc. of Grand Rapids, MI...**Firehouse Productions** (Red Hook, NY) used two Midas Heritage 3000 consoles for episodes of VH1's *Hard Rock Live* series. Performers included **Seal, Sugar Ray, Live, Meatloaf** and others... Regional sound company **Sound on Stage** (Brisbane, CA) purchased a Soundcraft Series Five console. SOS's clients have included **Garbage, The Wallflowers, Huey Lewis** and various corporate events...The 2,600-seat **Cathedral Second Baptist Church** in Perth Amboy, NJ, has installed six Tascam DA-98 machines. The units will be used to record church services and events, and for its regular broadcasts on Black Entertainment Television... **Thunder Audio** (Detroit, MI) has ordered a Nexo Alpha sound reinforcement system, including 40 Alpha cabinets, plus Nexo PS10s and PS15s. **F.A.T. Production Services** in North Carolina has also ordered a Nexo Alpha rig...VH1's **Rock Across America** tour is using a Renkus-Heinz Synco P.A. Front of house engineer Matt Koenig mixes on a Mackie 56-input console, and monitor engineer Randy Rhodus is using a Crest board...Recent projects for **Xtreme Studios** mobile recording (Bellevue, WA) include a **Lila McCann** performance for Country Music Television. ■

### THE HUMAN MIC STAND

The orchestra pit at the Broadhurst is small but the charts are percussion-heavy, a trademark of the Bob Fosse shows to which *Fosse* pays homage. Though the score also includes percussion samples, two of the three keyboard players and a percussionist are actually situated in a dressing room up on the sixth floor. "It's just a plaster room, but it seems to give the percussion more dimension, while completely isolating it

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acoustically from other players' mics," explains Gottwald, noting that the remote lair has been humorously dubbed the "sky-pit." In addition to AKG 414s on the tympani, the sky-pit's percussionist wears three wireless mics, one on each wrist and one on his chest. "He is his own mic stand," says Gottwald. "Even when he's on the xylophone or vibes, the separation is great, and the proximity to the instruments is consistent."

Down in the pit, orchestra mics include Sennheiser MKH40 and MKH80 condensers, an overhead Neumann U-89 on the tuba and AKG 747s on woodwinds. The musicians' headphone mixes are derived from eight submix outputs and are distributed via Mytek 8-channel Private Cue mixers.

Onstage, the dancers use 18 Sennheiser 1046 UHF wireless systems with B&K lavalier mics. "Most of them are not in use most of the time," Gottwald points out. "When the performers are not singing, they don't wear them, both for their comfort and to try and reduce the sweat on the mic—we've only lost two in 300 performances." Some of the mics are the new B&K 4060 headset model with a wire frame that goes around the back of the head. "They sound great and they're very low profile," notes Gottwald.

Gottwald calls the RF environment in Times Square completely hellish. "The unwritten rule of the neighborhood is first come, first served, so the new show has to fit in around everyone else's frequencies," he explains. Standing onstage, Gottwald points around the compass. "Ten feet past that door is *Jekyll and Hyde*, six feet over that way is *The Phantom of the Opera*, across the street is *The Civil War*, and ten feet the other way is *Chicago*. We literally are right in the middle of the most horrible block." Gottwald adds that the *Jekyll and Hyde* production has added a new rack of wireless in order to be ready for upcoming changes due to Manhattan's HDTV broadcast plans. "Now we're stepping on each other, even though the frequencies look like they're compatible," says Gottwald, noting that frequency sweeps are typically done weeks in advance of a new show's load-in. "The problem is that we can only check frequencies at show time when everyone else is also up and running." ■

*Mark Frink is* Mix*'s sound reinforcement editor. He can be contacted at mfrink@teleport.com.*


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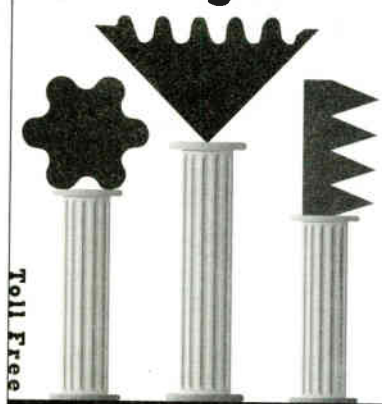

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World Radio History

BY BLAIR JACKSON

# RECORDING NOTES

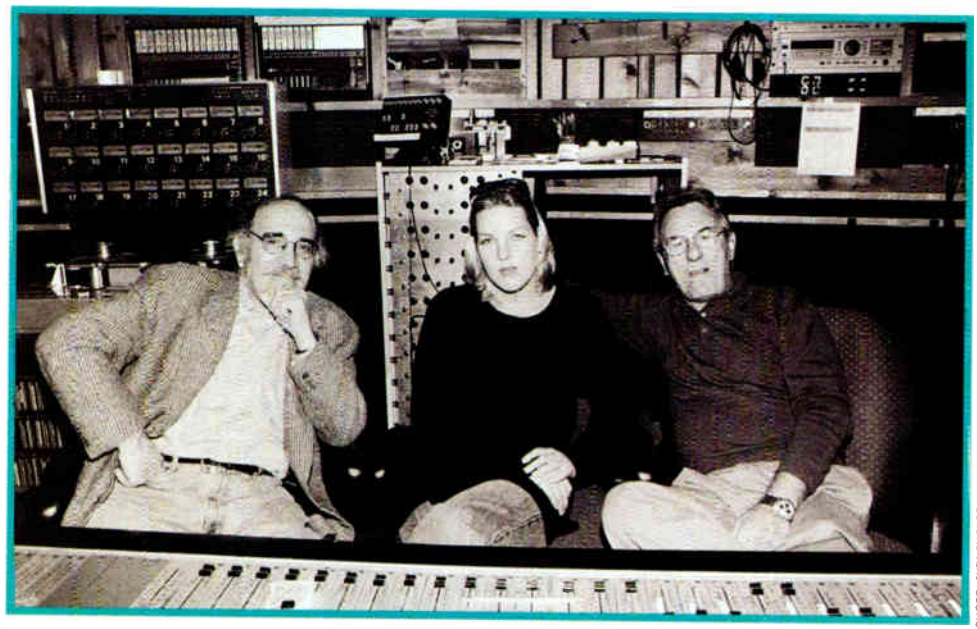


PHOTO: SYDNEY BYRD

*Left to right: Tommy LiPuma, Diana Krall and Al Schmitt*

## PRODUCER TOMMY LIPUMA

### MAKING MAGIC WITH DIANA KRALL

**by Eric Rudolph**

Although Tommy LiPuma has been in the record business for nearly 40 years and has 18 Gold and Platinum records, 30 Grammy nominations and several Grammy awards, the past is the furthest thing from his mind.

This veteran started as a professional saxophone player in the late '50s and has made a habit of producing high-quality pop/jazz records that break out as huge hits (George Benson's monster *Breezin'*; Natalie Cole's *Unforgettable*; albums by David Sanborn, Bob James and Al Jarreau), but he is looking forward instead of back; it's easily understandable after just a peek at the top of his artist roster at The Verve Music Group (where he is chairman). There are the blazingly brilliant young pianists Eric Reed and Danilo Perez, and the young, talented Canadian jazz singer/pianist Diana Krall. Not to mention the still wonderfully active hard bop master, Horace Silver.

LiPuma is most anxious to talk about the recently released Diana Krall record, *When I Look in Your Eyes*, the follow-up to *Love Scenes* (also produced by LiPuma), which has sold almost like a pop record, moving the better part of a million units worldwide.

The new record features Krall with orchestral arrangements by Johnny Mandel (also co-producer with LiPuma on six of the record's 12 tracks) and her regular accompanists—guitarist Russell Malone (a leader and Verve Music Group recording artist in his own right), bassists Ben Wolfe and John Clayton, and the great drummer Lewis Nash, among others.

LiPuma, a former song-plugger and Liberty Records promotion man, is well aware that with the media-genic Krall and her new record he has the chance for another big crossover success. In his desk-less corner office overlooking the Hudson River on Manhattan's West side, the soft-spoken producer needs little urging to discuss the ins and outs of capturing the essence of a hot, young crossover jazz star.

***What's step one for you in approaching a new record, for example, with Diana Krall?***

I'm very much into pre-production. It is one of the most important aspects of making a record. The more you're prepared as things come up, the quicker you're able to respond. Deciding on the material is a crucial part of this phase. Once you have the songs, then it's time to start working it out, through rehearsals with the act, which is usually the best way. You get some sense as to what the form is and what will happen before it happens.

***How involved are you in picking the material?***

In Diana Krall's case, she is not a self-contained writer/performer. So sometimes she'll walk in with a good portion of the material and so will I, and we'll pick from both columns. The bottom

—CONTINUED ON PAGE 268



World Radio History

# CIBO MATTO

## BEYOND STEREOTYPES

**by David John Farinella**

Whether it's the stress of following up a big hit or finding one, there always seems to be some obstacle in the path of a band during the recording of the "second" album. As Cibo Matto's Yuka Honda explains, all of the work that went into their own sophomore release, *Stereotype A*, was long overdue.

In a nutshell, the Cibo Matto story is a music business dream come true. Two women move to New York City from their homeland of Japan, they play together in a punk rock band (Leitoh Lychee) and then decide to go out on their own. With a unique and energetic set, they build a big-time buzz in New York City, catch the eye of Warner Bros. and release a critically acclaimed debut called *Viva! La Woman*.

PHOTO: MICHAEL LAVINE

*Yuka Honda (L) and Miho Hatori*

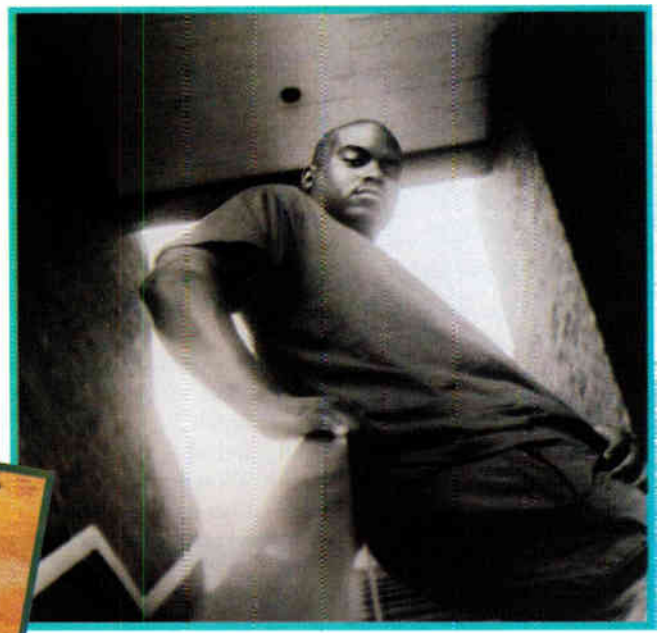
That, as they say, is the good news. The so-so news, as Honda points out, is that *Viva* was only half as good as it should have been. You

—CONTINUED ON PAGE 273

# THE EDUCATION OF CHE GUEVARA

**by Blair Jackson**

It's been quite a last couple of years for the young New York-based producer/songwriter/musician/remixer/programmer who goes by the colorful moniker Ché Guevara. (Ché is his real first name; his father was politically active in the '60s and named his son after the Cuban revolutionary.) He worked on Lauryn Hill's groundbreaking debut, *The Miseducation of Lauryn Hill* (producing "To Zion" and doing considerable programming and arrangement work throughout); Wyclef Jean's Platinum album, *The Carnival*; Destiny Child's smash remix of "No, No, No, No"; Aretha Franklin's Gold single "A Rose Is a Rose"; Ol' Dirty Bastard's "Ghetto Superstar" from the soundtrack for *Bulworth*; and a plethora of other acts, including Naughty By Nature, Brand Nubian, Will Smith and Harlem World.



That's quite a resume of R&B heavies, yet on the day I spoke with Ché he was working on something quite different. "Believe it or not, it's kind of a country thing," he says with a chuckle. "I'm scoring a film for Fox Searchlight Films called *Whiteboys*. It's a satire on white boys

—CONTINUED ON PAGE 274



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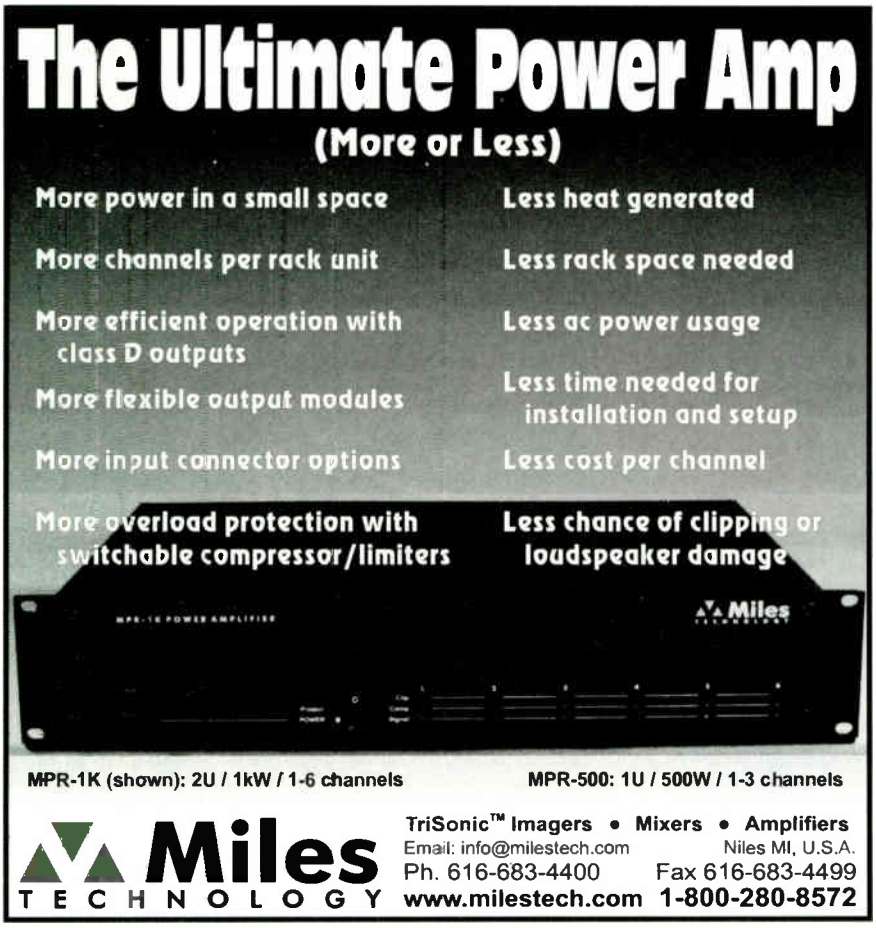


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with his train of thought. He's not saying anything. He's just minding his own business, doing what he has to do to prepare to record. He wasn't a guy who would say, 'All right men, this is what we're going to do!' But when he finally said, 'I want to play this or that song' and the musicians start comping, I realize, 'Hey, man, they blotted up where he was coming from.' He didn't have to say much. All I had to do was capture what the hell they were doing."

Coltrane—nearly all jazz players, in fact—cut entirely live in the studio, occasionally taking two or three different passes at a tune, but sometimes playing something only once. Since jazz is by nature an improvisational medium, the takes often differed considerably, and so usually the producer (at Atlantic that was Nesuhi Ertegun) in conjunction with the artist, would choose the take they liked best. Atlantic was a good room for live jazz—big enough to provide some ambience for an ensemble of almost any size, and well-equipped by Dowd and Phil Iehle.

"When I was doing Coltrane, we were using the eight-position 2-track custom console I'd built," Dowd recalls, "and I was feeding a stereo and a mono machine simultaneously. When we were doing jazz stuff we had to be able to record it mono, too, because there were still so many mono players out there; in fact, it was still mostly mono. Both the mono and the stereo were Ampexes—the mono would have been a 300, the 2-track machine a 352."

Dowd says he always liked to have the musicians in good visual contact with each other, "and I didn't worry much about bleed. It was a live performance so it's not like we were going to go in and do a bunch of fixes." By 1960, Dowd notes, "we were using a lot of the great German microphones. We had [Neumann] 47s, 48s, 49s, along with the 639. I also had an EL251. Usually I had a 48 or 49 on John. Usually the bass mic was some form of Electro-Voice, a 666 or 667, because I was working deals with them and they were giving me microphones to experiment with. For Elvin I might use as many as three microphones, but it depended on how he was playing whether I used all three or just the overhead—a 47—or the two down low, which were probably those Western Electric dynamic 'salt shaker' jobs.

"That group fit the room perfectly," he continues. "Dynamically, they couldn't play too loud to ever menace the room or make the room sing or jump. They



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couldn't saturate the room. I always had fun recording them."

It's hard to say what it was about "My Favorite Things" that struck such a responsive chord in the listening public, but it was an immediate success. Perhaps it was that magical blending of the familiar, popular theme with the quartet's fanciful solo flights—Tyner's elegant block chords; Jones' effortless rhythmic touch; Davis' steady but assertive bass underpinning; and Coltrane, playing the then-rarely used soprano sax, soaring like some great colorful bird, challenging himself, his band and all of us. The song became Coltrane's signature tune. It was the anchor for the popular album of the same name—the other three cuts were beautifully interpreted standards by Cole Porter ("Every Time We Say Good-bye") and George Gershwin ("Summertime" and "But Not for Me")—and it became a springboard for a series of even more exciting musical adventures Coltrane would embark on during the last seven years of his life. "I've got to keep experimenting," Coltrane said in the liner notes for *My Favorite Things*. "I feel that I'm just beginning. I have part of what I'm looking for in my grasp, but not all." Looming just up the road were *Africa Brass*, *A Love Supreme*, *Ascension* and so much more. It's never too late to start chasing this 'Trane. ■

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*—FROM PAGE 260, TOMMY LIPUMA*

line is that she has to know, whatever the song and whoever brings it in, that she can turn it around and make it hers.

As a case in point, take "I've Got You Under My Skin" from the new record. The song was her idea, and when I heard she wanted to record it I thought, "What does she have in mind?" I thought it would have to be something quite unique to take away from the all-time version, Frank Sinatra's. Fortunately she had a chance, because she works live constantly, to develop her approach onstage. So I went to a gig and got the idea right away of what she was thinking—it's a languid Bossa Nova arrangement that bassist Ben Wolfe and guitarist Russell Malone and Diana worked out.

We started in March 1998 looking for material, and in May got more into it and kept looking right up until the week before the date, last fall. She came to the rehearsal studio at my weekend place and spent the days finalizing the material and the evenings going over things with John Clayton, her friend and a bassist who performs on the record. He was a big help to her with things like the voicings on the chords.

We went through 50 to 75 songs and ended up with 14 to 15, 13 of which we ended up feeling good about. Some things we cut just didn't come off.

***Speaking of material, how did you come to record the remarkably delicate and intimate, and somewhat obscure, "Garden in the Rain" for the previous album,*** Love Scenes*?***

I grew up with that song, the Four Aces record. That version was not a ballad; it had a mid- to uptempo feel and was rather boisterous. It was one of the first records to use that eighth-note piano sound in the background, and it was just around the time of, or just before, Bill Haley broke out.

"Garden in the Rain" is a perfect example of Diana's artistry and talent. She turned it into the most beautiful ballad, which is extremely appropriate, as the song's simple lyrics are among the most incredible of any standard ever.

***Are her records cut in three days as is typical in jazz today?***

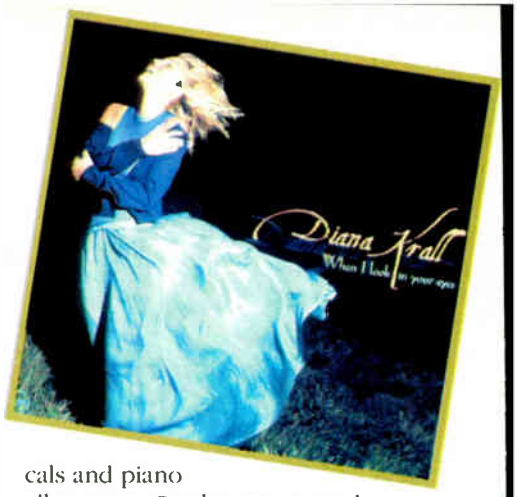
We gave ourselves five days and did it in four. On the previous record, *Love Scenes*, we did five days and we came back because we had an abundance of things in minor mode, and so went back to the drawing board and found some uptempo things and went back six weeks later and did some more recording.

No matter how prepared you are, until you finish and listen, you may not have a sense of whether you're really on target. Every time you go into a studio, it is a crapshoot.

Sometimes you get a fabulous performance but something happens that is just not quite right. But if something happens that is really magic but there's a minor problem, you have to make the mental note because I feel you're better off trying to repair something that's got a real sense of magic—repair a bar or phrase here and there—than trying to go back and repeat the whole thing and get everything right, but the feel isn't there.

***Are you working digitally?***

No, I'm still an analog guy. There are certain mechanical aspects to making such fixes that would be easier with digital. But you still have to make sure that the setup of the players in the studio is such that you have that latitude, because we do everything live—vocals, everything. With Diana, we do her vocals and piano all at once. On the new record, only the orchestra was overdubbed.




Engineer Al Schmitt puts a big piece of plywood over the front of the piano to separate the piano and vocal mics, and he raises the piano top as high as it will go and covers it with a blanket. Diana's in a rather good-sized isolation booth, one of two in Avatar Studio A in New York, which is one of the few big, high-ceilinged rooms in New York. High ceilings are important to me. Al likes to put two mics way up high and mix in the room's ambience as he sees fit.

Diana's in one booth, and the bass is in the other adjacent to her. So if we do have to fix a bass note, we don't have to worry that the note has leaked into the piano mics.

Occasionally she'll play the wrong voicing on a chord, and we have to go in and replace a piano part, which is the hardest. Without sections with abrupt stops, you have to try to get in on the downbeat so you won't hear the ambience. If you try to punch-in in the middle of a note, forget about it.

***How much are you involved with the technical aspect of recording?***

As little as possible. That's why I work with the recording engineers of the caliber of Al Schmitt; we've been friends since 1962 and have worked together since the early '70s. We know each other, we anticipate each other's moves, and that's the best kind of working relationship to have. And Al is a master at recording acoustical music.

***You were talking about feel. With Diana Krall, what comes to mind is a certain intimate texture of her voice. How do you get there?***

There's nothing out of the ordinary. We use a Neumann U67—one of mine. I own several, but I've been using this particular one for six or seven years, and it sounds just beautiful. I've used it with Natalie Cole, Anita Baker, just about everyone I've recorded in the past few years. It is a beautiful-sounding microphone.



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***Is this microphone better than other U67s?***

That's so subjective. I've heard others that sound as good, but why take a chance on a mic you know vs. one you don't? There are certain studios, such as Bill Schnee's studio and Ocean Way, that started buying these mics when everyone was going to dynamics; these guys just bought all of these tube mics. And now everyone's going back to them. You can't beat a tube mic.

***How about her phrasing? It's not a casual approach.***

No, but every performance is different. That is what makes a great artist; every time they do it, it is not going to be the same.

***So each of Diana's takes will have significantly different phrasing? That's kind of hard to believe, as it seems so deliberate.***

Absolutely; there are no two takes that I've ever heard that are the same.

So it's a question of when is that special one going to drop out, and the only thing you can really do to help it is to just set the mood and the atmosphere in the room to the point where the artist forgets themselves.

***How do you do that?***

Once you get everyone comfortable with what they're hearing, it starts happening. Then, on any one date, the most difficult thing is getting that great first take. You get that first one and it is great, then you've done it and you know it 'cause you've heard it! Then it's just a question of going straight ahead. That doesn't mean songs will just pop out; every song has different approaches to it, and every take is another challenge.

There is one thing I do that I haven't heard of too many other producers doing—I don't sit in the control room. I stay in the room with the musicians.

For the first several years I produced records, I had a problem with the talkback. Everyone looks up at the control room glass at the end of the take. To push that talkback button down and then there's that silence, you're not hearing anything from the room—it just inhibited me. One time, I was out in the room for a rehearsal, and I asked for some headphones, and I noticed that being able to communicate with the musicians while I was right there with them was a lot easier than using the talkback. So now I always set myself up in the room with the musicians. I'm there to talk to them just as one of the musicians. I'm no more than four or five feet from anyone.



World Radio History

Being in the room with the musicians gives me the ability to react immediately. The other part is that there is so much going on in the booth; there are more distractions than I want to deal with, as I get distracted somewhat easily. There are also times when the musicians get an immediate sense of how I'm responding to a take. There's eye contact and people can tell, "Oh we better start at the top!" You can't do that through a window 20 feet away.

I'm looking for that spontaneous moment, and it doesn't matter how you get there; everyone has their own way. You have to know how to wing it; you have to be on your feet and know how to respond to the moment.

***Do you tend to do a lot of takes?***

Sometimes we've gone as much as six or seven, but in most cases the first several are the ones.

***How often is it the first?***

Numerous times. Going back some years, the George Benson *Breezin'* album, five out of six cuts are first takes. It's not that we didn't do more, but we chose the first take five out of six times.

Of course, there are a few run-throughs before you start. But when you hear it start to sound good, which is one of the great things about Al Schmitt and Bill Schnee; within a short period of time they'll get a balance to the point where it will be good enough to use. So it won't take a half-hour just to get the balance, after which everyone's spent.

In the mix, the important thing is that the vocalist or soloist, whoever is the main character in the play, has to be predominant to the point where they are right there in the mind's eye. Whatever the focal point is, it's got to be right in your face; that's the point. Sometimes an artist is self-conscious and wants to be mixed further into the rhythm section. But if you lose that focus, the listener's mind will wander. It is very important that you have a sense of the main attraction being right in front of you.

***I noticed that with the orchestra on the new Diana Krall record it's very much in the background.***

I was concerned that if we did it all—including the orchestra—at once, we wouldn't be able to get the small group feel right, so we concentrated on the sense of the rhythm section and Diana. When we mixed I was careful not to lose the intimacy of her and the rhythm section; I wanted the strings to be the backdrop. Of course, when Al Schmitt records, everything is so transparent. I hear subtle things like the brushes, but it doesn't get in the way of the vocal.

We ended up using only six orchestral tracks on the record out of the nine we cut. It wasn't the arrangements; Johnny Mandel is a master with impeccable taste. Whatever you add, however, is ear candy, for lack of a better word, and if it doesn't add then it is going to subtract. You have to have enough sensitivity to know when it's taking away from what is there to begin with; and if it doesn't need it, why do it?

The orchestral recording was done at Capitol Records' Studio A in Los Angeles, where Frank Sinatra, Nat Cole and Peggy Lee all recorded their great sides for that label. It is, of course, a great room for orchestras and big bands. Al Schmitt mixed the record at Schnee Studios.

We worked with two 24-track machines locked, at 30 ips. We mixed to half-inch at 30 ips also. We decided for some reason not to use Dolby SR on this record as we have on the others. SR has always worked wonderfully for us, eliminating the noise and not sounding like it is running through a Dolby process, but we decided not to use it this time. At 30 ips, noise isn't that big of a problem anyway.

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We tracked the basic sessions on one 24-track and the orchestra on another. We had a 36- to 38-piece orchestra. Al probably used 15 tracks on Diana and the rhythm section alone. We had stereo piano, a direct box and a mic on the guitar amplifier and a direct pickup and a mic on the acoustic bass. It doesn't take too long to get up to 15 or 17 tracks even just with vocal, piano, drums and bass.

Once you've got a performance on tape that's been recorded well, the crucial thing is mixing and mastering. You can lose the subtleties of what happened in the studio in mastering by not paying attention. You have to get so close to the mix and how it feels. So that when you master it and you find that subtleties have gotten lost, things like it not being as warm as you thought it was before, you can correct these mistakes. These are important issues. We've been using Doug Sax at the Mastering Lab since the '70s. We always walk out of Doug's place and we feel great about the master.

***You're not only a record producer, you're also head of the label. Putting on that hat for a moment, the temptation to want to maximize the mass-market, pop potential of someone with Diana's talent, looks and youth must be tremendous on all sides.***

She has to do it on her own terms, though. I'll never ask Diana to do anything to make a record more applicable to this or that radio format. Neither of us work that way. The interesting thing about Diana is that she is doing it on her own terms. But she hasn't done anything musically to change what she's done from the first record as far as the integrity of the music is concerned.

We see an opportunity, however, to reach a wider market. I've also got a wonderful promotion, sales, marketing department. Credit is due there. Ron Goldstein as label president has great marketing ideas. All of these elements are very important, but one of the things that drew me to her is that even though she came out of the jazz genre the demographics at her shows is consistently 18 to 80. My brother is 79 years old and he loves these records.

***Would you call this a jazz or a pop record?***

I don't think I'd call it a jazz record, not a jazz record like Betty Carter, no. But to me what I look for in an artist is style. It is one of the most important aspects. Is there something about them that sticks out? Diana has that, no matter what you call the music. ■



World Radio History

—FROM PAGE 261, CIBO MATTO

see, they had been playing New York's clubs with Honda on a Roland DJ-70—a programmable beat box that includes a turntable, a keyboard and minimal memory for samples—and Miho Hatori singing. While the DJ-70 was cool for live purposes, Honda explains, it's not what she wanted to use for the album.

"I wanted to replace a lot of the samples, recut a lot of my loops and have a lot of my friends play," she says, "but a lot of people were against that and wanted us to do what we were doing live at the time." Within a month, the Cibo team, along with producer Mitchell Froom and engineer Tchad Blake, had the album ready to go.

That whiz-bang-boom approach didn't sit well with Honda, and she learned a valuable lesson: "I definitely grew up, and I'm a little tougher speaking up for what I want. At that time I couldn't really say anything. I was feeling like I should do what people said. I kind of feel that I should have pushed myself a little harder and should have shown all these other things I was doing at the time." With that experience in mind, she asked for the producer reins during the recording of *Stereotype A*, and got them.

The differences between *Viva* and *Stereotype* start from the creative inspiration behind the songs. Rather than writing for live performances, Honda says she was writing for the album. (Along with a rack of keyboards and samplers, Honda uses Steinberg Cubase VST to get those initial ideas down.) And, rather than spending just a month in the studio both recording and mixing, she wanted more studio time. "I wanted to enjoy this studio time," she says. "Instead of re-creating something that we were already doing, with *Stereotype A* we definitely tried to experiment with some spontaneous ideas."

Creating the environment where they could experiment was also very important, so they selected Sear Sound and The Magic Shop in New York City. "Both studios aren't those shiny, shiny studios with Gold discs hanging in the hallway," she notes. "They both have wood ceilings; it's a very relaxed, cozy feeling. I think it was very important because we were there for a really long time, so we wanted to find a place that was cozy, the walls are wood, and the people that are working there are relaxed."

Nowhere is that improvisational vibe felt more than in the song "Lint of Love," which features brilliant, shifting signature changes, electronic punches and instrument flairs. After coming up with a six-minute loop, Honda brought the track to Hatori so she could write the song's lyrics. Once they got in the studio Honda knew she wanted to add a handful of live musicians, including keyboardist John Medeski, who contributed clavinet; Joshua Roseman on trombone; and Sebastian Steinberg on fuzz bass. She sampled and rearranged some of Medeski's work, doubled Roseman's horn parts and did some sampling wizardry on the songs' heavy metal guitar licks, which were played by Sean Lennon and Timo Ellis, the auxiliary members of the band. Then she brought in Hatori, Lennon, Ellis and rapper Duma Love to contribute vocal parts. "I did all that in Pro Tools, then I decided on the arrangement in the studio on the spot," she explains. "That arrangement was improvised, and I think it works pretty good."

While she relied on Pro Tools for that song, she went back to an old-school technique on the song "Speechless." "I was watching this documentary

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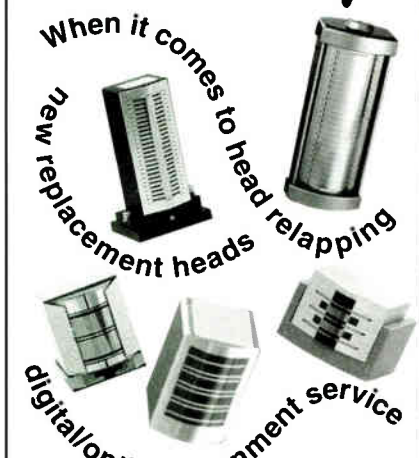
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about the making of Stevie Wonder's *Songs in the Key of Life*," she says. "They were showing how Stevie Wonder would slow down the tape and record the vocal and get a Munchkin effect. So I said we'd do that, and on one track the background is totally slowed down, and Sean and Timo are kind of singing really funky. I recorded another track, same guys singing, but I recorded them at fast speed. I recorded the lower vocal harmony that way, so the lower vocal harmony actually sounds really low and the higher one sounds high."

Though they relied on newer technology to fly song bits in and alter tracks (key plug-ins, according to engineer/mixer Chris Shaw, included Auto-Tune, DeVerb and DSP's Spider), the album's warm sound would probably not have been achieved had they not recorded at Sear Sound and The Magic Shop. Not only do both studios boast vintage Neve boards, each has an incredible assortment of classic microphones and outboard gear. The list of keyboards that Honda turned to is also impressive: Akai 3200, Prophet 5, Yamaha DX7, Electro-Harmonix Micro Synth, Omni Chord, CV101, D-50, Yamaha TX802, Juno 60. "I try to use keyboards from every decade," she says with a laugh.

They also seemed to use outboard gear from every decade, including some of John Lennon's old MXR pedals that Sean brought in, more current favorites such as Eventide H3000 and 3500s, and offbeat choices like a vocal effect pedal called a Toka and some unnamed "cheap echo/space effect things." According to Tom Schick, who engineered the first part of the tracking dates, the group used a number of different compressors and limiters, including Fairchild 660s and LA-2As on the vocals, and an RCA BA6 on the bass. They also had a Pultec MB-1 that used to be a mic-pre but was modified to be a limiter. Shaw says he used an Imperical Labs Distressor almost exclusively for compression/limiting.

Songs were tracked to a Studer A27 through the Neve 8038 at Sear Sound. Mixing duties were nearly split between Shaw and the Butcher Brothers, with Dan the Automator manning the boards for "Sunday" and Zak from the band Buffalo Daughter on "Clouds." As Butcher Brother Phil Nicolo explains, mixing the album was not their only responsibility: They added some new samples to "King of Silence," reworked "Sci-Fi Wasabi" and had Hatori write more lyrics for "Moonchild." The only problem was that, a couple songs into the mixing sessions, the band had to leave for an Australian tour. To keep their deadline, the Butcher Brothers would mix a track, burn a CD and then overnight it to the band's location. The band would then give a listen and send back detailed notes.

"They knew exactly what they wanted," Nicolo remembers. "So, it would be like '23 seconds, guitar left side, lick needs to be a half-a-dB louder. At 43 seconds, main pad needs more reverb; 1:10, background vocal harmony needs to be louder.' They would listen to it very closely and then give me very specific directions in some cases, but in other cases it would be a mood thing. Like at the end of 'Lint of Love' they wanted it to be really interesting and different, so she gave me images: 'I want the feeling of a woman crying in childbirth or the feeling of a man crying in a phone booth.' You go, 'A man crying in a phone booth?' There so many images that come to mind with that kind of stuff."

Nicolo has high praise for Honda, noting that "There wasn't a single song on the tape that I pushed up and went, 'Oh, yeah, Roland 803, setting three.' Every sound, every loop was like, 'Wow, this is cool, this is different.' She did a great job putting the sonic palette together." ■

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*—FROM PAGE 261, CHE GUEVARA*

wanting to be gangsta thugs. It's set in Iowa, and it's pretty hysterical. This is my first score, and it's not what you'd call traditional. I'm mixing beats with country and western feelings. There's some comical stuff, a lot of experimentation. I'm really enjoying it."

A native of Boston, Ché was always a music fan with eclectic tastes, but it wasn't until he went to Hampton University in Virginia (as a finance major) that his musical and engineering proclivities came to the fore. "I took the one engineering course they had there," he recalls, "and though I can't say that it was that informative, it gave me the basics and it interested me enough that I wanted to look into it more. So after that, I learned a lot just from sitting in on sessions with people, reading manuals, working with different engineers. Maybe three years later I was pretty up on most equipment and I started working on my own things and doing some work on



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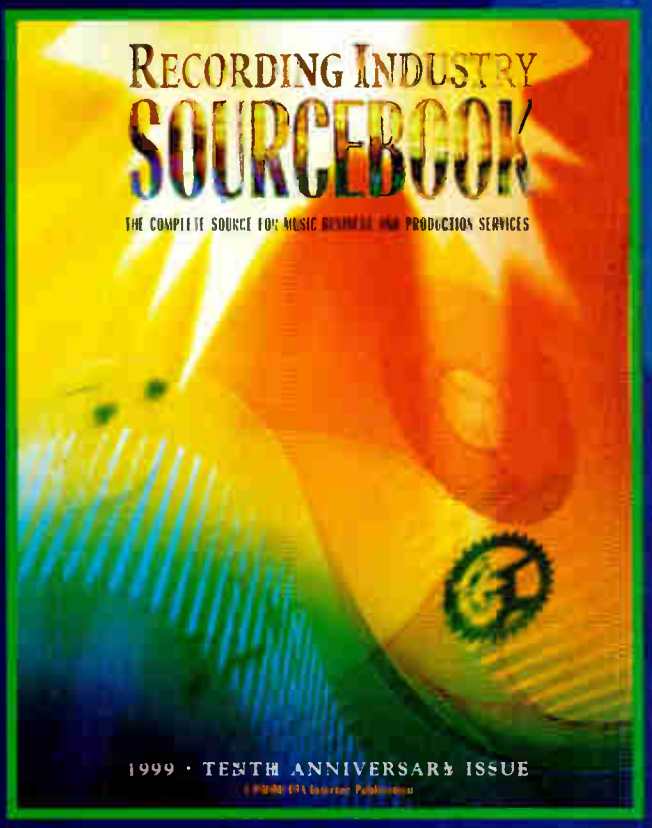


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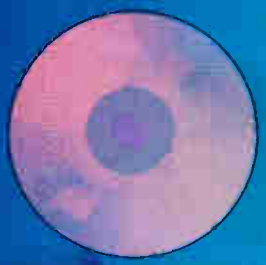

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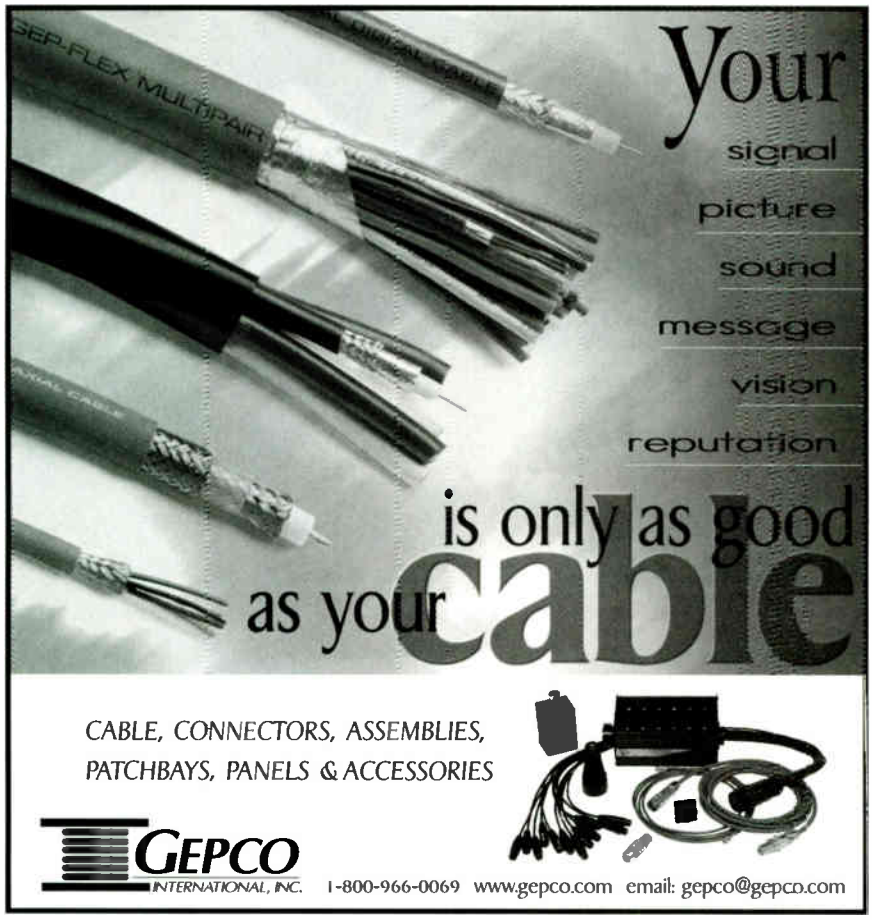


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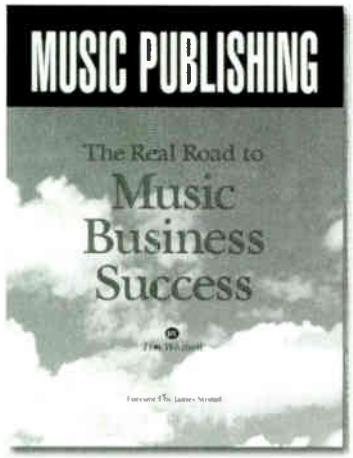


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tapes." He also began to DJ and developed quite a rep for himself in that area.

Ché's first break came when a friend sent a tape Ché had made to Virginia's top R&B producer, Teddy Riley. "I had already met him and knew him a bit," he says. "I think I had five tracks on there, and he liked three of them and eventually he offered me a contract. He also took me down to Trinidad for five months, and we did some work down there. Originally, it was going to be the Guy reunion album, but that fell apart and we ended up doing Blackstreet." Later, Ché and Riley parted ways, and Ché moved to northern New Jersey and started to immerse himself in the New York scene, making contacts wherever he could. During this period, he hooked up with Wyclef Jean, fresh out of The Fugees, and that led to his meeting Wyclef's former bandmate, Lauryn Hill.

**I was pretty surprised at how successful *The Miseducation of Lauryn Hill* was. When you do something new and different, you never know how it's going to be accepted in the mainstream.**

**—*Ché Guevara***

"We hit it off right away, and I worked with her on a few different projects," Ché says. "I did the Aretha Franklin song with her. We did something for CeCe Wynans. Then, when Lauryn's album project came up, she asked if I wanted to co-produce with her." In the end, Ché was credited with production on just one track, but his imprint is all over the album, which he was a part of from the early songwriting stage.

"Sometimes she might have already written lyrics and had a melody in mind; sometimes there was even less," Ché says. "She's very hands-on, involved and detail-oriented. She was already proficient on the Akai S3000.



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Sometimes she might have a sample idea she wanted to build on. There were times I brought a track I was working on to the table to see if she dug it. Sometimes she'd like a portion of it, and we'd build on that." In the case of "To Zion," "she had a song that she had written lyrics and a melody to, and then I brought her a track I had, and she put the lyrics to it. I had the flamenco guitarist that played a line, and she said, 'You know, I have a relationship with Carlos Santana,' so we went down to Miami and did that down there. Mostly we worked at Chung King and Sony and a little at RPM. Toward the end of the project, she built a room in her house, and we did some stuff there, too.

"It was a positive experience, but it sure took a long time to put together. In all, we worked on it for eight or nine months. You always feel like things could be better, but overall I was very happy with how it came out. I was pretty surprised at how successful it was. When you do something new and different, you never know how it's going to be accepted in the mainstream."

Though Ché will continue to work at a number of New York studios—besides Studio E at Sony and the Red Room at Chung King, Ché favors Studio C at the Hit Factory—he's been setting up his own personal studio in Soho based around a Mackie digital console, Yamaha 02Rs, DA-88s, Avalon 737 mic pre's and a selection of new and old keyboards and guitars. "I have a Wurlitzer and a Rhodes; I like those kind of flavors," he says unapologetically. "I love the new technology, but I'm also stuck in that '70s feel. If maintenance wasn't an issue, I'd probably have a 2-inch in my room. I love music from every period, but I've been getting into a lot of '60s and '70s stuff. I'm a huge, huge Curtis Mayfield fan. I love The Beatles; Earth, Wind & Fire; Sly & the Family Stone; Aerosmith...I'm a record junkie. But most of the music I'm making is more 'today' than that. In recent days I like D'Angelo's stuff. I like some of the grooves on R. Kelly's last album. As far as hip hop is concerned, the guy who got me interested in producing to begin with was a guy named DJ Premier; I love his stuff."

All this piecemeal work in writing, arranging and production that Ché has done for others naturally begs the question, is there a solo album in his future? "I think so. I'll probably do one that's all music. I may feature different artists


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on various cuts. It'll be a nice groove album, like a Brand New Heavies-type project. It's in the plans, but there are a few artists I'm going to work with first. I have this young lady from Milwaukee named Melissa Mathis who's like 16. She's like a younger Alanis Morissette, if I have to compare her to somebody—a really cool vibe. I've got one hip-hop guy from Boston, who's a little like Nas. I've got an alternative rock band. I've got a lot of stuff I wanna do. But I've got time..." ■

—FROM PAGE 264, COOL SPINS

album when he was involved in a near-fatal car accident. Now that he's on the road to recovery, *Cold Hard Truth* serves as a testament to the great singer's continuing strength as an artist. According to the liner notes, some of the vocals on the CD were meant to be re-

placed, but after the accident, the label decided to go ahead with the tracks they had. It's not too surprising that Jones' scratch vocals are much better than 99% of the country singers charting today. What is pleasantly surprising is the tasteful restraint shown in the production. Jones is accompanied by a crackerjack ensemble of musicians—no giant, schmaltzy strings, just a ten-man country band—and backing vocalists John Wesley Ryles, Larry Marrs, Vince Gill and Patty Loveless. Highlights include the ACM Award-nominated single "Choices" and a rocking love song, the title of which says it all: "Real Deal."

Producer: Keith Stegall. Recording engineers: John Kelton and Mark Nevers (vocal overdubs, background vocals). Mixing engineer: John Kelton. Studios: Javalina, Sound Station and Wedgewood Sound (all in Nashville). Mastering: Hank Williams/MasterMix (Nashville). —*Barbara Schultz*

**Willie Nelson: *Night and Day* (Pedernales/Freefall)**

Here's an unexpected treat: an all-instrumental album of standards by one of the best

singers in the business. What's going on? Well, if you've ever seen Nelson perform or listened closely to his records you know that he's an exquisitely tasteful master of the nylon-stringed acoustic guitar, and he's got a crack band that can play in any style. The repertoire hits classic tunes by a range of great writers, including Oscar Hammerstein, Jerome Kern, Fats Waller, Cole Porter, Django Reinhardt and Harry Warren. Fiddle player Johnny Gimble, pianist Bobbie Nelson and harmonica ace Mickey Raphae' traverse the different styles with ease and grace, and Nelson is at his unpredictable best in his solos. I particularly like the versions of Django's "Nuages" and Waler Bullock and Jule Styne's "Vous et Moi." Pleasant through and through.

Producer: Willie Nelson. Engineer: Larry Greenhill. Studio: Pedernales (Austin, TX). Mastering: Terra Nova. —*Blair Jackson*

**Various artists: *Alright, this time, just the Girls* (Sympathy for the Record Industry)**

Sympathy for the Record Industry's two-CD compilation of girl-dominated garage bands *Alright, this time, just the Girls*, is dedicated to

Brill Building-era Carole King, although one suspects the arguable Queen of '60s girl groups would simply invite the anthology's raw women to eat her Suburban Assault Vehicle's dust.

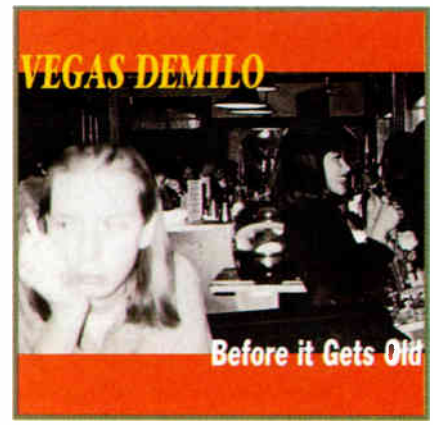
But girls (and even boys) who like their pop hooks swathed in trashy-sounding guitar, sweet and flashy vocalizing, and girlie subject matter will probably want to get their pink-tipped talons on this collection. More than 40 bands try on a spectrum of rock 'n' roll styles. There's infectious pop by The Muffs, surf guitars from The Neptunas, airy French confections by April March, snotty and horn-fueled punk by The Honeymoon Killers, dreamy garage rock from Holly Golightly of Thee Headcoatees, reverb-heavy rockabilly by Earl Lee Grace, and a down-and-dirty twist from the Japanese band 5, 6, 7, 8's. Throw in pioneer XX-chromosome new wavers (The Bags, The Revillos), big-name blondes (Hole, Free Kitten) and even newer waifs (early Donnas incarnation, The Electrocutes), and you have indisputable evidence: Chicks rock.

No recording or engineering information available. Producer: Long Gone John. Mastering: John Vestman (Fullerton, CA).

—*Kimberly Chun*

**Vegas Demilo: *Before It Gets Old* (Starving Cowboy)**

There's a lot to be said for a band that combines guitar crunch with accessible pop hooks. The San Francisco band Vegas Demilo is part of a noble tradition—you could say it goes back to The Beatles, though this group has a little more in common with power pop progeniters such as Tommy Tutone and Dwight Twilley. There's nothing startlingly original about Vegas Demilo but




they've definitely got the goods: a singer (Foster Calhoun) with a strong but even delivery, lots of variety in the guitar textures (John McCauley and Brad Wait), crisp drumming (Steve Perry), and catchy tunes you might find yourself singing along to first time through. There's a dash of cynicism, a teaspoonful of angst, a fair amount of drama, but it's always tuneful and driving—even the ballads. A band to watch.

Producers: Foster Calhoun and Alec Johnson with Dug Nicols and Travis Crenshaw. Engineers: Travis Crenshaw and Dug Nicols. Studios: Brilliant (S.F.) and Russian Hill (S.F.). Mastering: Paul Stubblebine/Rocket Labs. —*Blair Jackson* ■



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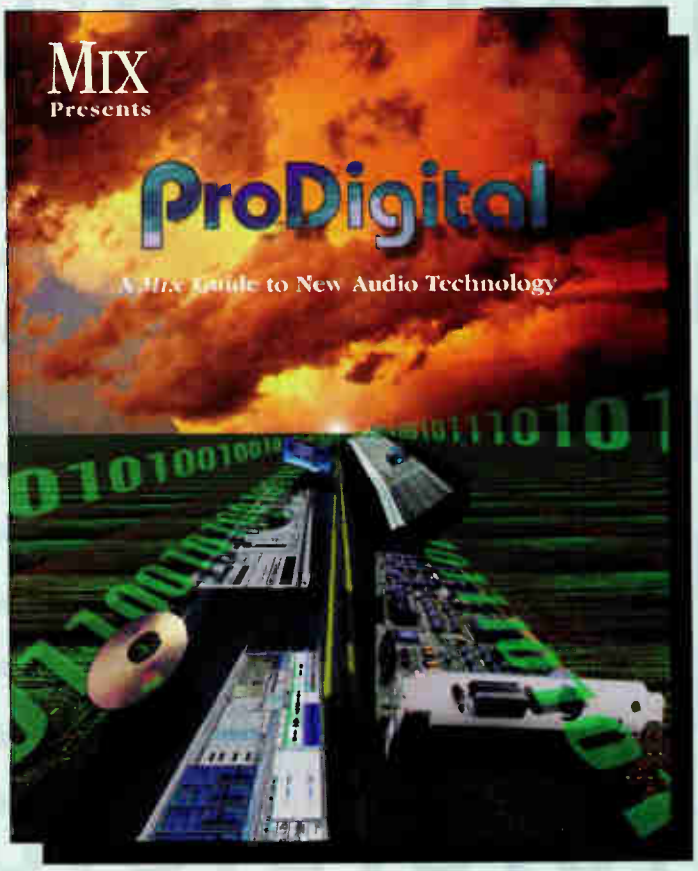


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# COAST TO

## L.A. GRAPEVINE

**by Maureen Droney**

At Ocean Way Recording, Slash was in Studio B with his new band, Snakepit, cutting tracks with producer Jack Douglas and engineer Jim Mitchell. The tunes, mostly uptempo rock with great grooves, feature drummer Matt Laug (Alanis Morissette), Swedish bassist Johnny Griparic (Nina Hagen), guitarist Ryan Roxie (Alice Cooper), and newcomer rock 'n' soul singer Rod Jackson.

Mitchell, a Record Plant alumnus whose credits include Brother Cane and Thee Hypnotics, has worked with Slash since Guns N' Roses' *Appetite for Destruction* album. He explains how the band got together: "Slash had a revolving band called Blues Ball that did shows playing cover tunes. Eventually Matt and Johnny wound up as regulars, so when he went into production for Snakepit, they came along. Ryan was playing with Alice Cooper, and when Slash did some guest slots with them, he loved playing with Ryan—he felt they really complemented each other. Then, after getting literally a thousand tapes sent to us by vocalists, and flying people in from all over to audition, we found Rod here in town."

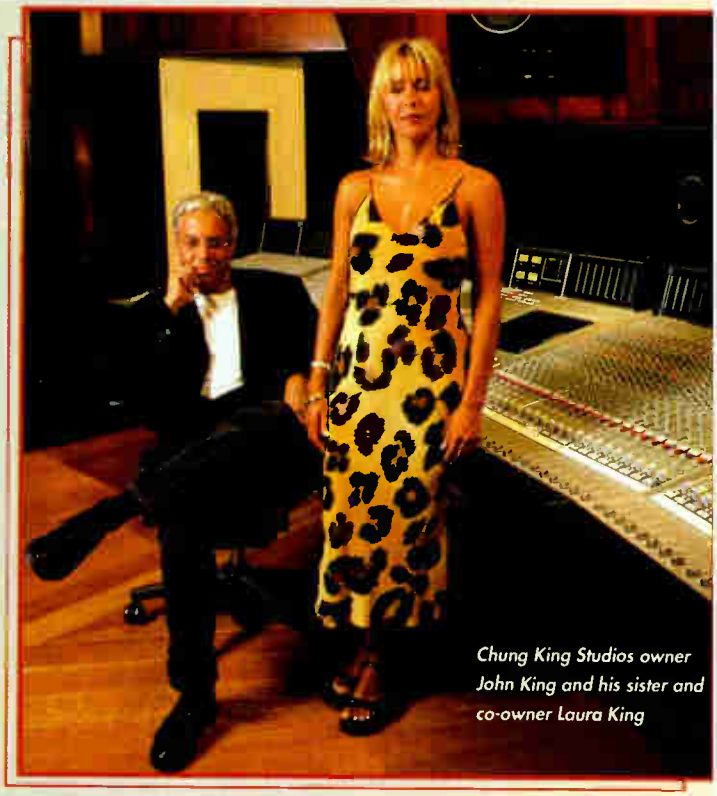
The soft-spoken Slash, looking wiry and energetic in an Ocean Way T-shirt and leather pants, elaborates on the search for a singer: "Johnny and Matt said, 'Let's go to the Roxy and see this band.' We walked in, it was completely empty, and there was just this lame band on stage with Rod singing. It was just a jam, all over the place, but he could really sing. So we sent him a tape of a song, he sent it back to us with a vocal on it, and we said, 'That's the shit!'"

The songs were demoed

—CONTINUED ON PAGE 282

PHOTO: DAVID GOGGIN

*Ocean Way Recording's Studio B was the site of a session with, L to R, bassist Johnny Griparic, guitarist Ryan Roxie, assistant engineer John Tyree, lead guitarist Slash, engineer Jim Mitchell, producer Jack Douglas, vocalist Rod Jackson and drummer Matt Laug.*



*Chung King Studios owner John King and his sister and co-owner Laura King*

## NY METRO REPORT

**by Gary Eskow**

If you prowled Manhattan late at night in the early '80s, chances are you remember the John King and the Cats posters that were slapped on nearly every lamppost in the lower half of town. King, who still plays, turned his indefatigable energies toward studio design as a way of staying in the music industry when stardom seemed distant.

His own studio, Chung King, first established itself as the home of hip hop early in this decade when Def Jam founders Russell Simmons and Rick Rubin tracked early hits by LL Cool J, Beastie Boys and other rap stars there.

When we caught up with King, he was moving like a tornado through his soon-to-be-completed new construction space on Varick Street. His ability to retain a sense of humor and humanity, even while barking orders at dozens of people via land line, cell phone and intercom, made an impression. "This isn't a business!" he says. "I call up my accountant at the end of every tax year and ask two questions: How big a check I should make out to the government, and is there anything left for me to spend? Everyone who works for me has to share my love for music-making."

King, who says that "there's always room at the top, the middle gets crowded" in New York, stresses that Chung King is now home to a wide variety of recording artists, as well as a

—CONTINUED ON PAGE 284



World Radio History

# COAST

## NASHVILLE SKYLINE

**by Dan Daley**

Nashville is rapidly turning into the Peyton Place of the studio business. It's difficult to keep up with the changes in the city's studio industry when things keep changing on a daily basis.

I reported in August that Emerald/Masterfonics owner Dale Moore had made a bid to buy East Iris Recording—and I stress the word "bid." Negotiations broke off shortly thereafter, and a successful bid for East Iris was accepted for the studio from Gary Belz, who owns Ocean Way Nashville (with Allen Sides) and House of Blues Studios (formerly Kiva) in Memphis and L.A. The price paid for East Iris, whose sale closed on August 3, was not available at press time, but Belz confirmed that it was less than $2 million. That's considerably less than the reported $3.2 million East Iris cost when the 1.5-room, Tom Hidley-designed facility opened three years ago with an 80-input SSL 9000J console (which, ironically, Belz and Sides had purchased for Ocean Way Nashville and later sold to original East Iris owner Burt Wilson). But it was also widely known in Nashville that Wilson was anxious to sell the facility in Berry Hill, an independent city located within Nashville's boundaries and about five miles from Music Row.

In addition to the East Iris studio facilities, Belz also purchased an adjacent plot of land. The plot could be used to expand the studio at some point, which was critical to the deal, Belz said.

Belz stressed that there would be no overt conflict between his continued partnership in Ocean Way and his solo acquisition of East Iris, even though both studios are top-tier facilities in the same market. Belz said that he has not discussed the purchase of the studio with Sides. "We won't be competitors. These two studios have entirely different equipment packages," Belz explained. (Located on Music Row, Ocean Way Nashville has three studios equipped with a vintage Neve, a recently installed Neve VR and a Sony Oxford.)

Belz, whose other facilities are named in a licensing arrangement with House of Blues owner Isaac Tigrett, demurred when asked about a name change for East Iris, saying that the studio's name, staff and operations would continue as before, and he retains a license to use the

—CONTINUED ON PAGE 286

## SESSIONS & STUDIO NEWS

### NORTHEAST

A variety of performers recently dropped in at Indre Studios in Philadelphia: Rykodisc country vocalist Kelly Willis tracked at the studio after an appearance at WXPN's Independence Blue Cross/Blue Shield Singer Songwriter Weekend. Producer Dave McNair and engineer Bogdan Hernik joined her. The rockers in Fuel also stopped by for a WYSP Rock Session, a live acoustic performance for an intimate group of fans. Nancy Falkow, a winner in the 1998 Lilith Fair Talent Search, also began her first full-length recording project at Indre with Shane McMartin, Steve Margulis and Joanne Schmidt producing and Michael Comstock engineering...At Oz Recording Studio (Baltimore), 45 King tracked and mixed for an upcoming album with producer Steve Janis and engineer Jake Mossman...At BearTracks (Suffern, NY), Gov't Mule mixed tracks for a Capricorn Records release with producer Warren Haynes, engineer Michael Barbiero and assistant Steve Regina. Kaylan was also in mixing a Warner Australia CD with producer Bryon Jones, engineer Earl Cohen and assistant Regina...

### SOUTHEAST

'N Sync mixed self-produced tracks at Emerald (Nashville) with engineer A. Gurzen and assistant J. Piske...Mya was in at Doppler Studios (Atlanta), recording a song for Interscope Records with producer Anthony Dent, engineer Rambo and assistant Ralph Cacciurri. Da Brat was also at Doppler, recording vocals on a So So Def song featuring Kelly Price. Aaron Pittman produced, Blake Eiseman engineered and Kenny Stallworth assisted...The Dixie Chicks cut a version of the Supremes' "You Can't Hurry Love" for the *Runaway Bride* soundtrack at Melody Hill outside of Louisville, KY ...Anita Baker mixed tracks with G. Smerek at Seventeen Grand in Nashville. Amy Grant was also mixing at the studio with producer Michael Omartian, engineer T. Christian and assistant B. Morse ...At Starstruck (Nashville), Michael Crawford overdubbed songs with producer Greg Nelson, engineer Bill Deaton and assistant Alex Chan...Engineer Billy Wolf worked on the next CD by bluegrass band The Seldom Scene at Bias Recording in

—CONTINUED ON PAGE 292

*Dave Matthews (center) gave a live in-studio concert for 50 Q101 listeners at Chicago Recording Company. Recording and mixing work was done by engineer Chris Shepard (left, with executive vice president and general manager Hank Neuberger on the right).*

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—FROM PAGE 280, L.A. GRAPEVINE

at Slash's home studio in live acoustic versions. "We moved in there and started writing and rehearsing," says Mitchell, who collaborated with Art Kelm to design and build the home facility. "No machines were involved," he laughs. "Even the heavy songs were worked up acoustically to start, with Matt laying down percussion parts. Then they'd morph into something else when the electric instruments came in."

"I'm pretty old school," Slash asserts. "If it sounds okay like it is, just leave it. I haven't figured out this mainstream, synthetic approach to recording. I'm stuck in that gray area, between generation 'then' and generation 'now.' I mean, I still use my Sony cassette deck to cut demos that sound great."

While the band was writing and rehearsing, they were also meeting with different producers. "When Jack showed up, it was a done deal," Mitchell says. "That was an easy call to make."

Although longtime producer Douglas, whose credits include Aerosmith, John Lennon and The Who, is New York-based, he's completely comfortable in Studio B. "I like this room because you've got a big iso booth and you can dedicate the main room to drums if you need to," he comments.

Drum sounds were an important part of the sessions, which alternated between five different kits. On the day I dropped in, there were two set up, a full-blown Pork Pie for the more ambient tracks and a baffled-off (including the very cool, adjustable ceiling baffle), mixed kit for a more dead, '70s sound.

Tracks were cut analog on Ampex ATRs with 16-track heads, then transferred to 24-track for overdubbing back at the home studio. The plan was to transfer finished tracks to a 24-bit Otari RADAR, for mixing in New York at Manhattan Center Studios, where Douglas mixes down to his own Studer tube 1-inch, 2-track.

A walk through the studio showed that Douglas is an avid vintage gear collector, with an inside connection for equipment pulled from old radio stations and churches. His personal rack contains two rare Pultec mic preamps, which for this project were used with KM54s on drum overheads. "Very few of those around," he says. "I love them because they sound very three-dimensional." Also in the rack were LA-4s and Altec passive EQ/filters, which Douglas uses patched together ("Great on guitar," he says).

PHOTO: MAUREEN DRONEY

*Composer/producer Richard Wolf, center, at the nerve center of his Studio City work space, with assistant engineer Tommy Raunds, left, and engineer Jerzae Johnson.*

Ribbon mics were much in evidence in the studio, with a Royer on the bass drum and an RCA44 combined with a Sennheiser shotgun on the kick and snare. "I compress them both together, and that's often your drum sound right there—that mono track," Douglas explains.

One iso booth was dedicated to Slash's guitar speaker setup, and I was warned that, with an SPL of 120 to 130 dB, it was dangerous to stick your head in. His main amps comprise a wide selection of Marshall JCM800s (including a JCM "Slash" series) for distortion and Silver Jubilees for clean sounds. There are, of course, a lot of other amps to choose from, like Fender Tweeds and Deluxes, a custom-shop VibraKing, a Peavey Classic 50...and, as expected, a huge selection of guitars, mostly Les Pauls, with aluminum-necked Travis Beans reserved for slide. The close mics of choice for guitars were SM57s, with Royer ribbons used for additional close miking and Royer and U87 room mics.

As I took my leave of the boys, I had to conclude that they'd been having fun. Douglas, who told me he's been thinking of having a "fun clause" inserted in his contracts, concurred.

"I've told people, 'I'm going to be living with you for two, three months, so if we're not going to have fun doing this, tell me now.' Because if you have no sense of humor or you're going to be sour, I don't want to do it. I don't mind not getting along sometimes—maybe our politics or our philosophy about making records is a little different, and we're going to learn from each other and be mad at each other from time to time. But at the end of the day, I like to have a good laugh and go out to dinner and have fun. If that can't happen, see ya later—I don't care who it is."

**Richard Wolf is one of the new crossover breed of composer/producers who transitions daily between the different worlds of pop and media music.** Wolf—whose platinum production and remix credits include Bell Biv Devoe, CeCe Penniston, Seal and Prince—continues to write and produce for music recording artists. He also composes for film and television. Current projects include music production for the upcoming Warner Bros. feature *Three Kings* and work as a music producer for the Fox Sports Network.

His busy Studio City workplace houses offices and edit rooms, as well as a traditional recording studio, allowing him to turn out projects from start to finish. He writes, arranges, records, mixes and edits, but editing is key to the process, and for that Wolf relies on Emagic's Logic Audio software. "You have to do a lot of different mixes and edits for TV," he explains. "For example, we just delivered 100 CDs to Fox Sports this morning. Each theme has four different mixes, and each mix has 11 edits—that's 44 edits for one song.

"Emagic is a big part of what I do," he continues. "We just got Logic Platinum 4.0, which I love; it has some great plug-ins." Other technical tools he relies on are his Emulator samplers and Roland and Korg keyboards. "I'm still using my SP1200 for those hip hop grooves," he laughs. "You can't beat it for that grittiness, that classic down and dirty fatness. I also still use my Emax I and II."

Although Wolf is a fan of analog tape for his record projects, his media music work is all on hard disk. "It's one thing to slap a live band onto tape," he



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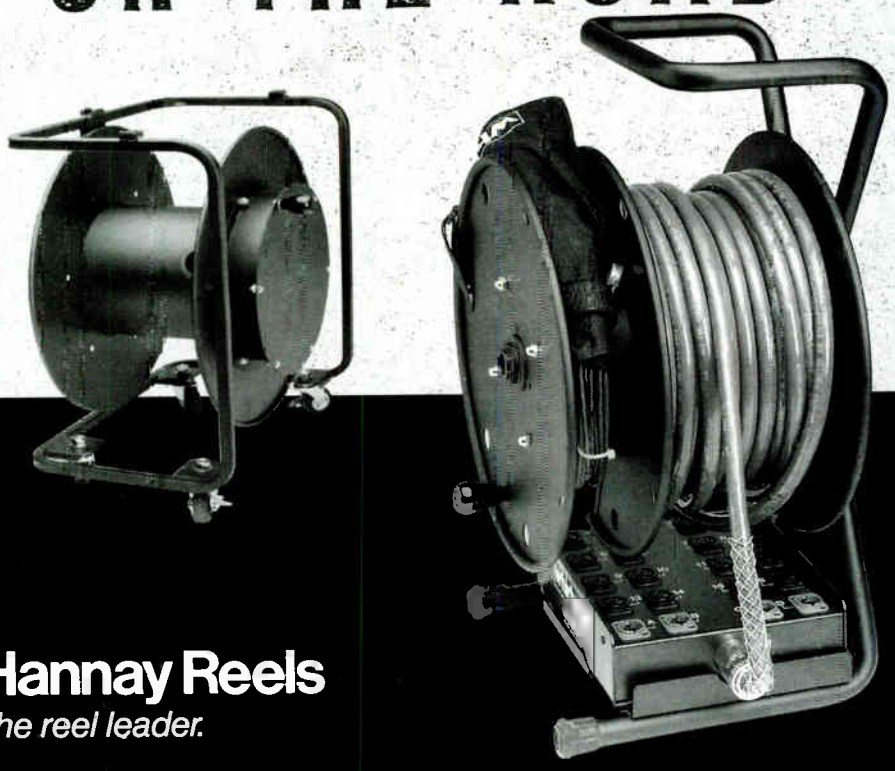

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says, "but when you're doing electronically oriented production and fine-tuning overdubs and performances, it's much easier on hard disk, where everything is visual, flexible and pliable. You're much more apt to be creative with what you do. It's a different kind of energy, of course, than when you're collaborating with people and there's that chemistry that engenders spontaneity."

Working with sports themes means a large variety of music is required, from mellow to exciting and intense. Wolf composes for approximately 20 sports: everything from beach volleyball, gymnastics and softball to international hockey, college football and car racing. On the day we spoke, he was in the middle of writing the new theme for Fox's NBA broadcasts.

"In a lot of markets, Fox has two 24-hours-a-day, seven-days-a-week channels," he says. "Certain sports, of course, demand a more quiet approach, like gymnastics, for which I created a softer theme. For beach volleyball, I created a hard rock theme, kind of like Rob Zombie, funky and up-to-date in the drums but with heavy guitars."

Wolf's current projects with Fox came about when the music he provides through his company, The Producer's Lab, got onto shows like *Chicago Hope*, *Millennium*, *The X-Files* and *King of the Hill*. "We got callbacks from people who really liked what they heard," he says. "Then producers started asking if I would custom-make songs for their shows."

How does one score for these kind of visuals? "A project generally begins with graphics, like a logo," Wolf explains. "And I'll score to that. Then there will be consultations with the producers to get feedback and make adjustments. It may take a few re-drafts until everyone feels we've hit that stone groove."

Scoring allows Wolf to work in a variety of a musical styles. "In records, I got known for working with people like BBD, MC Lyte and Prince, and I got pigeonholed as an R&B/hip hop guy. Now, I'm still doing R&B and hip hop, but I also get to do industrial rock, electronica—all sorts of styles. It's fun and refreshing, because the techniques that you get from one style, you bring to another. I also find it noteworthy that when you listen to all these kinds of music it's obvious how much they're all feeding off of hip hop.

"I always want to make records," Wolf concludes. "And, as a matter of fact, I'm very excited that there's a new Bell Biv Devoe album in the works that I'll be involved with. But with writing for television, there's certainly a lot more instant gratification. A record can take years. Here, you start writing music on Monday, hand it in on Friday, then you can turn on the TV on the weekend and hear your music."

*Fax L.A. news to 818/346-3062 or e-mail MsMDK@aol.com.*

*—FROM PAGE 280, NY METRO REPORT*

loyal rap clientele. "Pavarotti has recorded here, and we've worked with Smashing Pumpkins. If you've got good-sounding rooms and the amenities that top talent requires, there are no stylistic barriers to the kinds of music you can track and mix."

The new Gold Room will have enough space to record a medium-sized orchestra. Like all of the other recording and mixing areas at Chung King, a premium is put on natural light. Fresh air is important as well. "People overlook how important fresh air is," King says. "You have to stay healthy in a room. The air conditioning requirements in New York studios are so severe that most people don't want to throw out the cold air, but you have to!"

The Gold Room, like the rest of the facility, imparts a casual elegance, with rich woods and marble adding to the regal feel. I asked King how he goes about designing a studio. "I start with no plan at all," he replies. "Just boxes the size of the console and racks that I place in the studio where the real stuff will go. I strap on a carpenter's belt and just start working. I've been in plenty of rooms, where a fortune has been spent in design fees, that sound terrible. I've also walked into basement studios that sound great. You have to use your ears throughout the construction process. Plans are meaningless—a room takes on a sonic character as you work on it. Are there too many high frequencies in one area of the live room? So build a column, or whatever, somewhere in the space to absorb some of them. It's a constant tuning process."

The Gold Room will feature an SSL 9000 console. "All of the digital consoles have their own markets and uses," King explains. "The Neve Capricorn is my favorite board of all time. It sounds great, and once you get to know it, it's easy to use. But the SSL is even easier, and lots of engineers are comfortable with the



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SSL architecture. We're seriously considering putting an Axiom MT in one of our rooms as well. We also have a Euphonix CS 3000 board. We want to be able to provide the tools to service mixers who feel comfortable with different consoles."

Although he still loves analog recording and has Studer machines sprinkled throughout his facility, King has embraced digital recording completely. "We have a Pro Tools room, but I'm much more in favor of renting these systems when they're required, because Digidesign comes out with new versions of Pro Tools so often that the effect is one of planned obsolescence," he says. "We have invested heavily in the new Euphonix R1 hard disk recorders, which I highly recommend. They're easy to use and sound better than any digital recorder on the market. The sampling rate currently maxes out at 48 kHz, but the system is upgradeable to 96 kHz."

**Speakers can sound good in one room and terrible in another. You've got to keep listening to the space you're creating. —John King**

King considers the Gold Room a summation of all he's learned about studio design to this point. "It's built in the style of the great studios," he says. "I've taken all the brute force technology I've learned over the years and applied it to this room, from the isolation systems to the sizing of the rooms to the monitor systems. We're using Augspurger dual 15-inch monitors as our mains, and we have a roomful of near-fields. A client can just go have a look and grab whichever ones he or she wants.

"A good-sounding room should be loud and yet still clinical enough," King continues. "The Gold Room is a prime example. I built the subwoofers as part of the room itself, and so they integrate really well. Avalon built me some custom crossover curves. Speakers can sound good in one room and terrible in another. You've got to keep listening to the space you're creating, as I said. We crossed over the subwoofers at the right frequencies and tuned the room very well. Loud and clean!"

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SESSION SPOTLIGHT

# MARK AMBROSINO GOES GLOBAL

## THE DRUMMER CONNECTS VIA ISDN

**by Gary Eskow**

Drummer Mark Ambrosino has worked with some of the best, including Michael Brecker, Whitney Houston, Leonard Bernstein, Michael McDonald and Michael Bolton. The amount of session work in Elmont, N.Y., where he lives and operates his own project studio, is limited, however, so Ambrosino recently formed Global Groove, a company based on ISDN technology that lets him hook up with studios anywhere on the planet.

"It's amazing how quickly people get acclimated to working this way," he says. "I do a fair amount of television and jingle work, and head into the city [N.Y.] to track regularly. Once my clients work via ISDN they realize that I have more drums and percussion in my place than your typical room has, and they enjoy the flexibility of working with all of my toys. The distance factor seems to be a barrier that people forget about the first time they work this way."

We decided to put Ambrosino's chops and technology to the test. Having recently tracked an alto sax ballad using Digital Performer, we made a couple of two-mixes (with drum machine reference tracks, without, etc.) and saved both the sequence and associated audio to a Jaz cartridge.

We then hauled over to Doug Hall's house in Montclair, N.J. Along with partner Andy Messinger, Hall operates a successful commercial production facility, MessHall. Like Ambrosino, MessHall needs to communicate with the greater world in an "invisible way," according to Messinger. ISDN has given them the ability to instantly send mixes to clients anywhere.

"It really can be a deadline beater," says Messinger. "Let's say you have a Monday deadline. We might work all day on Saturday and send different ideas out throughout the weekend. When Monday comes, we'll have the spot nailed."

Using any technology for the first time brings the expectation of thorny problems, but guess what? Having

*Mark Ambrosino*

Ambrosino cut live drums and then create a series of custom loops was a breeze.

To achieve full 0 to 20kHz bandwidth, three telephone lines are used. We worked on a Sunday afternoon and there were no latency problems beyond the 11-frame delay that we expected. To get around this problem we simply sent our two-mixes to Global Groove, where they were captured on an ADAT system. From then on, Ambrosino was laying down parts in time to the tracks at his studio, and we were able to hear him as he worked.

Point No. 1: This guy can play. Point No. 2: The sound we took back—two tracks at a time—was quite good. "I have a large collection of microphones," explains Ambrosino, "including Neumann U87s and KM184s, AKG C-12s and 461s, and CAD E-200s for the room/overheads/hat; Sennheiser 421s and Shure SM57s for the toms/snare; and an AKG D-112, EV RE20 or Beyer M88 for the kick. If the client has a particular sound in mind, they have the option to choose what microphones they would like me to use.

"As far as mic pre's go, they can choose from a selection which includes Neve, Summit, JOEMEEK, ART and Focusrite. On our session I used a GMS kit with 57s on the snare, 421s on the toms, a 461 on the hat, KM184s for overheads, and two U87s for the room. For the percussion overdubs I used a matched pair of CAD E-200s, which I find to be great all-around microphones. I've been using them for the room a lot recently. For mic pre's I used JOEMEEK VC1s, a Summit TPA-200B and the ART Pro MPA, which I find exceptional for its price range."

As we said, Hall has used ISDN extensively to send mixes to clients.

—CONTINUED ON PAGE 290



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—FROM PAGE 286, NASHVILLE SKYLINE

Buddy Killen. Cook, who has been the studio's major client for the last decade, owns 25% of the business; Bradley owns the balance. Ironically, the owners of The Workstation had earlier expressed interest to Killen in buying Soundshop before they sold their facility to Emerald.

Soundshop has two Sony 3348 decks, augmented by Cook's own 3348; the consoles—a pair of Trident Vectors—are the natural focus of upgrades, Bradley said, and part of his intent to broaden the scope of the studio's clientele. Soundshop is also one of Nashville's oldest continuously run studios: It was started nearly 30 years ago on the same site.

Meanwhile, **Soundstage Studios bought the business assets of the former Nightingale Studios** (Soundstage owner Ron Kerr already owned the building). The technical complement from Soundstage's Backstage room will be moved to Nightingale, and eventually the space will be turned into a surround mix room co-ventured by Soundstage and engineer Chuck Ainlay, who had earlier shelved plans to do a similar deal with Georgetown Mastering owner Denny Purcell. In addition to physical expansion, Soundstage studio manager Michael Koreiba

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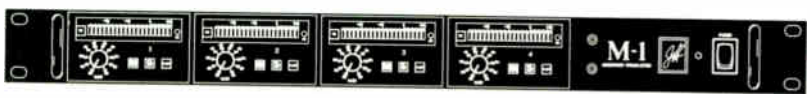


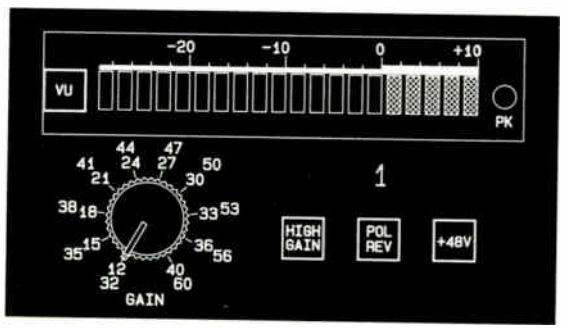


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—FROM PAGE 288, MARK AMBROSINO

However, this was his first experience laying overdubs to a sequence, and we made the mistake of taking Ambrosino's parts back wild (you can only pull in two tracks at a time), rather than locking them to SMPTE. When I loaded the parts back into Digital Performer, I discovered that lining up ten drum tracks is a chore, notwithstanding the fact that DP 2.5 has a sample-accurate audio editing environment. Achieving a dead lock between parts is possible, but avoiding a tiny flamming when so many tracks contain leakage of the kick, for example, is rough.

Instead, Ambrosino sent me the ADATs themselves. I took the first eight tracks into DP as a unit, soloed the kick and lined it up to sample accuracy with the sequence. I then copied this track's start point to the other tracks. The last two tracks were handled in a similar fashion with excellent results. Next time we'll send Ambrosino timecode in the layback process. In fact, to guarantee that this works, Mark sent tracks to Doug using SMPTE and the procedure was flawless.

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The real question is this: How many project studio owners are likely to own, rent or have easy access to the ISDN equipment that will allow them to interface with players like Ambrosino? Time will answer that question, but if ISDN turns out to be a tool of the masses, entrepreneurs like Ambrosino will be an important part of the story. Hall and Messinger say that the experience of tracking with Ambrosino has opened their eyes as well. "Next time we need a dobro player, I may not be calling around Nashville," says Hall. "Using Global Groove was a lot easier than I had expected."

Mark Ambrosino can be reached at his Web site, www.GlobalGroove.org, or by phone at 212/255-5080.■



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—FROM PAGE 290, NASHVILLE SKYLINE

also confirmed that the alliance with Ainlay—who has staked out a high profile in surround mixing nationally—was a significant part of the deal. "This town has slowly been going in that direction for about a year now," he said in a reference to the strategy of building alliances with producers, established by Sound Kitchen in nearby Cool Springs.

Meanwhile, meanwhile, meanwhile, the **Music Mill closed its doors**. The two-room, Focusrite- and API Legacy-equipped studio, owned by Mercury Records president and producer Harold Shedd, had been faltering in recent years as a studio business but had most recently become the home to Shedd's Internet-based Tyneville Records venture. Reports at press time indicated that the majority of the studio's equipment had been sold (though no report as to who purchased the Focusrite, one of only ten ever made), and that the building itself had been taken off the market.

All I can say is, stay tuned. ■

*Send Nashville news to Dan Daley at danwriter@aol.com or fax 615/646-0102.*

—FROM PAGE 281, SESSIONS & STUDIO NEWS

Springfield, VA...**Isaac Hayes** produced his own tracks at **House of Blues** (Memphis, TN) with engineer **R. Jackson** and assistant **D. Uptigrove**...**Steve Forbert** tracked at **Ardent Studio** with producer **Jim Dickinson**, engineer **B. Krusen** and assistant **J. Latshaw**...At **Sound Kitchen** (Nashville), **Diamond Rio** overdubbed with producer/engineer **Mike Clute** ...**Stereo Deluxx** tracked at **Whistler's Music** in Nashville with producer **Jeremy Bose** and engineer **S. McCaskey** ...**Meat Loaf** was in at **Bates Brothers Recording** in Birmingham, AL. Producer **Kasim Sulton** and engineer **Eric Bates** worked on the Loaf's new *Storytellers* release. The big guy was also shooting a film in town...

## SOUTHWEST

**Doug Pennick** of **King's X** mixed Canadian band **Vertical After's** upcoming album with the help of engineer **Randy Miller** at **Houston Sound Studio**...At **Planet Dallas Recording Studio** (Dallas), **Lutricia McNeal** recorded with producer **Josef Larossi** and engineer **Rick Rooney**. Aftermath/Interscope rapper **6-2** was also in with producer **D.O.C.** and engineer Rooney. Rooney also produced and engineered a Rough Tongue CD by **Boa Drape**...

## NORTH CENTRAL

Engineer **Tom Mudge** has been mixing it up at Minnesota Public Radio's Studio M (St. Paul, MN). Mudge engineered **Governor Jesse Ventura's** audio book, **Mary Beth Carlson's** latest release, *Peacegiver*, and recordings by **Lake Wobegon Brass**, **Bavarian Musikmeisters**, **Two Rivers Choral**, the **Dick King Classic Swing Orchestra** with **Prudence Johnson**, **Steve March Torme** (for an MPR broadcast) and **Rich Dworsky**. **Craig Thorson** also finished an album by **Zeitgeist**...At **Refraze Recording Studios** (Dayton, OH), **Parker Ben Parker** tracked with producer **Freddie Hall** and engineer **Jeff Koval**. **Melba Moore** also tracked vocals with producer **Dale DeGroat**. **Phyllis Turner** recorded and mixed a self-produced project with head engineer **Gary King**. **Craig Houston** also was in with producer King and **Tod Weidener**...**Slipknot** recorded a track for their Roadrunner Records debut at **SR Audio & Cinemedia Productions** in Des Moines, IA...

## SOUTHERN CALIFORNIA

Mix engineer **Rob Chiarelli** mixed **Will Smith's** "Fresh" at **Larrabee North Studios** in Universal City. **Jazzy Jeff** produced the track...**No Doubt** mixed their new Interscope album at **Ocean Way Recording** in Hollywood with producer **Glen Ballard** and mix engineer **Jack Joseph Puig**. **Ballard** also worked on saxophonist **Dave Koz's** Capitol Records CD at **Westlake Audio** in L.A. **Brian Carrigan** engineered...At **Signet Soundelux Studios** (L.A.), **Lisa Marie Presley** tracked with producer/engineer **Clif Magness**. **Maxwell** mixed a track for an upcoming album with engineer **Bill Esse** and assistant **Brian Dixon**. **Wynton Marsalis** completed his fifth project this year called *Reel Time* with producer **Delfeayo Marsalis**, engineer **Patrick Smith** and assistants Dixon and **Jesse Eaton**. Music director **Silvio Barbato** mixed a score about the life of Brazilian composer **Heitor Villa-Lobos** with mix engineer **Joel Moss** and assistant Dixon...All kinds of artists have been breezing through **Oceanview Digital Mastering** in L.A. **Freedy Johnston**, **Gaelic Storm** (the Celtic combo in *Titanic*) and **Swingin' Utters** worked on new albums. The former vocalist of **The Jayhawks**, **Mark Olson**, teamed up with **Victoria Williams** on a new bluegrass recording. Producer **Bob Kulick** came in for a new Triage tribute to

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Aerosmith including Ted Nugent, Edgar Winter and Tommy Shaw. Los Straitjackets wrapped up a project with producer Ben Vaughn and engineer Mark Linnet. Dave Alvin and Paul Dugré worked on a new CD by country singer Katy Moffatt. The Brood brought in their new Atlantic release produced by Jeff Baxter and Ron St. Germain ...Swing House in L.A. has been in full swing: The Street Walking Cheetahs recorded tracks with MC5 legend and producer Wayne Kramer and engineer C.J. Buscaglia. Buscaglia also engineered a new set of tunes that mix French pop and surf music by The Migs. Lauri Krantz recorded demos with musicians from Matthew Sweet and Liz Phair's bands. The Jason Kirk Band also recorded demos with former L.A. Guns bassist Kelly Nickels. Jack Off Jill were immersed in pre-production rehearsals for a Risk Records project...At Mad Dog Studios (Burbank), producer/engineer Dusty Wakeman produced Scott Sax's "Summertime" for the *American Pie* soundtrack...

## NORTHWEST

Seattle engineer Tucker Martine mixed recordings by Up artist Land of the Loops, and engineered and mixed two new discs by Seattle's Zony Mash ...Portland producer Fran Ashcroft was off to Belgium to record four songs with Darling Nikkie of Lords of Acid... Conrad Uno of Egg Studios (Seattle) celebrated the first ball thrown out at Safeco field by recording the "Unofficial Mariners Fight Song," written by Lance Morgan...James LeBrecht of Berkeley Sound Artists (Berkeley, CA) finished producing storyteller Awele Makeba's new CD, *Tell That Tale Again*...Rainstorm Studios' (Bellevue, WA) Paul Speer collaborated with Queensrÿche drummer Scott Rockenfield on a new album, *Hells Canyon*. Rockenfield and Speer produced, and Steve Carter engineered...Ota-Prota, Leatherboy and the Nuns of Chester tracked with Gravelvoice Studio's engineer, Scott Colburn, in Seattle...Atahualpa, The Shed and Aggressive Nature recently recorded at the songwriters' studio Acoustic Chamber (Kent, WA), which is collectively operated by William Reedy and Aimee Marmon...Jay Kenney and Guy Staley produced a cappella groups M-Pact and Kickshaw at Audio Logic (Seattle)...At Boptech Studios (Spokane, WA), Patrick Parr recorded a rash of punk rock bands including Juggernaut, HFC, Out of Order, Buddy Ruckus and Suffice for an upcoming Hardfire Records compilation. Rockabilly pioneer Bobby Wayne worked on a new album, tentatively titled *Hot Rod Boogie Woogie Days*...Deal Studios (Redmond, WA) hosted John Diliberto's NPR/PRI radio show *Echoes* and recorded artists participating in the Womad Festival. Performers included Sheila Chandra, Djivan Gasparyan, Joji Hirota and Richard Evans. Diliberto and Jeff Towne produced, and Chuck Strouss and Willow Jorgenson engineered...Rick Ruskin produced projects by Marsha Reeves, Sherry Flanigan and Dan Kieneker at Lion Dog in Seattle...At Haywire (Portland, OR), Robert Bartleson and George Verongos worked with Brunette, Suplex, Mike Toski, Slackjaw, Lielythe, The Prude Boys, Intifada, The Reports and The Miss...Chris Sleight was busy with The Paradise Vendors, Adelaide, The Stone Throwers, Brat, Illegal Substance, The Turnoffs and The Messenger at Megasound Studio in Seattle...At Gray Rain (Bonney Lake, WA), Michael Gray captured Christian rap artist Elbert Montgomery Jr....

## STUDIO NEWS

Country singer/songwriter-turned-engineer Clint Black has gone digital with his forthcoming acoustic album. Black used two Yamaha 02R digital consoles and Pro Tools for overdubbing and effects processing at his project studio ...Japanese producer and artist Tetsuya Komuro's True Kiss Disc Studios was recently completed by studio bau:ton. The company and its affiliated company, TEC:ton engineering, planned the architectural, acoustic and interior design of the two-story, 11,000-square-foot space in Honolulu and completed the construction. True Kiss includes two SSL 9000J consoles with 112 and 96 fader inputs, analog and digital tape machines, and full-fledged custom TEC:ton TTH1 stereo and 5.1 surround monitoring systems...Paul Stubblebine Mastering in San Francisco recently acquired an ATR-102 1-inch, 2-track recorder. The machine is one of the first of its kind at a West Coast mastering facility...Studio D in Sausalito, CA, has completed a major upgrade. Improvements include the installation of an Amek 9098i console, a JBL 5.1 surround system and an editing suite with the latest 24-bit Pro Tools; a redesign of the control room acoustics; and reinforcement of the isolation booths...Malibu Recording in High Point, NC, has acquired its second Otari Status console. The 40-input desk is outfitted with an Otari Eagle automation system. ■



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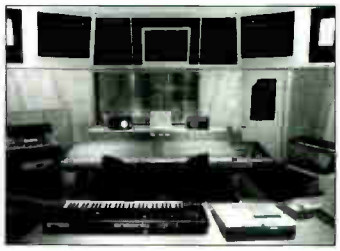

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Located in sunny South Florida, Visom Mastering combines state-of-the-art equipment (featuring Sonic Solutions & Weiss Engineering) with well over a decade of experience and customer satisfaction. We offer a comfortable, professional atmosphere to work in, a friendly and knowledgeable staff and extremely attractive rates. For more information give us a call and see why clients like Sony, Universal/PolyGram and WEA put their trust in us.


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World Radio History

# ▪ STUDIO SHOWCASE ▪

## Lobo Recording

2103 Deer Park Ave.
Deer Park, NY 11729
(516) 242-0266 or (516) 243-2983
Fax (516) 243-3964
e-mail: music@loborecording.com
http://www.loborecording.com

Located 35 minutes east of NYC, Lobo Recording is the place to achieve your creative goals. Recent acquisitions include an SSL 9096J, Neve VR 72, Studer D827 and Yamaha C7 Grand Piano. Other equipment includes Amek Angela IIs, Studer A827s, A80s, ADAT XTs (64 tracks), and an extensive list of microphones and outboard gear. Please call for more info.

COYOTE
Recording Studios

## Coyote Studios

100 N. Sixth St.
Brooklyn, NY 11211
(718) 387-7958; Fax (718) 388-3898
http://www.influx.com/coyote.html

No amount of technology can create the magic that happens when musicians play together in the same room, at the same time. That's why Coyote was designed to offer premium space and a relaxed atmosphere. A large control room and four iso booths help keep the musicians involved, which saves time and money. Our neighborhood offers many fine restaurants, bars and cafes as well as a B&B directly across the street. Clients include: Atlantic, Elektra, Epitaph Records, Profile, Hellcat, Dion DiMucci, Scott Kempner, Bryce Gogglin, They Might Be Giants, Patty Smythe, Mojo Nixon, Joan Jett & The Blackhearts, H2O and Rancid.

## Paradise Sound Recording Inc.

P.O. Box 410
Index, WA 98256
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SSL 4056G console

Otari RADAR digital system

Otari MTR-90 24-track

Digidesign Pro Tools

Kodak CD-R

Vintage microphones

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## MCMR

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Shelbyville, TN 37160
(931) 684-6778 or (615) 591-6597
Fax (931) 684-1410

This truck is small enough to park in the alley by your favorite club yet geared to run with the big dogs. This mobile has archived quality performances with: 'N Sync, Beth Nielsen Chapman, Wynonna, Tatyana Ali, Shawn Colvin, Martina McBride, Elvis Costello, Blackhawk, Diamond Rio, Sawyer Brown, Alan Jackson, Trace Adkins, Collin Raye, Dery! Dodd, Phil Keaggy, Mark Knopfler, Nashville Chamber Orchestra, NPR, CMT, TNN, Disney Channel, Tennessee Jazz & Blues Society, Ashley Cleveland, Tim Mc Graw.

## Threshold Music

440 W. 41st., Plaza 6
New York, NY 10036
(212) 244-1871; Fax (212) 244-7549
http://www.threshholdmusic.com

Extremely accurate isolated control room and iso booth. Tuned live room. Mix Plus Pro Tools DAW. 24 tracks of ADAT XTs, M20s and 2" analog. Vintage backline/outboard. Services: multitrack/live recording/mastering/CD burning/sound design/VO. Private, creative environment and comfortable lounge. EXCELLENT Pro Tools tracking/mix room, tons of plug-ins—A flawlessly integrated system! New console in Oct. Ask for James or A.J.

DF

## The Dream Factory

1600 Broodway, Ste. 512
New York, NY 10019
(212) 641-5200; Fax (212) 397-0976

The Dream Factory is a 5,000-sq-ft., 2-studio complex featuring the latest state-of-the-art recording technology and equipment. We offer clients the ultimate in privacy and service with 10 dedicated FT engineers available 24 hours a day at competitive rates. Our Grammy Award-winning artists, writers and producers include: Sony, Arista, BMG, MCA, Celine Dion, Taylor Dayne, Jon Secada, Trisha Yearwood, Diana Ross and Grover Washington Jr. Come see for yourself and experience the difference at the Dream Factory.



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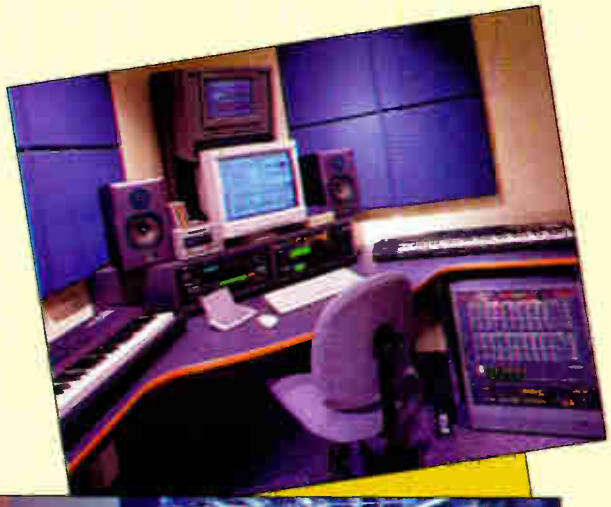

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## DIGITAL MIXERS

MACKIE.

### Digital 8 Bus Mixing Console

Everything you've been waiting for and more!!! The digital 8 bus from Mackie features great sound quality, full recording and mixdown capabilities, motorized faders and an array of digital features geared to take you flying to the next century. See for yourself what the entire industry is raving about.

**FEATURES-**

48 channels of automated compression, gating, EQ and delay
Built in 3-way meter display keeps you on top of your mix.
Built-in meter bridge.
Ultramix II automation for complete control, hook up an S-VGA monitor and you'll feel like you spent a lot more money.
All functions can be automated, not just levels and mutes.
Store EQ, reverb, compression, gating and even Aux send information.
Fast SCENE automation allows you to change parameter snapshots on every beat.
Reads Standard MIDI tempo maps, displaying clock info on the built-in position counter.
Truly the cutting edge of mixing technology.

Panasonic.

### WR-DA7 Digital Mixing Console

Stop dreaming about your digital future, it's here! The Panasonic WR-DA7 digital mixer features 32-bit internal processing combined with 24-bit A/D and D/A converters as well as moving faders, instant recall, surround sound capabilities, and much more. Best of all, it's from Panasonic.

**FEATURES-**

- 32 Inputs/6 AUX send/returns
- 24-bit converters
- Large backlit LCD screen displays EQ, bus and aux assignments, and dynamic/delay settings.
- 4-band parametric EQ
- Choice of Gate/Compressor/Limiter or Expander on each channel
- 5.1 channel surround sound in three modes on the bus outputs
- Output MMC
- Optional MIDI joystick

meter bridge optional

TASCAM

### TMD1000 Digital Mixing Console

You want to see what all the digital mixing buzz is about? The NEW TMD100 from Tascam will have you smilin' & automatin' in no time. It features fully automated EQ, levels, muting, panning and more in an attractive digital board with an analog 'feel'. Your digital future never looked, or sounded, so clear.

**FEATURES-**

- 4 XLR mic inputs, 8 1/4" balanced TRS inputs.
- 20-bit A/D D/A conversion, 64x oversampling on input, 128x on output.
- Store all settings, fully MIDI compatible.
- ***Optional IF-TD1000*** adds another 8 channels of TDIF and a 2-channel sample rate converter.
- ***Optional FX-1000*** Fx board adds another 4 dynamic processors and another pair of stereo effects.

## DIGITAL RECORDING

lexicon

### Lexicon Studio Recording System

The Lexicon Studio System interfaces with your favorite digital audio software for a complete hard disk recording package. Supporting both PC and Mac, Lexicon Studio can be expanded up to 32 voices from a variety of I/O options. For recording, editing, mixing and DSP, Lexicon Studio is here.

**FEATURES-**

- The Core-32 System PCI-Card is capable of supporting 32 audio streams simultaneously. It can also be used as a time code or clock master or slave.
- The PC-90 Digital Reverb daughterboard attaches to the Core-32 providing 2 discrete stereo reverbs.
- The LDI-12T delivers up to 12 channels of simultaneous I/O supporting analog (+4 XLR and -10 RCA), s/pdif, and ADAT.
- Direct support of Steinberg Cubase VST and many other software programs.
- Optional LDI-10T w/ 8 24-bit analog to digital I/O, coaxial S/PDIF digital I/O and time code input (PC only)

- Soon to be available LX3 I/O hub allows up to 3 LDI-10Ts to be used simultaneously

## EFFECTS PROCESSING

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ULTIMATE SOUND MACHINES

### Finalizer Express

The Finalizer Express is a fast and efficient way to turn your mix into a Professional Master! Based upon TC's Multi-Award winning Finalizer Mastering Technology, it delivers the finishing touches of clarity, warmth and punch to your mixes, putting the world of professional mastering within your reach..

**FEATURES-**

- 24-bit resolution A/D & D/A converters
- 16 & 20 bit dithering
- TC's unique Multiband Comp & Limiter Algorithms
- Boost and cut over three bands with the Spectral Balance Controls
- Soft Clipping and Look Ahead Delay.
- Finalize Matrix for 25 variations in style and rate
- Optimize overall level with the Automatic Make-Up Gain
- Extra compression in each band using Emphasis keys
- Record fades from the built-in Digital Fader or the optional TC Master Fader via MIDI.
- Connections include AES/EBU, S/PDIF, Optical Toslink & MIDI I/O's.
- High Res LED Metering of I/O & multi-band gain reduction

### M3000 Professional Reverb

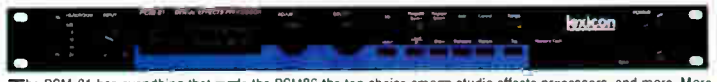
Incorporating TC Electronic's new VSS-3 technology, the M3000 is a great sounding, versatile reverb that is easy to use. Combining ultimate control of early reflections with a transparent reverb tail, the art of reverberation is brought to a new level. Whether it's a phone booth, cave or concert hall, the M3000 delivers high-quality ambience.

**FEATURES-**

- VSS-3, VSS-3 Gate, C.O.R.E. & REV-X reverbs as well as Delay, Pitch, EQ, Chorus, Flanger, Tremolo, Phaser, Expander/Gate, Compressor and De-Esser
- 300 high-grade factory presets including Halls, Rooms, Plates, Ambience, Gated Reverbs, and more
- Up to 300 user presets in internal RAM and 300 more using an optional PCMCIA card.
- Dual engine configuration featuring 24-bit A/D/D/As.
- Connections include AES/EBU, Coaxial S/PDIF, Optical Tos-Link/ADAT & analog XLR I/Os. MIDI IN/OUT/THRU, Clock Sync and External Control.

lexicon

### PCM81 Multi-Effects Processor



The PCM-81 has everything that made the PCM80 the top choice among studio effects processors, and more. More effects, more algorithms, longer delay and full AES/EBU I/O.

**FEATURES-**

- 300 Presets include pitch, reverb, ambience, sophisticated modulators, 20 second stereo delays, and dynamic spatialization effects for 2-channel or surround sound applications
- 2 digital processors including Lexicon's Lexichip for the reverb and a second DSP engine for the other effects.
- 24-bit internal processing
- Dynamic patching matrix for maximum effects control.
- PCM card slot

## COMPRESSORS

PreSonus

### ACP88 8 Channel Compressor

Stemming from their popular ACP8, the ACP88 comprises eight channels of compression, limiting and noise gating for a variety of studio applications. It features individual side chain for each channel and it's attractive blue anodized finished lets you show your true sonic colors.

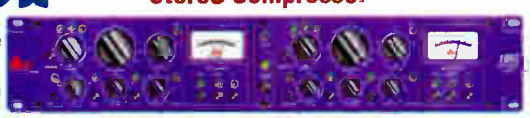
**FEATURES-**

- 8 separate compressors/gates with individual controls.
- Servo balanced or unbalanced inputs & floating balanced or unbalanced outputs.
- Individual side chain jacks for spectral compression and a separate sidechain jack for gate processing.
- Each channel boasts full gain reduction metering, compression threshold indication & gate open/close.
- Front panel buttons include hard/soft knee compression, peak/auto compression, bypass, gate range and link
- Link feature uses a unique summing bus for multiple combinations of master/slave link setups.

dbx

### Blue Series 160SL Stereo Compressor

The dbx 160S combines the best features of all the great dbx compressors in a well-built unit where the craftsmanship is as stunning as the engineering is innovative. This is truly a desirable compressor.



**FEATURES-**

- 127dB dynamic range • Program dependent "Auto", or fully variable attack and release
- Hard knee/OverEasy switchable.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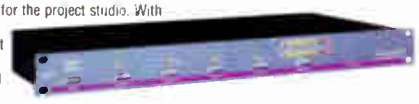
## ANALOG TO DIGITAL CONVERTERS

### Apogee Rosetta 96k
24-bit Analog to Digital Converter



The high-end quality analog to digital solution for the project studio. With support for both professional and consumer digital formats you can now record your audio at a higher resolution and with greater detail than standard converters found on MDM's, DAT's and DAW's. Ideal for mastering or tracking.

**FEATURES–**
- 24-bit, 44.1-48, 88.2-96 kHz Sample Rate (±10%)
- 116dB dynamic range (unweighted)
- Improved UV22HR for 16 and 20-bit A/D conversion

**FRONT PANEL:**
- Power switch • Sample Rate (44.1, 48, 88.2, 96kHZ)selector • 16-bit (UV22), 20-bit (UV22) and 24-bit resolution selector • S/PDIF ADAT optical selector • Soft Limit on or off • 12-segment metering w/ over indicator & Meter Clear switch • Level trim

**REAR PANEL:**
- XLR balanced inputs • 2 x AES/EBU for 88.2/96kHz 2 channel path, Coaxial S/PDIF, switchable S/PDIF or ADAT optical outputs • Wordclock out

### lucid AD 9624
24-bit Analog to Digital Converter

Transparent analog to digital conversion designed to bring your music to the next level. XLR balanced inputs feed true 24-bit converters for revealing all the detail of the analog source. 16-bit masters can take advantage of the AD9624's noise shaping function which enhances clarity of low level signals.

**FEATURES–**
- 24-bit precision A/D conversion • Support for 32, 44.1, 48, 88.2 & 96kHz sample rates • Wordclock sync input • Selectable 16-bit noise shaping
- Simultaneous AES/EBU, coaxial and optical S/PDIF outputs • 20 segment LED meters w. peak hold & clip indicators • **ALSO AVAILABLE:** DA9624 24-bit D/A converter

## DIGITAL MULTI-TRACK RECORDERS

### TASCAM DA-88 Modular Digital Multitrack

The standard digital multitrack for post-production and winner of the Emmy award for technical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise cueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.

**FEATURES–**
- 1.48 minutes record time on a single 120 min tape
- Expandable up to 128 Tracks using 16 machines
- User-definable track delay & crossfade
- Shuttle & Jog capability
- Auto punch with rehearsal
- SMPTE, MIDI and Sony 9-Pin sync capability
- Options include RC-828/898 Remote Controllers, IF-AE8/IF-88SO digital interfaces, MU-Series meter bridge, MMC-88 MIDI machine control interface, SY-88 Sync Card

### DA-38 Digital Multitrack for Musicians

Designed especially for musicians, the DA-38 is an 8 track digital recorder that puts performance at an affordable price. It features an extremely fast transport, Hi-8 compatibility, rugged construction, ergonomic design and sync compatibility with DA-88s.

### ALESIS ADAT M20
20-bit Digital Audio Recorder

The M20 represents Alesis commitment to meeting the high-standards of world-class audio engineers, producers, studio owners and high-end video and film post production studios. A new professional digital multi-track, the M20 records 20-bit for outstanding sound quality. Combined with a host of production features like SMPTE/EBU, the M20 is a powerful tool.

**FEATURES–**
- SVHS Recording format - up to 67 minutes recording.
- 18-XLR connections (9 in and 9 out) as well as a 56-pin ELCO connection. • Digital I/O
- Includes LRC remote and a digital cable.
- 24-bit, 64x oversampling recording, 20-bit, 128X oversampling playback

### ADAT XT20 Digital Audio Recorder

The New ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

**FEATURES–**
- 10-point autolocate system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.

**ADAT OPTIONS–**
- **BRC** for all Adat (except M20) w/ 460 locate pts, smpte/absolute time & bar and beat timing references, digital editing and transport control for up to 16 ADATs
- **AI3** 20-bit 8 channel analog - optical I/O interface
- Remote control
- Servo-balanced 56-pin ELCO connector
- Built-in electronic patchbay
- Copy/paste digital edits between machines.
- **CADI** remote control/autolocator for M20 w/ jog/shuttle & rj-45 ethernet connector for long distance cable runs
- **Adat/Edit** integrated PCI digital audio card and software for recording and editing on Mac & Windows computers

## CD RECORDERS

### HHB CDR-850 CD Recorder

The new HHB CDR850 is one of the most comprehensive CD-R, CD-RW recorders available today. It delivers the outstanding sound quality that HHB is known at a lower price than previous models. Equipped with a complete range of analog and digital I/O and easy to use one touch recording modes make the CDR850 suitable for any audio environment no matter how sophisticated or demanding.

- CD-R, CD-RW compatible
- All functions accessible from front panel menu
- 4 one touch recording modes; 2 manual, 2 automatic
- Sample rate converter accepts any digital signal from 32kHz to 48kHz including varispeed
- Copies all CD, DAT, MD, DVD and DCC track starts
- Complete user control over SCMS
- Balanced XLR analog I/O, Unbalanced (RCA) phono analog I/O, AES-EBU digital input, coaxial & optical S/PDIF digital I/O

## STUDIO DAT-RECORDERS

### TASCAM DA-45HR Master DAT Recorder

The new DA-45HR master DAT recorder provides true 24-bit resolution plus standard 16-bit recording capability for backward compatibility-making this the most versatile and great sounding DAT recorder available. With support for both major digital I/O protocols plus the ability to integrate the machine into virtually any analog environment, the DA-45HR is the ideal production tool for the audio professional.

**FEATURES–**
- Word Clock
- 24-bit A/D and 20-bit D/A with dither
- XLR balanced and RCA unbalanced analog I/O
- AES/EBU and S/PDIF digital I/O
- Word Sync In/Thru
- Alphanumeric data entry for naming programs
- Independent input level adjustment capability
- Output trim for XLR balanced analog output
- Optional RC-D45 Remote Controller

### Panasonic SV-3800

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The **SV-4100** adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more. Panasonic DATs are found in studios throughout the world and are widely recognized as the most reliable DAT machines available on the market today.

**FEATURES–**
- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number
- Single program play, handy for post.
- Adjustable analog input attenuation, +4/-10dBu
- L/R independent record levels
- Front panel hour meter display
- 8-pin parallel remote terminal
- 250x normal speed search

### FOSTEX D-15 Pro Studio DAT Recorder

The new Fostex D-15 features built in 8Mbit of RAM for instant start and scrubbing as well as a host of new features aimed at audio post production and recording studio environments. Optional expansion boards can be added to include SMPTE and RS-422 compatibility, allowing the D-15 to grow as you do.

**FEATURES–**
- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
- Set cue levels and cue times
- Supports all frame rates including 30df
- Newly designed, 4-motor transport is faster and more efficient (120 minute tape shuttles in about 60 sec.)
- Parallel interface • Front panel trim pots in addition to the level inputs

### D-15TC & D-15TCR

The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)

### SONY PCM-R500

Incorporating Sony's legendary high-reliability 4D.D. Mechanism, the PCM-R500 sets a new standard for professional DAT recorders. The Jog/Shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.

**FEATURES–**
- Set-up menu for preference selection. Use this menu for setting ID6, level sync threshold, date & more. Also selects error indicator.
- Includes 8 pin parallel & wireless remote controls
- SBM recording for improved S/N *(Sounds like 20bit)*
- Independent L/R recording levels
- Equipped with auto head cleaning for improved sound quality.

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## TUBE MICROPHONES

AKG

### C12VR
**TUBE MICROPHONE**

A legendary tube mic developed by AKG over 40 years ago. The carefully hand-made large dual diaphram capsule offer a silky smooth, transparent high end, exquisite mid-range and a deep, rich bass response. Nine polar patterns and 3 bass roll-off positions are provided for unsurpassed flexibility. An outstanding mic for the serious recordist.

**FEATURES-**
- Re-issue of classic tube mic the C12
- Polar patterns include: Cardioid, Omnidirectional figure 8 and six intermediate settings accessible via remote control
- 3 position Bass-cut filter (Flat, 75 & 150Hz)
- Includes N-12cr power supply, H15/T shock suspension 10M cable, W42 foam windscreen and professional metal case
- Frequency response 30Hz to 20kHz

audio-technica

### AT4060

Combing premium 40 series engineering and vintage tube technology, the AT4060 delivers a versatile and competent studio microphone. Low-noise and high SPL capabilities make the AT4060 a premier vocal mic as well as strings, guitars and other demanding applications.

**FEATURES-**
- 20 - 20,000 Hz freq response
- Dual gold-vaporized large diaphragm elements
- Includes the AT8560 power supply, AT8447 shock mount, rack mount adapters and case.

## MICROPHONES

### SHURE KSM-32

The new KSM32 side-address microphone features an extended frequency response for open, natural sound reproduction. Suitable for critical studio recording and live sound production, Shure steps up to the plate with another classic.

**FEATURES-**
- Class A, transformerless preamplifier circuitry for improved linearity across the full frequency range.
- Exceptionally low self-noise and increased dynamic range necessary for highly critical studio recording.
- 15 dB attenuation switch for handling high SPLs.
- Switchable low-frequency filter to reduce vibration noise or to counteract proximity effect.
- Great for vocals, acoustic instruments, ensembles and overhead miking of drums and percussion.
- SL model also features an elastic shock mount which greatly reduces external vibrations.

### BPM CR10

The BPM CR10 Studio Condenser Mic features a full frequency response for competition against the best of the best.

**FEATURES-**
- 1" Gold diaphragm
- Suitable for most guitar and vocal recording applications.
- Includes Custom Aluminum Road Case, XLR-cable, wind screen and elastic suspension

## SAMPLING

### AKAI
### S5000 & S6000 Studio Samplers

Akai is proud to announce its next generation of samplers with the introduction of the S6000 and the S5000. Building upon Akai's legendary strengths, both machines feature up-to 128-voice polyphony and up-to 256 MB of RAM. They use the DOS disk format and .WAV files as the native sample format allowing standard PC .WAV files to be loaded directly for instant playback - even samples downloaded from the Internet into your PC may be used.And of course, both the S6000 and S5000 will read sounds from the S3000 library.

**FEATURES–**
- OS runs on easily upgradeable flash ROM.
- 2x MIDI In/Out/Thru ports for 32 MIDI channels
- Stereo digital I/O and up to 16 analog outputs.
- 2x SCSI ports standard
- Wordclock connection
- Optional ADAT interface provides 16 digital outs
- .WAV files as native sample format

**S6000 ONLY FEATURES–**
- Removable front panel display
- User Keys
- Audio inputs on both the front and rear panel allow you to wire the S6000 directly into a patchbay from the back and override this connection simply by plugging into the front.

E-MU

### E-mu Systems, Inc.
### E4XT ULTRA Professional Sampler

The Emulator legacy continues with the new ULTRA series from E-mu. Based on the EIV sampler, the new 32-bit RISC processing of the E4XT guarantees faster MIDI response, SCSI, DSP and sampling.

**FEATURES–**
- 128 voice polyphony
- 64mb RAM (exp. to 128)
- 3.2GB Hard Drive • Dual MIDI (32 channels)
- 24-bit effects processor • 8 bal. outs (exp to 16)
- Word Cloack& AES/EBU I/O
- EOS 4.0 software
- 9 CD ROMS over 2GB snds

## MIC PREAMPS

HHb

### Classic 80 Pentode Tube Mic Pre

Fronted by a low noise EF86 pentode tube and 2 additional triode tubes per channel gives this pre amp detail, openness and presence. Input and output level controls allows precise control of harmonic contribution of the tubes.

**FEATURES-**
- 2 Channel Mic Pre • Balanced Mic Ins w/48V Phantom Power • Dedicated 1/4" instrument input
- High & Low pass filters w/ 3 cut off frequencies (HPF - 50Hz, 100Hz or 150Hz) (LPF - 5kHz, 10kHz or 15kHZ)
- Phase reverse on channel 2
- Drive & Peak LEDs • Large rotary output faders
- Illuminated VU meters • 250V HT voltage rail

### dbx 586 Vacuum Tube Mic Pre

The DBX 586 Vacuum Tube Dual Mic Preamp uses hand selected and matched premium 12AU7 vacuum tubes ensuring ideal characteristics for a warm, distortion free signal path. Custom designed analog VU meters monitor tube level insert path or output levels well Line/Instrument and mic inputs make the 586 versatile enough to use with virtually any input source.

**FEATURES-**
- Mic or line/instrument inputs on each channel. +4/-10 operation.
- Drive control for a wide variety of great tube effects
- 3-Band EQ with sweepable frequency
- Optional TYPE IV Conversion System outputs
- Separate 1/4" insert send/return on each channel

### JOE MEEK VC1 Studio Channel

The Joe Meek Studio Channel offers three pieces of studio gear in one. It features a transformer coupled mic pre, compression and a professional enhancer together in a sleek 2U rackmount design!

**FEATURES-**
- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- High pass filter for use with large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out & VU/Compression meter
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC

## MONITORS

KRK

### EXPOSE E7
**Active Studio Monitors**

When you need a truly neutral sounding near field monitor, look no further than the Expose E7 by KRK. From the unconventional enclosure shape that eliminates the resonances found in parallel designs to the custom designed Kevlar cones and bi-amplification, every aspect of this reference monitor has been built from the ground up to deliver sonic purity.

**FEATURES-**
- 7" Kevlar LF Driver
- 1" Kevlar HF Driver
- 54Hz - 20kHz, ±3dB.
- Bi-amplified 140 watts/side @ 8 Ohms
- Neutrik XLR/ 1/4" combo connector
- 109dB Max SPL continuous

### M6000/S
**Studio Monitors**

The KRK M6000/S are designed for close-field monitoring. A smooth frequency response in a compact size make these units portable and efficient.

**FEATURES-**
- High power handling
- 62Hz - 20kHz, ±3dB.
- Compact and portable
- Low distortion
- Smooth frequency response
- Custom Gray finish

MACKIE.

### HR824

These close field monitors from Mackie have a wide deep response with exceptional detail. Each pair of these biamplified speakers has been clinically matched to ensure optimum performance

**FEATURES-**
- 8.75" polypropylene woofer. 1" aluminum dome tweeter
- 150W Bass amp, 100W Treble amp
- Full space, half space and quarter space placement compensation
- 1/4" and XLR inputs
- Hi frequency adjustment, lo fequency roll-off switch
- Frequency Response 39Hz to 22kHz, ±1.5dB

### Hafler TRM-8
**Powered Studio Monitors**

Winner of Pro Audio Review's PAR Excellence Award in 1997, Hafler's TRM8s provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an active crossover, and Hafler's patented Trans•nova power amp circuitry.

**FEATURES-**
- 45Hz - 21kHz, ±2dB
- 75W HF, 150W LF
- Electronically & Acoustically matched
- Also Available!! TRM-6 Monitors

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—FROM PAGE 20, "ROCK OF AGES"

When I am there I think of nothing but being there, and when I am not there, I work to get back. Every Surf song I hear grabs my heart and pulls me back even more. And Hendrix said we'd never hear Surf music again...

### SEX

Then I moved to a different apartment in Arizona where there were...girls. Older girls who would have nothing to do with me even though I gave up my balloons for one of them as a demonstration of my maturity.

Through some freaky fate I had discovered sex years before with a babysitter, and had even discovered blind rage from her father, but this failed to impress any of these stunning beauties in the new complex. They were only interested in the older guys, even though most of them hadn't discovered *anything* yet. It was there that I learned affection, rejection and frustration.

And the music let me know I wasn't the only one learning these things. "The Wanderer," "Runaway," "Rubber Ball," "Calendar Girl," "Runaround Sue" and the others were there for me, each in their own time. Someone understood.

### SURF CITY, HERE I COME

A few years later I finally made it to California. It was everything I had envisioned and more. Still a kid and far too young to drive, I used to hitch to the beach at sunrise and stay through the day into the night with my surfboard and a new radio. New Surf music reinforced the old. I began to trust the accuracy and power of the images music had brought me. As I grew stronger, more blond and more tan, I met older girls who took me home. (I might have misrepresented my age and situation somewhat; I was six feet by age 12.)

The Surfaris, Jan and Dean, and The Ventures were there with me for every wave. I was living my dream as defined by my anthems.

### GO EAST, YOUNG MAN

I must have misunderstood. One day, out of the blue, my real father wrote and offered to move me to Baltimore to grow up in a real family.

I did. I felt ridiculously out of place, and I was. Just as I was beginning to decode the absurdity of life in the East, Santo & Johnny released "Sleepwalk," and it tore my heart out. It made me feel the setting sun on the warm California sand even as I was trying to forget it. I put surf posters up, but no glow, no warmth came from them.

After a while The Blues Magoos released "Summertime Blues," and suddenly my confused, tenuous grip on life, thousands of miles from where my soul was waiting, simply let go. Once again, music was there to show me I wasn't alone, even in my displaced solitude. Country Joe's view of Vietnam showed other poor souls in displaced solitude. The Jefferson Airplane, Frank Zappa and others offered another world made just for us. We went there.

**When I play now, I create new music that links what I am today with what I was—closing the circle.**

And, of course, I had a band. We played all the best acid rock, some Stones and "Sleepwalk." Nobody got the "Sleepwalk" part.

### NO, I MEANT GO FARTHER EAST

I hopped a boat and moved to Switzerland, by way of ten other countries. I started another band and toured Europe. Playing behind the Iron Curtain was just like playing Baltimore—too strange for the audience to accept even though there was every indication that it was real for *somebody*.

Music got weirder, and come to think of it, so did I. There was a special place in the world for musicians then, a sort of universal alternate reality that transcended physical location. I think.

Now when I think about it I can't believe I didn't get killed 20 times over. The Beatles and Stones were there to tell my story, though, as was a new, more insane Airplane.

### OKAY, YOU CAN GO WEST NOW

Eventually I moved back to the States and went to Carnegie. Pink Floyd released *Ummagumma*, so I dropped out. Then, since I didn't have to go to class, I got married. That interfered with my music, so I got un-married. Lou Reed was teaching me about the Darker Side. Led Zeppelin. Friends were ending up in mental institutions.

I began to do more studio work and more touring. Music and its trappings went from 80% of my life to 90%. (I needed 10% for fast cars and bikes.)

One day Stevie Wonder called and asked me to do some work on *Songs in the Key of Life*. I did.

I got a house in Laguna and drove to L.A. every day, just so I could wake up on the beach. The surf was high, and life was good.

I started doing more and more work in Europe, but made sure to return to Laguna as often as possible to stay in touch with my first verified musical roots. In one year alone I made the flight 52 times, listening to Duane Eddy, The Everly Brothers and others of that era on each flight to work, and the new work itself on each flight home. I flew and worked nonstop for an entire decade, living a life forged by the music of my childhood.

### COMING HOME

I am what I have made myself into, as each of us are. Music was my *only* guide. Music told me I was *not* alone; it told me of wonderful new lands and, later, even of wonderful new worlds. I went to every one of them.

Every single memory I have—good or bad—is tied to music. And in turn, every time I hear a song from my past, images of what I was doing and feeling, what I *was*, come back to me. Every time.

When I play now, I create new music that links what I am today with what I was—closing the circle. When I engineer or produce now, I strive to create for others a unique sound, a *feeling* that ties what they are *now* to the piece, while hopefully triggering memories or feelings from their pasts.

Let's face it, by now all that is new must contain some that is old. I try to integrate subtle ghosts of our collective musical past (and so the associations) into the music I make today. I do this in order to evoke deeper emotions and meaning.

Now it's your turn: Have you thought about how the music you grew up with helped form what *you* are today? And how the music you are making today is forming what you will be tomorrow? ■

*SSC wrote this* real *late one night. There was no music playing, but he heard every song anyway.*



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# MASTER PRESERVATION

*—FROM PAGE 56, MASTER PRESERVATION*

ic tapes (open reel and cassette) and 45% to 50% RH for all other materials.

It's hard know exactly how to interpret all these numbers, but it seems like a safe bet that a stable temperature within a few degrees of 55° F is a reasonable goal for long-term storage. As for RH, 35% falls in about the middle of the range.

Air conditioning alone won't guarantee these conditions, and while constructing a special room may be an option for a label or a studio, it won't be practical for many individuals. One possible alternative is to try to find self-contained devices that are designed for storing other products with specific temperature and humidity requirements (wine or cigars, for instance). But be aware that even if these devices provide the desired temperature and humidity range, they may have other characteristics, such as electromagnetic fields from compressor motors, that make them unsuitable for some types of recorded media.

Speaking of magnetic fields, it should go without saying that it's a bad idea to store magnetic media near speakers. But be careful as well about operating machines with electric motors (including vacuum cleaners) close to magnetic tapes or disks.

As for light, the National Archives of Australia explains that "materials degrade more quickly when exposed to ultraviolet light. In storage areas, fluorescent tubes which are low in UV should be used wherever possible. Storage areas should not have windows, but if they do they should be covered with curtains or blinds. Lights should be turned off whenever possible."

## KEEP IT RUNNING

All the right steps to protect your masters against the ravages of time will only take you so far toward the ultimate goal of being able to recover your program material from the storage medium. "Even if tapes or disks made today are in excellent condition in 30 years time," the Australian National Archive notes, "the machines required to play them will almost certainly have been superseded long before." Without a fully functional playback device, even the best preserved materials will be unusable.

Analog formats, such as ¼-inch or ½-inch 2-track and 2-inch 24-track, have proven their appeal over time and will likely be available somewhere, somehow, well into the future. Digital formats have a less stable track record. The Sony F1 and the Mitsubishi X-80 are extinct, as are any number of magnetic disk formats. But some digital media, particularly DAT and CD-R, are currently so widespread that it seems likely that playback machines will be around for a good long while. Without getting into the pros and cons of any particular format for long-term storage, it only makes sense that as you commit to a particular storage medium, you also commit to having a machine around to play it. That means a machine that is regularly maintained in proper alignment, so that your media plays back without being damaged by the machine itself. For formats that seem to be fading from the scene, building up a hoard of extra players or spare parts might not be a bad idea, if you can afford it.

Of course, even having well-preserved media and a working machine will be of limited value if poor documentation makes it difficult or impossible to determine the contents of the master. Is it the original mix, or the EQ'ed version from mastering? Is it the radio edit, or the dub edit, or the version that was later re-mixed because the horns were too loud on the chorus? Was noise reduction used on the recording? And where are the tones? Don't assume that anyone will remember anything about the material in a few years; write it all down on the box.

Lastly, it's important to realize that there is no strategy that can guarantee that any given master will last forever. "The main prospect for long-term retention of the information held on magnetic media," the Australian National Archive states, "seems to be in regular copying or data migration, thus maintaining a good quality signal which can be read using available equipment. Copying can either be to fresh tape or disk, or to some other machine-readable format such as CD-ROM." If all the material you want to preserve is already released on replicated CD, you already have copies in what is (if stored properly) probably the most stable available format. Otherwise, plan on booking yourself a copying session sometime between now and 2009. ■

*Philip De Lancie is* Mix*'s new technologies editor.*

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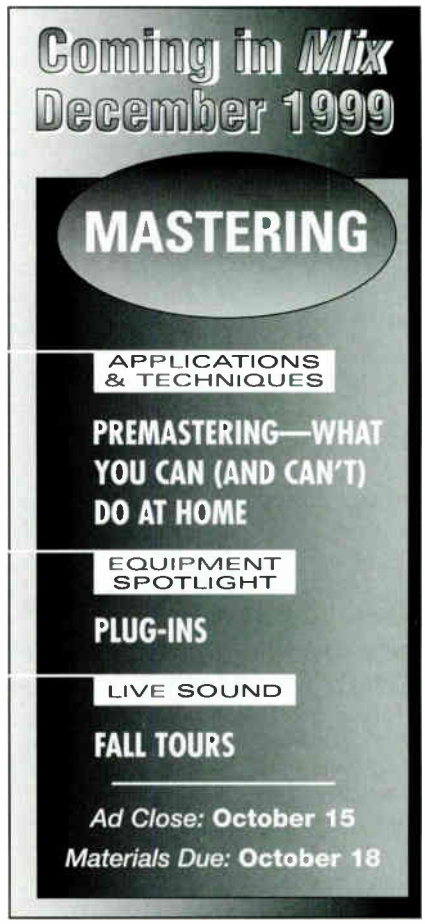


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—FROM PAGE 90, JOHN T. MULLIN
became Crosby's chief engineer, recording *Philco Radio Time* on tape, both the dress rehearsal and the "live-to-tape" show. The final mix, transferred to 16-inch ETs for airing, was often an edit of both performances. Mullin's skillful edits created the kind of program pacing that most live radio shows could not achieve. The now-hit Crosby show remained tape-delayed, setting a precedent in broadcast production that remains the norm to this day. Other network radio and recording artists quickly adopted tape to produce their shows and discs, including Burl Ives and Les Paul (who later went on to develop the first multitrack tape recorder). Live broadcasting soon became limited mostly to local disc jockeys spinning the new long-play 33⅓ and 45 rpm music discs.

## MULLIN INSPIRES AMPEX

Mullin's two prototype machines proved the feasibility of the new tape technology to Ampex Corporation, a tiny, six-employee company that built small motors and generators for U.S. Navy contracts. Mullin and Palmer assumed that the Army Signal Corps reports from Germany on the Magnetophon would motivate the big U.S. electronics firms to introduce their own professional tape recorders. Strangely, that never happened. Only Col. Richard Ranger of Rangertone in New Jersey tried to build a working prototype of the German technology. Although Ranger later distinguished himself with audiotape decks for motion picture production, his first effort was a failure, opening the door for Ampex. In 1946 in Alabama, J. Herbert Orr—a former major in the Signal Corps—began manufacturing an $Fe_2O_3$ (ferric oxide) acetate tape according to a recipe given him by a BASF scientist, but 3M eclipsed his initial products. Orr's Orradio later became Ampex's magnetic tape division, today called Quantegy.

Ampex went on to design and build America's first professional high-fidelity audiotape recorder, the Model 200, which went into service in Hollywood, Chicago and New York on all of the radio networks in the spring of 1948. Mullin and the Crosby show were presented with serial numbers 1 and 2 of the Ampex machine in gratitude for their research and development support. Model 200s were biased for the newly developed 3M Scotch No. 111 tape, which replaced Mullin's dwindling supply of German tape. That same year, other American manufacturers including Magnecord, began building commercial audiotape machines for consumer and pro use. Mullin's pioneering work in America became the basis for many recording industry standards, including the famous NAB equalization curve still in use for analog studio recording.

Ironically, many of Mullin's innovations and modifications made their way back to postwar Europe. When the Germans entered the international tape recorder market in 1950, joined by the Swiss, international marketing pressures led them to adopt most of the technical parameters established by Mullin and put into practice by Ampex, Magnecord and many others, including the 30 ips tape speed (later reduced to 15, 7½ and 3¾ ips) and the ¼-inch (6.35mm) tape width.

## THE VIDEO TAPE RECORDER AND DATA TAPE

In 1949, as television exploded onto the American entertainment scene, engineers and producers recognized the need for high-quality video recording for delayed broadcast and program editing. At the time, video was captured on poor-quality kinescope recorders, a relatively low-tech, 16mm and 35mm film-based TV recording method. A kine (pronounced "kinnie") was essentially a film camera with a "3-2 pull-down" shutter aimed at the screen of a 30-frames-per-second video monitor, all in a closed box.

Mullin told Crosby that he could do for the singer's budding TV career what he had done in radio, and he could earn a lot of money for Bing Crosby Enterprises in the process. Mullin proposed a magnetic-tape video recorder, which some engineers at the time felt was a theoretical impossibility given video's wide, 6MHz bandwidth. He led the Bing Crosby Enterprises team, assisted by Wayne Johnson, that introduced the world's first working prototype VTR in 1950. Simply called "Crosby Video," the machine used 1-inch tape running past 12-track fixed heads at 100 ips (250 cm/s) with an 8,000-foot-long reel recording 16 minutes of monochrome video. The engineer based the VTR transport on the robust Ampex Model 200. By 1955, Crosby Video recorders had color capability and longer record/playback times using ½-inch tape with 3-track heads, but always with fixed heads and high tape speeds.

Mullin's Crosby Video prototypes established engineering principles that became the basis for many professional and consumer audio and data recorders, including the closed-loop capstan that later appeared with great success on 3M's Mincom line of data and professional audio machines, on Ampex data recorders and in many consumer decks. Mullin's Crosby Video machine also spurred Ampex, RCA and the BBC to begin their video development work. Ampex won that race in April 1956 with the world's first practical VTR, the Ampex VR-1000 (the secret was the use of spinning heads past slow-moving 2-inch-wide tape), as well as vestigial-sideband FM recording.

## SUCCESS IN RETIREMENT

Bing Crosby sold his electronics lab to 3M in 1956, which led to the creation of the Camarillo, Calif.-based 3M Mincom electronics division, a maker of military and civilian data recorders and later professional and consumer audio machines. 3M audio engineers pioneered some of the earliest professional digital audiotape recorders sold commercially. Mullin served as Mincom's chief engineer until his retirement in 1975, when he began a second career teaching, writing and lecturing. He voiced over 2,000 hours of books-on-tape that reside in the national library of Recording for the Blind & Dyslexic (www.rfbd.org) and are still nationally distributed.

He created one of the finest collections of historic entertainment technology—radios, recorders, microphones, phonograph and cylinder players, cutting lathes, tapes and discs—which were widely shown at trade shows around the country, including AES functions. A video, *An Afternoon with Jack Mullin*, based on those shows is available from the AES (www.aes.org). The Mullin museum is now a part of the Pavek Museum of Broadcasting (www.pavek-museum.org) in St. Louis Park, Minn., near 3M in St. Paul.

Mullin's love of classical music and his support of public radio led to his work as a volunteer engineer and on-air talent at California stations KCPB-FM and KZYX-FM. His tenor voice was well known to local public radio audiences as he played his favorite pieces and offered his views on the art of performance and the history of recording.

Mullin was a fellow and honorary member of AES, a recipient of the Emile Berliner Award, and an elected member of the 3M Carlton Society. He is survived by sons John and Peter, and daughter Eve Collier. ■

*Entertainment technology historian Peter Hammar is the former curator of the Ampex Museum of Magnetic Recording in Redwood City, Calif.*



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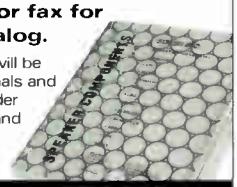

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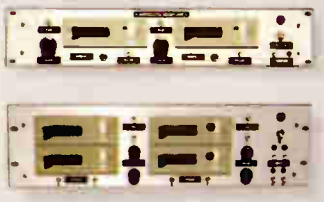

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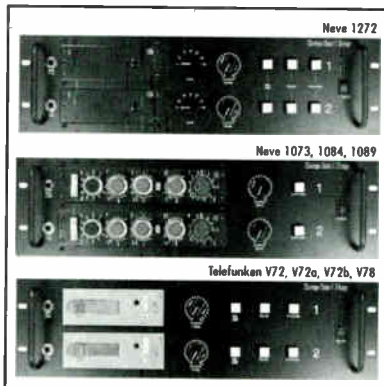


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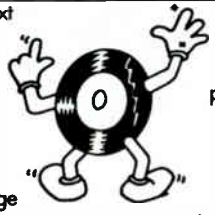

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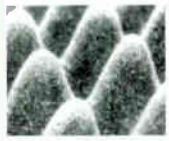

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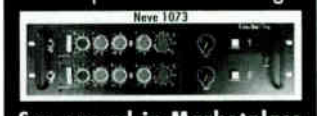


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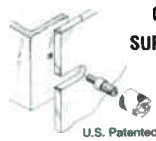
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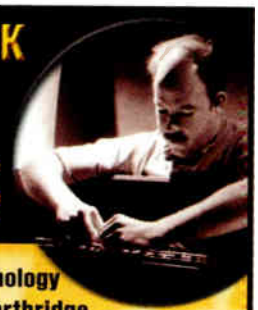

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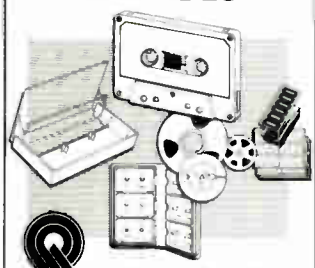

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—FROM PAGE 44, TOM DOWD

head was, "Dowd, we're going to have to build a bigger studio."

But when I was doing Bobby Darin, The Coasters and all of those things, if they were done at Atlantic, they were done on 8-track. So that ultimately, when stereo came around, you just whip out the old tape, remix it and issue it. "Here it is in stereo." Those 8-tracks paid for themselves a couple of times over 20 years later.

The only times the multitrack went out of the studio was when I did Herbie Mann down at the Village Gate and I also did the MJQ someplace; I can't recall. I know we tried Lincoln Center and I walked out before the downbeat and said, "Pull the equipment. This place is impossible."

The other place that I took it that really paid for it a hundred times over, was when I took it to the Copacabana for *Bobby Darin at the Copa.* That was done on 8-track. After that, in New York, it became fashionable to have a truck, and later you could hire two 8-track machines or whatever configuration you wanted.

***Let me ask you a question about a transitional time. You're there doing this incredible jazz, R&B, pop stuff. In 1966 The Beatles'*** Revolver ***comes out and there are all those effects and backwards parts. In a way, it's the antithesis of the live approach you've been using...***

*Revolver.* This is when I'm doing The Young Rascals. And I'm doing a lot of Stax sessions. I'm flying in and out of Memphis every fifth week. Or going down to Muscle Shoals. And I'm doing the Rascals and things like that back in New York. I'm doing "Under the Boardwalk" with The Drifters and working with Solomon Burke. I was doing a lot of Otis Redding and a lot of Booker T & The MGs. When *Revolver* came out, the ones that it impressed the most were the Rascals. Everybody else said, "It's an English group, and they're trying this and that and fine, fine, fine." That's how I felt. But the Rascals went ballistic when they heard *Revolver,* and they wanted us to try and emulate everything—every sound and everything they read the way the *Revolver* album was recorded.

I will say this about the album: They were unknown to us, and they didn't know what we were doing, or what I was doing. That was all done on 3- and 4-track, and they were bouncing tracks. And in bouncing tracks, they didn't realize that the heads on the machine were out of phase. They were monitoring everything in stereo, in 2-track. And when you play the album in mono, some things dropped out, some things disappeared. It was a fright.

The Rascals are saying, "Man, that [effect] is what made it a hit. That's what made it a hit." And I'm thinking, "You idiots. It's good songs and good singing. That's all that it is." If you didn't have a good song, if you didn't have good singing, forget it.

***Which The Beatles always did have.***

Yeah, exactly.

***So it didn't make you start experimenting on things?***

It didn't get me to go in a different direction, no.

***What was it that took you down to Stax and Muscle Shoals originally?***

It was Jerry Wexler. By then Atlantic had four or five promo men out on the road—in the West, the middle of the country, up and down the East Coast. Ahmet was flying from Los Angeles to London and stopping over in New York to answer the phone once in a while. Otherwise, he was signing artists in England or signing artists in Los Angeles. Nesuhi was doing nothing but jazz, and Jerry was doing the pop and R&B, but we were not doing so much R&B. We didn't have any blues stuff. This disturbed Jerry, and a couple of the guys said, "Oh, you ought to hear this little record company down in Memphis. And then there's this guy down in Muscle Shoals that has a rhythm section." We started listening to their records, and Jerry made one or two phone calls and a couple of deals and the first thing you know, we're distributing Stax records through the United States, but not in the Memphis/New Orleans area. When Jerry hears a couple of records coming out of Muscle Shoals, he says, "Man, that rhythm section is really tight. And they're different from the guys in Memphis. We ought to use them." So he's flying in and out of Muscle Shoals once or twice to record, to get a different sound, or a more authentic blues traditional sound to things than we'd get in New York. But Jerry is averse to flying, so after he makes one trip here and one trip there, he says to me, "Go down there and take this artist with you and make a record." And that's how I started commuting to Alabama and Tennessee. ■

*Coming next issue: Otis and Aretha, Eric Clapton, Rod Stewart and The Allman Brothers, as we continue our chat with Tom Dowd.*


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# Sweetwater MUSIC TECHNOLOGY REPORT.

music technology direct

## SHURE

**EXCLUSIVE "ENSEMBLE SYSTEM!":** You get 1 Transmitter and 4 Receiver/Earphone sets at a special discount — only from Sweetwater! Now your entire ensemble can enjoy the benefits of this advanced system!

## TASCAM

**TASCAM "PERFORMANCE BUNDLE":** Another Sweetwater Exclusive! This offer upgrades your TM-D1000 Digital Mixer to deliver 12 Mic Preamps and double the DSP at an amazing Sweetwater "ProNet" discount! Call for details!

## Community

PROFESSIONAL LOUDSPEAKERS

**CHOOSE THE "XLT POWER TRIO" FOR SUPERB SOUND AND PORTABILITY:** Thanks to the XLT41E's compact 12" and the XLT51E's powerful 15" driver, you get an incredibly convenient and easy-to-carry PA that really kicks! The XLT41E even works great as a floor monitor! Call for your special Sweetwater discount on this Power Trio!

## MUSIC TECHNOLOGY DIRECT — and the Best Value, Guaranteed!

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# LIVE PERFORMANCE TOOLS

## Why Upgrade to SHURE PSM 700 Stereo Wireless In-Ear Monitors?

- You have the best possible **protection** for your **hearing**.
- Your monitors **sound great every night**, regardless of the venue.
- You have **tremendous freedom of movement** on stage - without losing your monitors.
- You save money as multi-user systems are actually **more economical** than traditional, multi-speaker monitor systems.
- You drastically **reduce the weight and size** of your monitor system.

## Why does Shure Dominate the In-Ear Wireless Monitor Category?

- **Sound:** Shure's unique Low Mass/High Energy E5 dual-driver earphones deliver stunning audio quality.
- **Flexibility:** Each transmitter delivers your choice of one stereo mix or two user-selectable mono mixes.

Use any number of receivers with a single transmitter. Everyone on stage can enjoy a clear, safe mix — all for a lot less per band member than most floor monitor rigs! Add up to 16 base transmitters for a total of 16 stereo or 32 mono mixes.

## Mark of the Unicorn — the Choice for Powerful Live MIDI & Audio

Live sequencing? It's not just for keyboards and drums anymore! Automate a mix, reset effects and EQs, run your lights, even play complete audio tracks with real-time plug-in DSP effects! **Digital Performer** sequencing software has proven reliability with hundreds of live touring acts and innumerable concert performances. The **MTP AV** patches your live MIDI rig with on-the-fly setup changes —indispensable for keyboards and FOH control of effects processors. The **2408** gives you tremendous audio playback and recording capabilities and the **1224** lets you record your performances in stellar, 24 bit resolution. This combo has quickly become the standard on pro tours, both for audio "sweetening" and live location recording.

## Automated Digital Mixing for Live Gigs? The Tascam TM-D1000 Performance Bundle is Here — A Sweetwater Exclusive!

No soundman? No problem! Tascam's amazing TM-D1000 Digital Mixer is perfect for the small ensemble, keyboard player or electronic percussionist that wants great sound and extensive control, without a lot of complicated headaches. Easily create preset mixer "scenes" for each song. Set all mixing functions plus built-in digital effects with a single button push! Or enjoy real-time automation when you control the TM-D1000 from a MIDI sequencer such as Digital Performer.

Sweetwater's Performance Bundle adds Tascam's MA-AD8 8-channel mic preamp/A-to-D converter and FX1000 DSP expander. You get a total of 12 balanced, XLR inputs with 20-Bit D to A conversion, enough for full band. DSP horsepower is dynamically allocatable for up to 8 dynamics processors and 4 channels of digital effects. Save all settings with scenes or automate! Why settle for manual mixing? Call us here at Sweetwater Sound today for our special "ProNet" discount on this great bundle! We'll even **pay you top dollar for your old board when you upgrade** to a Tascam Performance Bundle.

## Power and Grace! A Truly Compact PA that Smokes!

What if your club PA had more volume, cleaner sound and less weight? For solo artists and small ensembles, the Community XLT41E two-way cabinet is the perfect choice, balancing top sound quality, pro durability and remarkable portability. Add an XLT51E 15" subwoofer and you've got a full range rig that really kicks, without breaking your back! From the titanium, high-dispersion tweeters to the indestructible construction, Community has taken all of their knowledge and experience with arena and stadium systems and packed it into these little giants!

Enhance your live shows with these advanced tools. What's the best approach for your unique needs? Call us now to talk it over!

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# Recording audio with your Mac or PC?

## MUSIC TECHNOLOGY DIRECT – and the Best Value, Guaranteed!

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Configure the MOTU system that's just right for you!

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# No other system gives you all this

**24-bit recording** — **With today's latest converters**
Just a few years ago, this level of audio quality would have cost you thousands per channel.

**116 dB dynamic range** — **With our new 1224 analog interface**
The 1224 gives you stunning audio specs that rival today's most expensive interfaces.

**Balanced I/O** — **With the 1224's eight analog inputs and ten outputs**
All of the 1224's analog connectors are balanced +4 TRS or XLR for pro-grade I/O.

**Tons of ADAT Optical I/O** — **24 channels of ADAT optical expandable to 72**
The 2408 delivers all the ADAT optical you need for today's digital mixers, FX processors and other gear.

**Loads of Tascam digital I/O** — **24 channels of Tascam TDIF expandable to 72**
If you're in the Tascam world of digital I/O, no other system even comes close.

**S/PDIF and AES/EBU I/O** — **The new 308 gives you AES/EBU and two flavors of S/PDIF**
8 channels each of optical "TOSlink" S/PDIF, RCA "coax" S/PDIF and AES/EBU — all in 24-bit glory.

NEW! 308 digital I/O

**Expansion** — **With the flexible PCI-324 card — the core of the system**
Connect up to three 1224, 2408 and 308 interfaces for as many as 72 inputs/outputs.

**Sample-accurate sync** — **With digital transfers between your Mac and MDM's**
Say goodbye to worrisome phase issues and other digital audio sync problems.

**Broad compatibility** — **With all major audio software for Mac and Windows**
Use your favorite audio software with your favorite native plug-ins.

**Audio format conversion** — **Up to 24 channels at a time**
Own the most flexible format converters out there — without paying extra!

**Sample-accurate software** — **with AudioDesk™, the workstation software for Mac OS**
Make sample-accurate transfers with ADATs. Edit tracks with sample-accuracy.

**Super-easy setup** — **with our step-by-step Setup Wizard**
You'll be up and running in no time.

**Industry buzz** — **Why is everyone is talking about the 2408?**
Keyboard Magazine says it best: "Is the 2408 the audio interface system we've all been waiting for?...the answer is yes."

**Price, price and price** — **Did we say price?**
A core 2408 system with 24 channels of input/output is only $995. Add a 1224 24-bit analog expander for only $995 — or a 308 for only $695. Mix and match them any way you like. At these prices, you can own just the right combination.

MOTU

# MOTU 2408/1224/308 hard disk recording

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# AKAI DD8 DIGITAL DUBBER

## TIPS FROM TODD-AO EAST

The Akai DD8 random-access digital film dubber is designed to be used in place of traditional mag machines and as a plug-and-play replacement for tape-based recorders and playback machines. It records to and plays from 2.6GB magneto-optical (MO) disks or removable hard drives and now offers 24-bit/96kHz resolution.

At Todd-AO East in New York City, our mixing/screening room accommodates all digital formats, as well as 16/35/70mm capability. We recently added another ten Akai DD8s for a total of 28 units. Many of our clients now bring in elements on MO drives; some even bring MOs for stem screenings.

### THE QUICK CHANGE ARTIST

In the past, when we'd make changes on mag, we had to first re-create that stem—recall all the automation, make sure all our elements were up, with all the reverbs and EQs—and punch into that stem. Now, we lay our stems out so that the Foley is spread out separately from the backgrounds, which are in turn separated from the specific effects. When the client wants to fix something—lower a gunshot, for example—we can just highlight the gunshot and lower it right on the stem, without having to go back to the original elements. Now we save 70% of the time it used to take us to do fixes.

### THE 8-TRACK CLIPBOARD

When a client doesn't like a particular music cue we've mixed into a stem, instead of erasing that cue and adding a new one, we use the DD8's DL1500 controller to move the original cue, with all the crossfades and moves in place, over to "virtual tracks" 9 through 16, and then record the new cue on tracks 1 through 8. It's like having an 8-track clipboard—tracks 9 through 16 can be recalled and put right back into the mix if the client changes his mind.

### ON THE MOVE

If you want to move something, like a piece of dialog that's slightly out of sync, the DD8 allows you to move it a subframe at a time, or a frame at a time. There are two ways to move the section: by highlighting the section with an In and Out key and "nudging" it, or by going to the Move page. In general, it is better to use the Move page since you have to specify the amount of the move, whereas when nudging it is easy to forget how many button pushes were needed. Also, as you nudge, you tend to overlap what you did after that move and you cannot recover audio that was overlaid, whereas the Move page Undo function will restore overlaid audio.

### MONITORING FROM AFAR

If there is only one monitor for the DD8, it may be difficult to see the punch-in/out point—shown by a thin green line—when sitting at the other end of the console. However, if you put all the keys in Edit Mode, all the tracks will be edit-ready and all the in and out points will display in green, clearly visible from some distance.

### KEEPING TRACK OF TRACKS

Documentation is important, especially if a project is conformed two or three times. With three stems and multiple elements to be kept track of, it makes sense to provide as much information as possible in the file names. But a file name can be only ten characters long, so it is important to use those ten characters in such a way that the file name reflects its version and status. At Todd-AO we mark one file as the final file, and any revisions to that file are indicated in the file name. Sound One, Todd-AO's sister facility, has devised a file system that uses the ten characters as a code; one or two letters indicate that the file is a premix, a stem, a final, a transfer, or a Foley track, etc. Once familiar with such a coding system, it becomes second nature to label files accurately and informatively. ■

BY FRANK MORRONE AND BOB CHEFALAS

*Frank Morrone is the lead mixer at Todd-AO. Bob Chefalas is Todd-AO's vice president of engineering.*



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# Buying a new digital recorder or workstation between now and September is sort of like buying a new turntable just before CD players came out.

September 24th, 1999 AES. New York City.

Significant new digital products

from Mackie Designs. D8B owners

will love 'em. So will most everybody else.

Even turntable owners.

MACKIE.
Digital Systems

Log onto www.mackie.com at 12 NOON ET, September 24th for live coverage of our new digital product announcements.

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One day, there will be a monitor
whose performance profile
is based on science, not opinion.

A monitor whose compact size
and power output will stun you;
and whose low end performance and
dynamic range will beat competitors
costing three times as much.

One day, there will be a monitor with the
same Linear Spatial Reference
technology that has changed forever
the way monitors are measured and qualified.

**That day: September 23, 1999. The AES Show, NYC.**
**That monitor: The all new JBL LSR 25P.**

**The only workstation monitor**
**good enough to be called LSR.**

# LSR.

SEE US AT AES BOOTH #726

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