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PRODUCTION NOTES

Transcontinental Studios, a new state-of-the-art recording studio based in Orlando, FL and an offshoot company of Transcontinental Records, has installed an 80-channel Solid State Logic SL 9000 J Series console. The facility has hosted the hit group The Backstreet Boys, who sold more than 20 million copies of their first two projects. Transcontinental also produces the mega pop group N Sync. Joe Smith, v.p. and general manager for Transcontinental Records, mixed the hit single 'God Must Have Spent A Little More Time On You' from their self-titled debut album N Sync on the RCA label.

"With pop music you have a very punchy sound and that's what SSL gives you," says Smith. "The SL 9000 J is an extremely flexible console and its automation is the best in the world. Having a 9000 has taken us straight to the top."

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LIVE SOUND

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DEPARTMENTS

Check out Mix Online!
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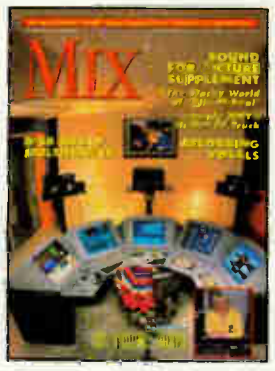
On the Cover: Margarita Mix, one of the country's hottest commercial audio post houses over the past decade, opened a five-room facility in Santa Monica earlier this year, centered around the dSP Postation. For more, turn to page 44. **Photo:** Ed Freeman. **Inset Photo:** Vic Stiles.



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FROM THE EDITOR

PIRATES AMONG US

The word "piracy" evokes images of seagoing thieves plundering ships filled with precious cargos, but modern piracy occurs much closer to home. Everyone is familiar with bootleggers creating counterfeit software, videos and music CDs for resale to unknowing (and sometimes knowing) customers who may overlook a few "details" (such as ethics or quality) in exchange for a rock-bottom price. In such cases, the perpetrators can eventually be tracked through the clues left in the manufacturing/distribution process.

Unfortunately, today pirates are often little more than hackers who revel in the challenge of cracking a commercial software program's copy-protection scheme. Later, copies of the "kracked" programs are uploaded to any of thousands of Internet sites that provide free Web space. The pirates then flood Internet newsgroups and e-mail lists with details on where to download the "warez" (illegal software). The distribution is instantaneous and anonymous. No money changes hands, no manufacturing or traditional distribution is involved; finding the pirates is difficult.

The problem of warez is global and widespread, involving not only mainstream programs but also audio and MIDI programs and plug-ins. As a test, I entered "Pro Tools warez" on a search engine and instantly had a list of 40 sites offering pirated software. However, the lag time between listing with a search engine and seeing data on its database ranges from several days to several weeks, and by that time, most of those sites had been shut down, either by a software company or through the efforts of Copyright Control Services (www.CopyrightControl.com), a piracy watchdog group funded mostly by music and audio software vendors.

In its first six months, CCS has helped shut down more than 750 sites offering kracked versions of CCS members' audio software. Unfortunately, as soon as hackers hit the newsgroups, thousands of illegal downloads flood the market. The financial effect on the companies involved can be devastating, especially for small businesses that design specialized programs for a limited market. And although the lure of "something for nothing" seems great, unstable warez can wreak havoc with users' systems.

Another new form of Internet piracy has come in the form of MPEG-3 encoding—referred to online as MP3—which allows users to create AM radio-quality compressed data files of music for easy download, storage and playback. A recent survey of Internet search engines stated that the most common word entry is "sex", followed by "MP3."

Clearly, the MP3 technology isn't at fault here—no more than color photocopiers are to blame for counterfeit currency—but this type of piracy will surely get worse as Internet bandwidth increases. Even today, a cable modem transferring at 1 MB/sec could download a 600MB audio CD in ten minutes. And as Internet transfer stats continue their meteoric rise, the concept of consumers sharing entire movie or album collections with the online world may not be too far away. The education, enforcement and technology solutions to this problem pose a formidable challenge for the future.

Be on the lookout!

George Petersen

BPA INTERNATIONAL SPARS ABP American Business Press

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FEEDBACK

APPLES TO APPLES

I have to say the ignorance I encounter in the pages of *Mix* magazine scares me. It does. The idea that analog is safer, offers more redundancy, a better sound (which I won't touch, as that, at least, is opinion) and so on is foolish. For one thing, the system comparisons I have heard are ridiculous. This sound familiar anyone? "My $3,000 Wintel PC/Mac is not as good as my 2-inch 24-track, which I paid $300,000 for." No kidding? Or, "ADATs don't sound as good as analog, they break more, there are sync problems..." Duh again? Hmmm, analog tape costs $50 to $200 for a single tape; ADAT, 12 bucks. Analog is $300,000 for a complete 24-track system; ADAT, $6,000. Are we really comparing the cheapest digital to the cream-of-the-crop analog?

Let's be fair. Lets try comparing a $7,000 analog system to a $7,000 digital system. Well, for $7,000, I or any creative shopper can get a 24-bit hard drive 24-track with plenty of disk space. $7,000 analog? Glorified cassettes with sound that matches. A $300,000 computer system would offer about 2 terabytes of disk with a redundant RAID system, 8 gigs of RAM, two DAT backup units and two 25-inch monitors. On that system I can track, mix, master...all in one box. I can back up my data twice in about two hours, and with a RAID system in place I don't really need to worry about backing up because nothing short of an act of God is going to get my data. I have been running $3,000 or less computers since I was 12, and in that time I have rarely if ever had a catastrophic loss. I think the reason people at *Mix* and the readers of *Mix* are so paranoid about computers is, very simply, they don't know what they are doing.

Michael Alan Johnson
Madison, Wis.

WHAT DO YOU KNOW?

Thanks for the enlightening interview with Chris Thomas. What a career, and what an engineer. I'm sure that there was not room to mention all of the acts that Mr. Thomas has worked with, but, in my opinion, there was one glaring omission. Anybody who remembers the British pub rock scene of the '70s will, no doubt, remember an amazing "blue-eyed soul" band called Kokomo, very much from the Average White Band mold. This ten-piece band was put together from remnants of the Grease Band, King Crimson and 10cc, amongst others. They were superb—one of the best live acts I've ever witnessed. Chris Thomas produced their first album in 1975, and it was just sensational. Kokomo had five vocalists, and their harmonies were joyous. Chris Thomas caught that spirit to perfection. At the time, I can remember some critics saying that the production was too "clinical" and didn't have "soul." I disagreed. Kokomo needed that warmth. Their follow-up album was produced by Arif Mardin.

Nick McGeachin
Electrix
Petaluma, Calif.

SCHOOL SEARCH

First off, I would like to let you know that I think your magazine is great. It is the most informative recording magazine available, in my opinion. Second, I was wondering if you could help me with a problem I am having. I am desperately looking for recording or audio engineering schools in and around the Philadelphia, Pa., area but have been unsuccessful so far in my search. Any help you can provide to me will be greatly appreciated.

Bridgette Rohan

Editor's Reply: We are publishing your letter, Ms. Rohan, because this is one of the questions we are most frequently asked. First of all, though you didn't ask this of us, we should mention that Mix *never recommends specific recording programs for many reasons, the most obvious being the fact that the school that suits one person may not be the best for another. We do, however, publish an annual directory of U.S. audio education programs. The directory includes some general advice on choosing a school and listings of programs with degrees/certificates offered, program descriptions and contact information, divided by region. This feature most recently appeared in our Aug. 1998 issue and will be revised for Aug. 1999. Anyone can purchase a copy of the issue by phoning 800/843-4086.*
Good luck.

THANKS FOR THE MEMORIES

I probably should have dropped you a note ages ago, but you know how it is with writing and radio commentating (which I do currently on NPR's "Morning Edition")—people tend to mostly only contact you when they disagree and hardly ever take the time to contact otherwise. Well, this message is an exception. Anyway, Paul Lehrman's Bell Labs piece (March '98 issue) brought back some good memories.

I'm one of the "old" men of the Internet, starting in the early '70s. Our lab at UCLA was site 1 on ARPANET back when it was, well, a hell of a lot different. I remember going up for frequent trips to the Stanford AI Lab during those days, when we'd use the "entire" computing capacity of a PDP-6 just to play a simple but remarkably interesting version of "Spacewar." Of course, a hell of a lot of interesting music work was going on up in a lab off to the side as well.

Given that UCLA had one of the very early UNIX educational licenses (and over at Rand, where I also did some work, we had the first commercial UNIX license), I had almost continuous interaction with the Bell Labs folks during that period, especially the core UNIX people (Dennis Richie, Ken Thompson, etc.). The "Lab" (which, of course, encompasses facilities in other cities in addition to the Murray Hill, N.J., complex) was a unique place and has apparently managed to maintain much of this under Lucent. It is truly Lucent's "crown jewel."

Lauren Weinstein
Vortex Technology
Woodland Hills, Calif.

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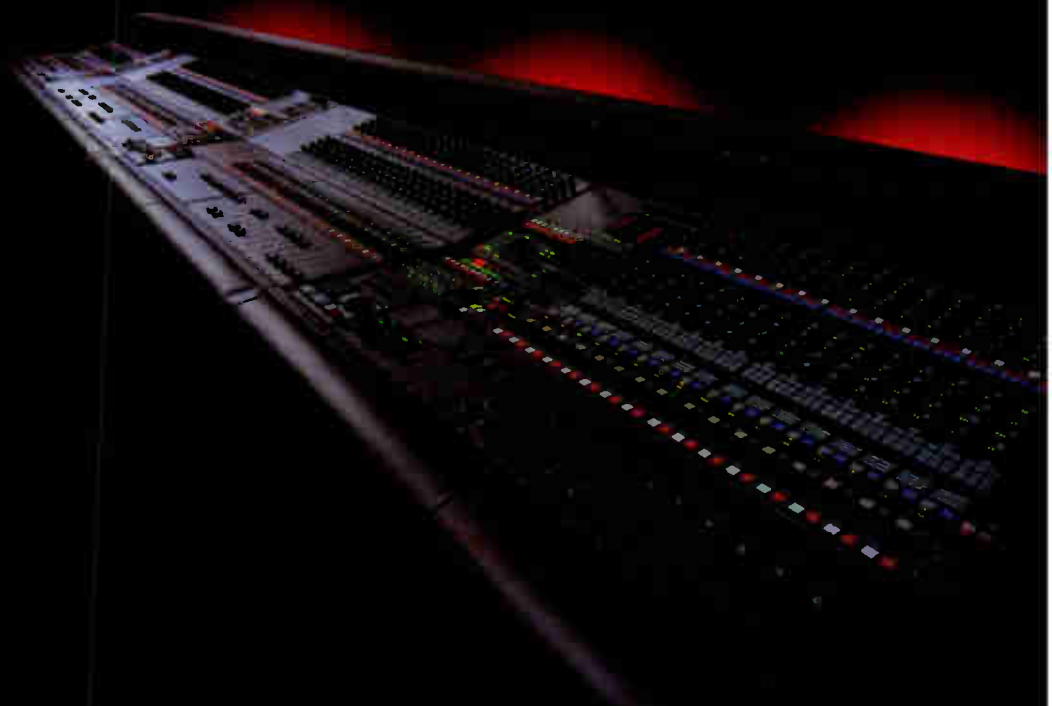

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CURRENT

DVD-AUDIO VERSION 1.0 APPROVED

The DVD Forum steering committee has approved Version 1.0 of the DVD-Audio Disc specifications, making it the fifth of the DVD format family, following DVD-Video, DVD-ROM, DVD-RAM and DVD-R. The effort, which began in January 1996, was carried out by the DVD Forum's Working Group 4, under the chairmanship of Victor Company of Japan Ltd. (JVC). The Forum will publish the DVD-Audio Format Book, which will be made available to authorized companies. For more information visit www.dvdforum.org or call 011/8145/450-1488.

EAW PURCHASES SIA SOFTWARE

Eastern Acoustic Works recently purchased SIA Software Company Inc., best known for developing the JBL Smaart Pro system optimization and acoustic measurement software for Windows. EAW president Ken Berger said the company was acquired because the companies share a vision regarding the direction of product development. EAW stated that JBL would continue to be the exclusive source for the product until the upgraded Version 3.0 would become available; at press time, that was scheduled to occur in March.

SIA Software will continue to be based in New York City, with Sam Berkow and all other key personnel continuing in their current roles. Additionally, Jamie Anderson was appointed product manager for SIA and will be based at EAW headquarters in Whitinsville, Mass.

NEUMANN, SONIC SOLUTIONS RECEIVE TECHNICAL AWARDS

Two audio manufacturers were recently honored with high-profile awards for technical achievement.

Georg Neumann GmbH received this year's Technical Grammy Award, a special merit award given for contributions of outstanding technical significance to the recording field. The recipient is determined by the Recording Academy's Technical Committee, with final approval by the National Trustees. Professor Jorg Sennheiser, President and CEO of the Sennheiser Electronic Corporation (Berlin), accepted the award on behalf of Neumann.

Dr. James "Andy" Moorer, chief scientist and founder of Sonic Solutions, received a scientific and technical Academy Award for his work in the design of digital signal processing and its applications to audio editing for film.

FURMAN MANAGEMENT BUYS BACK COMPANY

Furman Sound Inc. announced the sale of the company in a management-led buyout from the founder and sole shareholder Jim Furman. The buying group consists of Gary Kephart, president and CEO; Joe Desmond, VP of sales; Hunt Moore, VP of materials; and Pacific Mezzanine Fund, a private investment fund based in Emeryville, Calif.

"We are excited by the opportunity to take Furman Sound to the next level of product development, manufacturing quality and customer satisfaction," said Kephart. Furman Sound has been manufacturing power conditioning/distribution and signal processing equipment since 1976.

ANALOG COALITION RESTRUCTURES

The Analog Option Coalition has restructured and is now called Analog Options Consulting, a division of Wavelength Communications. The group will address issues surrounding analog recording, including hardware availability, maintenance and upgrade services, new analog formats, analog's relationship to new high-resolution digital formats, tape media availability and costs, maintenance tech training and accurate media portrayal of analog's continuing role in the industry.

AOC coordinator Bruce Borgerson cited the emergence of the Music Producers Guild of the Americas and Mastering Engineers Guild of the Americas, alongside SPARS, AES and other groups, as the primary reason for not trying to press forward with a similar structure. "Instead of setting up yet another formal association, Analog Options Consulting will enlist the support of various companies and constituencies on a project-by-project basis to achieve a specific set of goals." For further information e-mail bbwave@compuserve.com.

CHANGES AT APRS

The Professional Recording Association (APRS) announced additions and changes to its board. Adrian Kerridge retired chairmanship after serving four years. Dave Harries was appointed new chairman and will be supported by deputy chairman Peter Filleul and Malcolm Atkin. Peter Fielder of CTS Studios was welcomed as new director, and Phil Dudderidge now chairs the exhibitor's group.

MACKIE DESIGNS, SAM ASH AND SAMSON SETTLE

The lawsuits between Mackie Designs, Samson Technologies and Sam Ash Music Corporation were settled recently. Sam Ash Music will commence acting as a dealer for Mackie products effective April 2. Other terms of the settlement were not disclosed.

Mackie's lawsuits against Behringer Spezielle Studiotechnick and Behringer International are ongoing.

UPCOMING SHOWS

NSCA EXPO '99 takes place at the Opryland Hotel and Convention Center in Nashville and is expected to draw over 5,000 attendees and more than 490 exhibitors from around the world. Pre-Expo educational workshops run from April 26-28, with educational seminars April 29 to May 2. Demonstration rooms are open April 29 to May 1. For more info visit www.nscaexpo.org or call 800/466-6722.

The Society of Professional Audio Recording Services (SPARS) announced the schedule and theme for this year's BizTech '99. The conference, which takes place May 15-16 at Chicago's Midland Hotel, is titled Smart Business—Smart Technologies. Bob Ludwig of Gateway Mastering Studios will kick off the event with a keynote address, "Navigating the Future: Audio Delivery Technologies." For further information, call 800/771-7727 or e-mail spars@spars.com.

—CONTINUED ON PAGE 16

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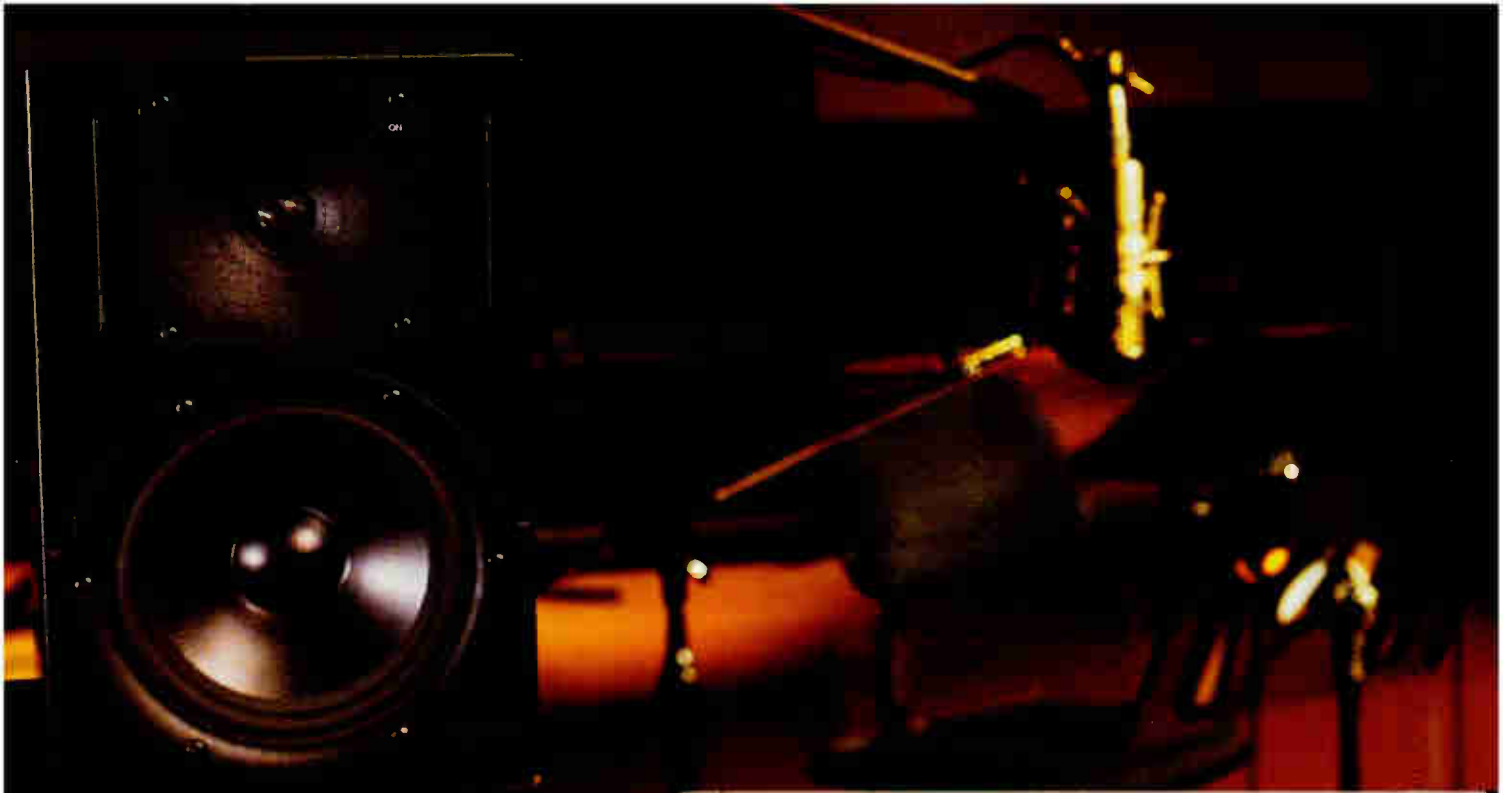

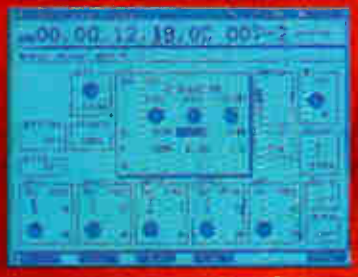

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CIRCLE #008 ON PRODUCT INFO CARD

INDUSTRY NOTES

Telex Communications (Minneapolis, MN) announced the creation of an executive management team with **John Palleschi** as president of the newly formed speakers and microphones group, **Dan Dantzler** as president of the new electronics group and **Glen Cavanaugh** as president of the existing multimedia/audio communications group. The Speakers and Microphones group assumes responsibility for all speaker and wired mic products under the brand names Electro-Voice, Altec Lansing, University Sound and Dynacord. The Electronics Group will handle wireless mics, intercoms, amplifiers, mixers, signal processors and consoles under the Dynacord, Vega, Klark-Teknik, Midas, DDA, Merlin, Electro-Voice, Telex and ProStar brand names...Nashville-based **AKG Acoustics** named **Doug MacCallum** VP and general manager of U.S. operations. MacCallum came to AKG in 1996 from Mark IV Audio, where he served for 13 years, most recently as VP...**Julia A. Wesley** was promoted to executive producer/sales and marketing at New York City's **Howard Schwartz Recording**. Wesley joined HSR in 1996...At **Klark-Teknik** (Worcestershire, UK), **Patricia Baxter** was appointed public relations officer, and **David Wiggins** was appointed international sales manager...QSC Audio (Costa Mesa, CA) appointed **Clare Climaco** as its in-house public relations coordinator and named **DiModica & Associates** as its sales representative for Florida...**Mike Muench**, former VP of Apple Computer, was brought aboard as CEO at **Line 6** (Thousand Oaks, CA)...**Wayne Morris** was recently appointed president of **Lexicon** (Bedford, MA)...**Euphonix Inc.** tapped **Richard McKernan** to be recorder sales manager. McKernan will be responsible for overseeing sales of the R-1 in the Western territory...**Steve Hathaway** was named director of regional sales for broadcast systems in Europe, the Middle East and Africa at **Harris Corporation** (Cincinnati, OH). The company also appointed **Chuck Maines** to radio district sales manager serving Alabama, Louisiana, Mississippi, Tennessee and the Florida Panhandle...California State University, Northridge Extension, now offers an audio technology certificate program. Developed by engineers, the yearlong session offers training in audio maintenance, problem solving and crisis management. Call 818/677-3916 for info...NARAS president and CEO Michael Greene announced that this year **MusiCares** celebrates its 10th anniversary of providing critical human service programs to members of the music community...**Bose Corporation** (Framingham, MA) and **Philips Communication & Security Systems** (Eindhoven, Netherlands) have agreed to work together on promoting and marketing each other's specialties...Wedemark, Germany-based **Sennheiser Electronic Corporation** named **Spoiled by Technology** (Naperville, IL) Rep of the Year. Most improved sales went to **Elrep Sales** (Tucker, GA)...**Systems Development Group** (Frederick, MD) announced the promotion of **L.D. Warrington** to president and **Paul Wolke** to VP. **Bruce Whittington** was brought onboard as sales and marketing rep...**Eastco Pro Audio/Video Corporation** has moved all operations from West Seneca, NY, to 3646 California Road, Orchard Park, NY 14127. Ph: 716/662-0536...**Be Incorporated** (Menlo Park, CA) tapped **Lamar Potts** as VP of Internet appliances, and promoted **Timothy Self** to VP of developer relations and **Frank Boosman** to VP of business development...**Disc Makers** (Pennsauken, NJ) entered into an online retail distribution agreement with **The Orchard** (www.theorchard.com). When Disc Makers fulfills a CD order, the delivery is accompanied by a distribution agreement that includes a Web page on The Orchard. ■

—FROM PAGE 12, CURRENT

WEB SITES

Maxell's Professional Media Products Group's site can now be accessed directly via www.maxellpromedia.com, bypassing Maxell Corporation of America's home page (www.maxell.com).

Former head of MCA Music Entertainment Group and industry veteran Al Teller launched Atomic Pop (www.atomicpop.com), which is described as a music-driven lifestyle Web platform. The Internet-centric music company is committed to changing the way music is acquired, marketed, promoted, sold and distributed. The company recently signed the group L7 and broadcast the world premiere of "Blondie Live."

Visit www.mitcables.com to view 53 pages of product info, FAQs, company and technical history and more.

The Bat Cave Recording Studio's site at www.thebatcave.com features sections on studio design, a monthly industry e-zine, links and merchandise information.

Radial Engineering can be found at www.radialeng.com. The new site features product specs, newsletters, operator manuals, competitive reports and a customer comment area.

Sweetwater Sound updated its electronic trading post. The renovated site, www.sweetwater.com/tradingpost, offers upgraded search features and allows customers more control of their own ads.

Swedish company Fact42 (www.fact42.com) invites sound and lighting companies to send in their press releases for publication. They also invite Webmasters of sites related to the touring and concert industry to send them news.

Gibson and Opcode Systems set up a site (www.zerocrossing.com) that provides information on their high-tech spin-off company.

CORRECTIONS

In the Producer's Desk on John Snyder (Jan. '99) we misprinted the title of Derek Truck's new album as *Quintet*; The real title of the release is *Out of the Madness*.

In the mic preamp article "...And Nothing But the Gain" (Feb. '99) we inadvertently referred to Grace Design as Grace Designs. Our apologies.

In the Surround Sound Monitoring article (Mar. '99) HHB's phone number was misprinted in the manufacturer contact box. The correct number is 310/319-1111. ■

QDIII
Also known as
Quincy Jones III,
Multi Platinum
Songwriter/Producer

"To be an innovator...

...with unlimited creativity, the only choice is Logic Audio. Used in combination with my 24 bit hardware, I get superior power and flexibility when writing, producing and scoring. Nothing else even comes close."

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CIRCLE #010 ON PRODUCT INFO CARD

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DIGITAL MASTERING PROCESSOR

QUANTUM

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Introducing the dbx Quantum. The first mastering processor that offers a sampling rate of up to 96kHz, a true 48 bit digital signal path with 24 bit output, and the same superior dbx dynamics processing that's been processing the hits for more than 25 years. Quite a trio of features.

96K

- **4 Band Multi Band Stereo Compression**
- **5 Band Variable Q Parametric EQ**
- **Dual Mono or True Stereo Operation**
- **TYPE IV™ Conversion System with TSE™ Tape Saturation Emulation**

And with the dbx TYPE IV™ Conversion System already on board, your signal retains the analog warmth and character it started out with, plus the clarity and versatility demanded by today's digital standards. Our patent-pending TSE ™ Tape Saturation Emulation processing makes it easy.

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2 TO 5 TO 7

ROOM TO GROW

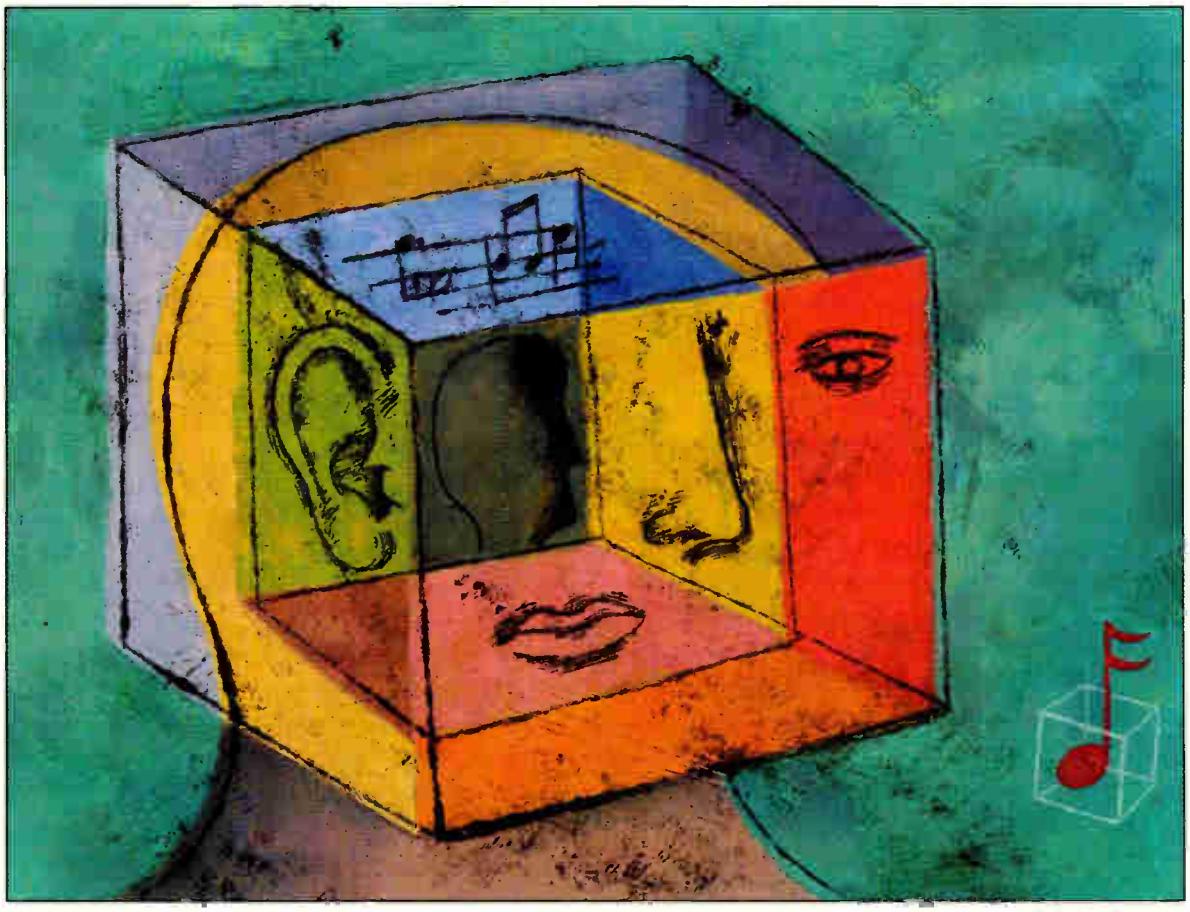

ILLUSTRATION: FERRUCCIO SARDELLA

6,000 .22 BLANKS, 1,000 BENT NAILS

When I built my personal studio back in the early Iron Age, I did the whole deal—poured a huge base slab and floated a second Neoprene isolated concrete floor above it. I built the outer walls from cinder block and then completely filled them with sand. The inner walls were also block, then firestop Sheetrock, with all the trick diffusion and acoustic treatments of the day, and of course all floated on the isolated floor, with an 8-inch air-isolation space to the outer walls.

The ceiling was fabricated using seven nonparallel planes, each constructed with six layers of ¾ ply, each layer cross-grained and isolated from the next layer with Neoprene and a permanently viscous synthetic damping polymer. This sandwich was assembled as a true A-frame and was held together (and to the walls) with two giant 360-degree looped steel cables. Turnbuckles were used to keep it all from exploding (or resonating), and finally to tune the structure itself.

The inner side walls were sawtooth-shaped to avoid parallel surfaces and to create the faces for five Helmholz resonators (floor to ceiling slots) per side to allow tuning out the first ten primary LF resonances.

The rear wall had to be glass (!) and so was shaped like, well, imagine a large yacht had crashed through and the bow was sticking into the room. No parallel surfaces, with reflections loaded into the floor, the rear Helmholzes, and a 250-pound absorber disguised as a sofa, with side-wall junctions perfect for tubular MR traps.

The front wall, as well as the front of the ceiling and side walls, are the same multilayer, viscous-damped construction as the rest of the ceiling, with the addition of two layers of 1-inch-thick tongue-and-groove white oak facing, steam-pressure-formed to continuous multiradius curves, thereby avoiding any chance of flat faces, much less parallel faces.

The entire A-frame ceiling was then covered with four tons of sand, with the exception of two 7x11.5-foot-tall cavities—over two stories tall, to allow full-wave 20Hz.

BY STEPHEN ST.CROIX

Way More Than Four More

The New Fostex FD-8: Eight Tracks of Unprecedented Flexibility and Power—Priced at Under $900

You could say that the new Fostex FD-8 is a duplicate version of Fostex's groundbreaking FD-4 digital recorder plus 4 channels more. But you'd be overshadowing the FD-8's amazing list of powerful, professional features. Because in addition to offering 8 channels of pure Fostex digital audio, the FD-8 also gives you two independent recording modes (one maximizes sound quality, the other recording time), 16 Virtual Tracks (for a total of 24 recording tracks), "Digital Track" inputs and outputs, and much more. Even full MIDI implementation. Plus, just like the FD-4, it gives you the freedom to choose your own optional SCSI recording media from a wide variety of available removable and hard drives. And with an M.S.R.P. of only $899, it shines a whole new light on what you can expect from a portable digital multitracker.

ADAT LIGHTPIPE
I/O jacks provide best solution to exchange up to eight tracks of data with an ADAT™.

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Input digital signals from other sources and output directly.

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Analog 8 IN x 2 OUT familiar mixer with 105dB dynamic range.

3 BAND EQ Plus Sweep
3-point EQ (2 shelving & 1 parametric types) on all 8 channels.

FD-8 LIMITLESS FOSTEX

Don't need a full eight channels? The original Fostex multitracker, the FD-4, gives you four channels of pure, "no-compression" digital recording and many of the professional features you'll find in the FD-8. It's the only four-track multitracker that lets you choose your own recording media from a variety of removable and hard drives. And—best of all—you can get your hands on one for under $600!

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FOSTEX

WHY DOES THE RESPONSE OF BECAUSE IT'S

WHERE'S THE EXTRA SUBWOOFER?

Greg Mackie and his team were recently invited to present the Digital 8•Bus to Britain's top engineers and producers in the "A" rooms at two of the world's most famous recording studios. Of course we used HR824 active monitors.

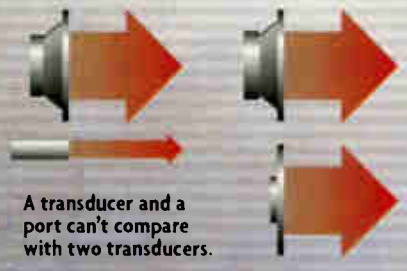
When the presentations were over, many of the veteran engineers were astonished to learn that they had been listening to 8-inch monitors instead of the studio's Big Speakers. Some even so far as to touch the house monitors' 12 and 15-inch cones while the HR824s were playing. They just couldn't believe the bass output from such a compact box.

Last fall we won the pro audio industry's coveted TEC Award for best near field monitor. Modesty prevents us from listing the impressive field of competitors but you'll probably encounter their ads in this magazine.

TIGHT, RESPONSIVE BASS FLAT DOWN TO 39HZ. Reviewers and owner's warranty card responses are unanimous: The HR824 has the most accurate bass they've ever heard from an 8-inch monitor. And the **quality** is as astonishing as the quantity. Fast low frequency transients like kick drum slaps and electric bass notes have a crisp articulation that makes other monitors sound like mush.

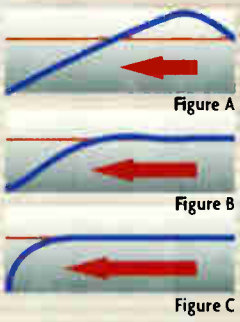
ANOTHER TRANSDUCER INSTEAD OF A PORT.

The more LF transducer cone area a speaker has, the more bass it can produce. But a huge low frequency transducer isn't an option on a compact near field monitor. To augment primary bass output, other monitors resort to using ducted ports that can convert cone movement into extra low frequency air movement. But for optimal output, a ducted port needs to have the **same area** as the low frequency transducer. In other words, an 8-inch near field monitor would need an 8-inch vent. Needless to say, you haven't seen any vents this big on our competitors' near field monitors. When vent size is reduced to maintain compact enclosure size, bass output is compromised. And, forcing a lot of energy out of a couple of small ports can create audible wheezing and whooshing.



A transducer and a port can't compare with two transducers.

Instead, the HR824 adds a large passive transducer with the cone area of another 8-inch woofer. Occupying the entire rear panel of the monitor (see photo below), this ultra-rigid honeycomb laminate piston tightly couples with the 824's active bass transducer. With a combined cone area greater than a single 12-inch woofer, you get exceptionally extended bass without port noise complaint.



Pushing out the curve: redistributing LF energy with synthesized mass.

SYNTHESIZED MASS AND OTHER STORIES. The cool thing about an active speaker system is that you can basically rewrite laws of physics that otherwise limit passive speaker designers.

A low frequency transducer's free air response graph looks like a bell curve—it's most efficient in the mid band (Fig. A above). To flatten the curve (and extend low bass), you have to proportionally reduce higher frequency output. Acoustic designers use all sorts of tricks to do this—and usually end up with response something like Fig. B.

The most effective way to "shape" an LF transducer's output would be to increase its mass (cone weight). But for designers of traditional passive speakers, adding mass hasn't been a practical option since it would dramatically slow down the woofer's transient response.

Rear view: The HR824's electronics conceal an ultra-rigid, honeycomb composite passive transducer.

HR824 HAVE THE MOST ACCURATE BASS ANY 8-INCH ACTIVE STUDIO MONITOR? REALLY A 12-INCH MONITOR IN DISGUISE.

Because the HR824 is internally powered (active), we could precisely control parameters that normally occur outside of the loudspeaker. Greg and the engineering team were able to create an electronic "symbiotic relationship" between the low frequency transducer's voice coil and its FR Series amplifier voltage output. At mid-band frequencies, the woofer "sees" extra synthetic "electronic mass." This effectively pushes out its lower bass response without compromising its lightning-fast transient response (Fig. C).

MASSIVE POWER THAT WOULD PROBABLY POP A PASSIVE MONITOR.

Punching out crisp bass requires a lotta watts. The FR Series™ high-current bass amplifier module inside the HR824 delivers a solid 150 watts of power with peak output in excess of 250 watts (plus another 100 watts for mid and treble). That's significantly more than any other 8-inch active monitor. Moreover, the HR824's servo coupling and ultra-short signal path put that power to work far more effectively than a passive monitor and a 250-watt stereo amp could.

PART OF A TIGHTLY-INTEGRATED SYSTEM. Our servo bass system is only one contributing factor to the HR824's amazing accuracy.

Internal power amplifiers are "fed" by phase-accurate, low distortion electronic circuitry instead of a crude coil-and-capacitor passive crossover. The HR824's proprietary logarithmic wave guide not only widens treble dispersion but also smooths the midrange transition between high and low-frequency transducers. At the critical 3500Hz crossover point, the alloy HF transducer's output is acoustically the same diameter as the LF transducer's output, thanks to the wave guide's flaring design (refer to the actual HR824 photo on the other page, not our ad folks' fanciful rendering at left).

Indirectly, the HR824's LF transducer even contributes to high midrange accuracy. In many monitors, woofer cone harmonic vibrations bounce around inside the enclosure and then exit through the thin woofer cone. The result: smeared imaging and muddled details. Instead of a chintzy chunk of fluff, the HR824's enclosure is utterly packed with high-density absorbent foam. Cone vibrations go in, but they don't come back out.

DON'T SKIMP. It's amazing how many studio owners will mortgage the farm for money-is-no-object, esoteric microphones... and then monitor on cheap, passive loudspeakers. If you aren't using ACTIVE near field monitors, you're seriously compromising your creative product.

We urge you to visit your nearest Mackie Designs Dealer and seriously audition **all** of their active monitors with some demanding, bass-rich program material. Judge our claims (and those of our competitors) for yourself. We think you'll agree that the HR824 is truly the best of the best.

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ONLINE AND SOUNDING FINE

I must say that this room is as close to perfect as I could imagine, but I have to admit that I had the luxury of designing and building it from the ground up, with no real, uh, financial or time constraints. In fact, it took two-and-a-half years to complete. And though it's really not as great an accomplishment as crunching a stunning room into existing city structures like today's top designers do, it works *very* well. In fact, it works so well that now, 22 years later, I still use the same basic structure, with only minor technical updates. It has produced Gold and Platinum, along with an extensive series of remix re-releases of classic films such as *Wizard of Oz*, *Singin' in the Rain*, *Yankee Doodle Dandy* and many more.

BUT?

It took only a few months of actual commercial use to realize that I had to build a second, "representative" listening environment if I wanted to mix a truly predictable end product. And so I did—a high-end consumer room with vaulted ceilings over a beamed oak floor. No slab, no spooky steel cables. I wanted a room that had a reactive floor, glass windows and other structural characteristics that more closely approximated the imaginary home that I was targeting with my work.

Of course, I already had the standard horrid test speakers. And I had learned long ago from Gary Olazibal and John Fishbach during the mixing of *Songs in the Key of Life* to actually transmit your mix with a baby FM transmitter to your car so that you might enjoy the entire music-crushing chain in all its real-world splendor.

Well, back to the second room. It took a few more months to tune and learn the new environment, and, most critically, to learn what the differences in what I heard in the two rooms actually *meant*.

For the first years, I happily did only music, but eventually film work began to appear, and with it came the need for rear channels. It was at this point that I realized that had I not built the alternate "living room" environment, I would be lost.

Most of us mixing music or film realize that we need at least two references in order to trust one.

Simply put, my single most important, critical, useful mix tool is this "other" room. The imaging is *far* less stable than the control room's, it has some evil resonances and sounds *way* different, and just for amusement, it changes a bit every day. It is much, much more fun to listen in. It's just...different, and that's the whole point.

HOW I CAME TO BELIEVE IN DIFFERENT FOR DIFFERENCE'S SAKE

As a kid, I decided that there was a cosmic law of such importance that it must apply to absolutely *everything* in life. Everything. I have altered the exact wording several times over the decades since I first realized it, but here it is: "Two points of reference are worth a thousand times one." I think that at one time it was: "The second point of reference is worth even more than the first."

—CONTINUED ON PAGE 249

PRO TOOLS

Looking for Your Dream Studio?

Yesterday's Dream

Expensive automated digital mixing console	$250,000 and up *(the sky's the limit)*
Also-expensive digital multitrack (1-inch/48-track/24-bit)	$225,000
Loads of expensive outboard gear	$75,000
Patchbay and associated mess of wire	$15,000 and up
Total System Cost	**$565,000**

Today's Dream-Come-True

Pro Tools® 24 MIXplus for Mac OS and Windows NT (64-track/24-bit solution with automated digital mixing, total recall of all settings and tons of real-time DSP power. No patchbays — route everything electronically!)	$9,995
24 channels of I/O with 24-bit A/D and D/A conversion (Three 888|24 I/O™ Audio Interfaces @ $3,695 each)	$11,085
Expanded, 32-fader ProControl™ (World-class integrated control surface: $11,995 for Base Unit plus 3 Fader Expansion Packs @ $6,495 each)	$31,480
Fully-loaded computer	$4,000
Four 9-GB hard drives	$4,000
Three (3) 8-channel mic pre-amps	$13,000
The world's best-sounding DigiRack™ Plug-Ins included *FREE* with Pro Tools *(a $1,000 value!)*	
Total System Cost	**$73,560**

Or $1,995/mo. Fair Market Value (39-mo. lease term)*

Additional financial structures are available. All prices are subject to change without notice.

Studio photo courtesy of DubeyTunes Studios, San Francisco.
Photo by Bill Schwob

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CIRCLE #213 ON PRODUCT INFO CARD

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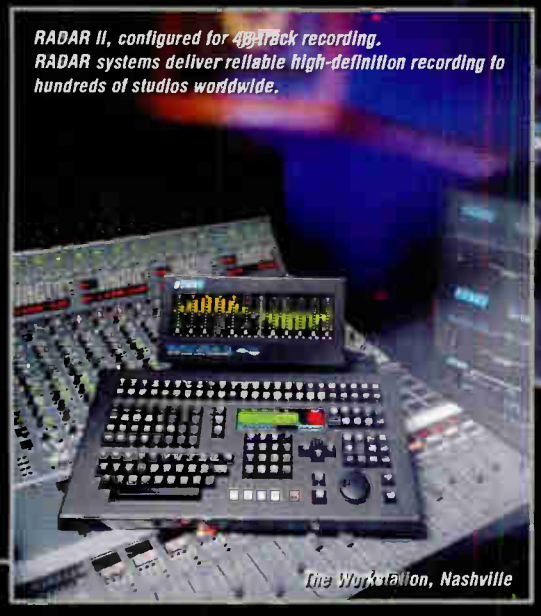
24 TRACK 48



RADAR II, configured for 48-track recording. RADAR systems deliver reliable high-definition recording to hundreds of studios worldwide.

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SEE US AT NAB BOOTH #L21653

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04/01/Y2K

WHAT REALLY HAPPENED

Microsoft Corp. (NASDAQ=MSFT) announced today a change in the release schedule of its new operating system, Windows 2000, explaining that extra time was needed to bring it into full Y2K compliance. The release date is now expected to be second quarter 1901.

—an alleged Microsoft press release, circulating the Net

Date: April 1, 2000
From: Insider Audio Central
City: None of your business

Well, it's been quite the few months since the big year-o-metric tickover, hasn't it? Nothing happened as anyone predicted it would, at least not in the *way* they predicted, but a whole lot of things happened that no one expected. And our little industry wasn't unaffected, was it?

There were, of course, the great shortages and outages, as the doomsayers predicted. But the doomsayers got them right for all the wrong reasons. The technology didn't fail us: We managed to screw things up all by ourselves, just by *expecting* that the world was going to end.

Were you one of the millions who woke up the day after Christmas and decided you'd better fill your cars' fuel tanks, figuring all the pumps would stop working a week later? Actually, none of the pumps had clocks in them, but that didn't stop you from getting into one of those gas lines that made the '70s oil panic look like a picnic on a deserted beach. Prices soared, Exxon and Mobil called off their merger as their individual stock prices went through the roof, troops went on alert in the Persian Gulf, and Nigerian investment capital, of which there suddenly seemed to be a whole lot, bought out what was left of the Republican party. Three tanker ships, trying to make double-speed deliveries with crews forced into round-the-clock duty, went aground off of Nova Scotia, causing spills that closed

BY PAUL D. LEHRMAN

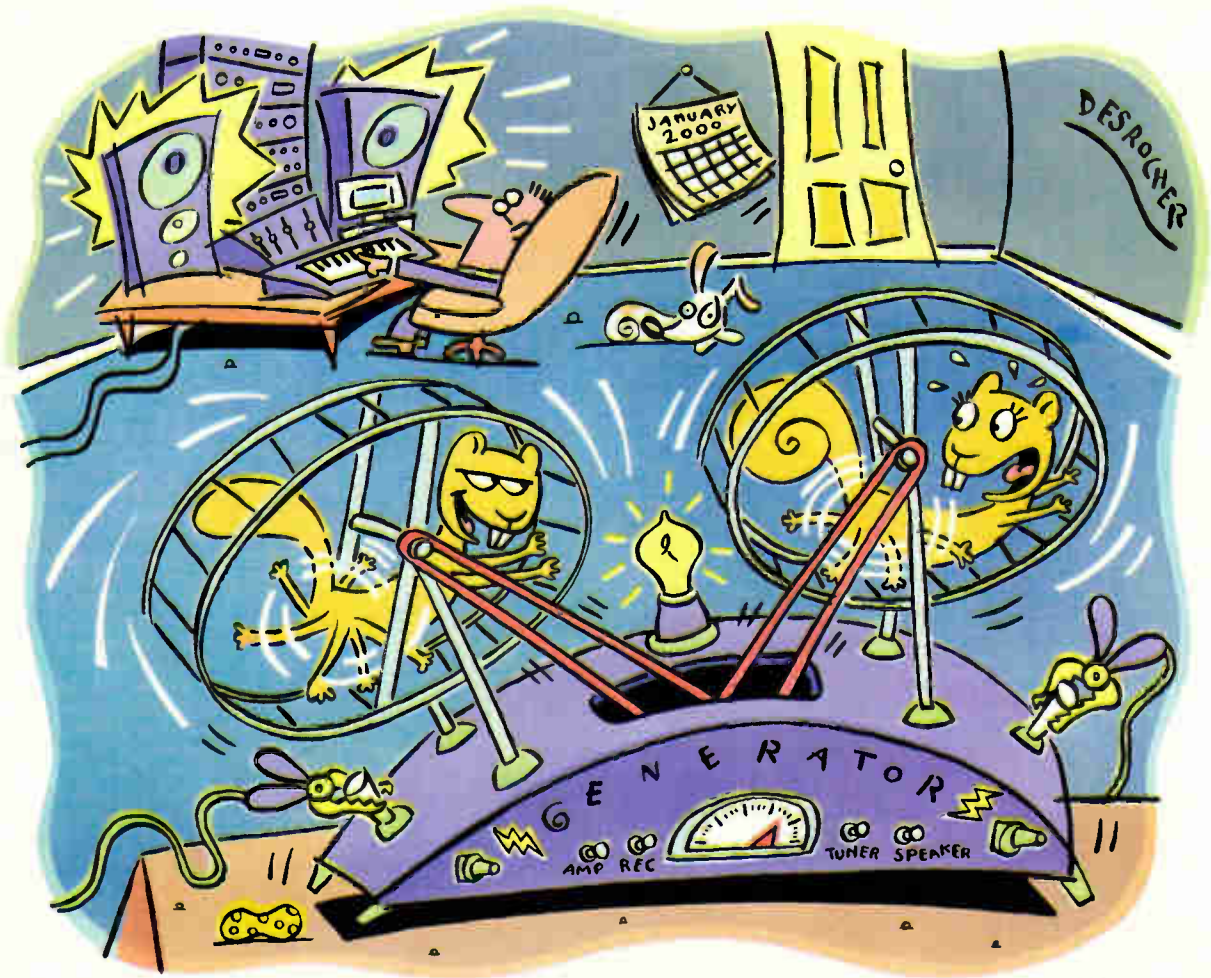

ILLUSTRATION: JACK DESROCHER

In 1990, Sweetwater Sound Inc. created an exciting new way to serve musicians and studios: We combined the convenience of direct-to-your-door service with a solid focus on music technology.

Like L. L. Bean, Dell and other specialty direct marketing leaders, Sweetwater is fortunate to have grown by leaps and bounds, while earning your trust and providing greater and greater value. Our exclusive "Music Technology Direct" approach has helped over 150,000 satisfied customers make their musical dreams come true.

Music Technology Direct!

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What does Music Technology Direct mean to you and your music?

1. Convenience. You get the right gear, when you need it!

It's like having a huge warehouse of music gear right outside your front door! One call gets you all the top brands—no chasing around all over town! Why put up with any hassles?

2. Savings. You get a fair "ProNet" price.

We stock in tremendous quantity to get the lowest possible cost from our vendors. We pass the savings directly to you with our "ProNet Pricing." Why spend more?"

3. Service. You get great Tech Support and Service, when you need it.

Help with an installation? Confusing problems? We know our stuff cold! We don't pass the buck, we get you back to your music as fast as possible. Why wait?

4. Respect. You get treated with respect.

Shouldn't shopping for gear be easy and fun? We'll do everything we can to make sure you have a great time selecting and building your rig, without pulling out your hair! Why not enjoy yourself?

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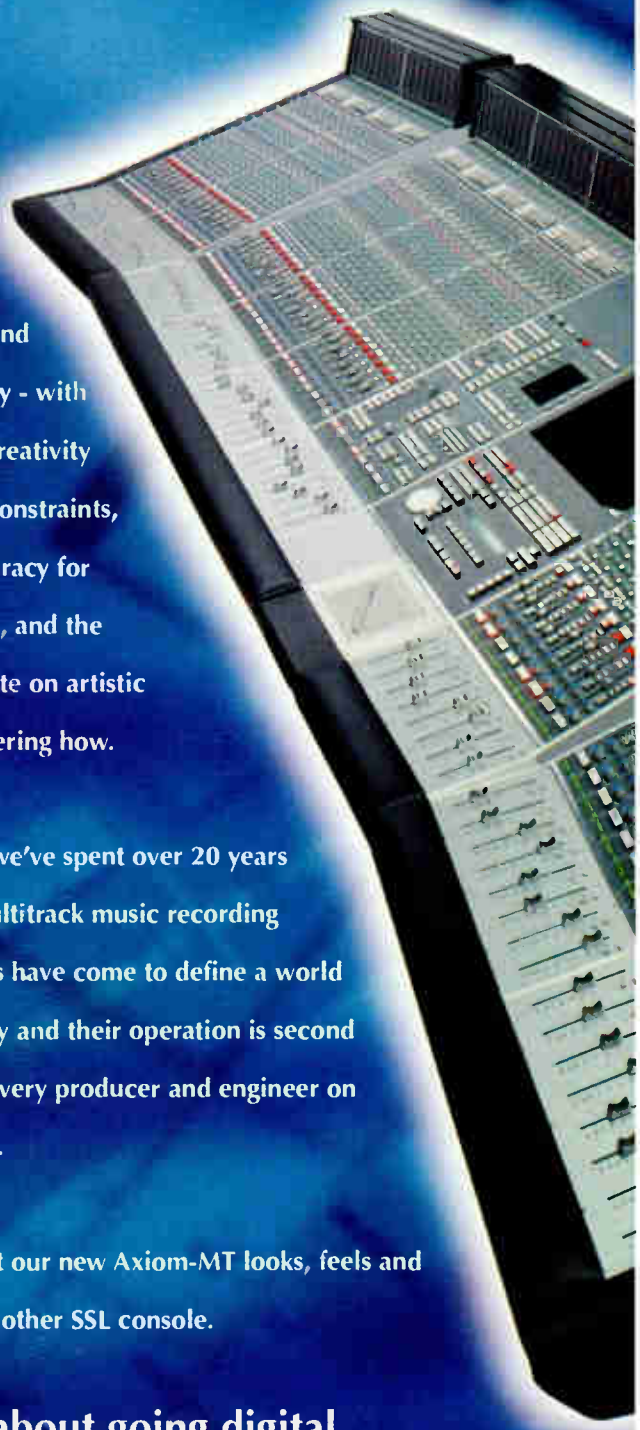
CIRCLE #015 ON PRODUCT INFO CARD

What turned the music technology industry on its ear?

1422 knobs.

With over 20 years experience in defining and refining the multitrack audio recording process, it's obvious that the new Axiom-MT is going to look, feel and operate just like any other SSL multitrack console.



Digital technology doesn't just mean brilliant automation and unimpeachable quality - with Axiom-MT it means creativity without operational constraints, instant effortless accuracy for remixes and overdubs, and the freedom to concentrate on artistic results without wondering how.

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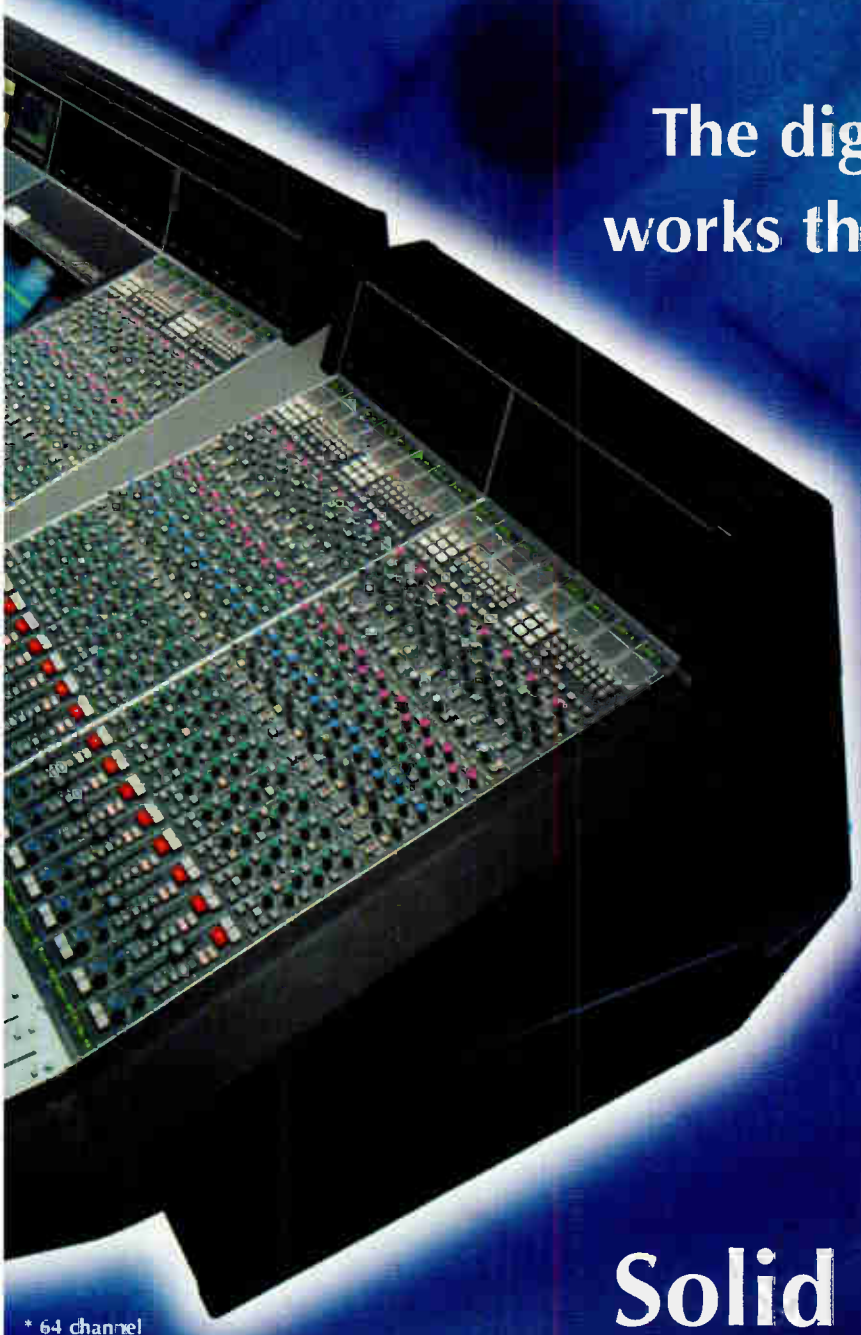

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down the entire New England fishing industry once and for all, and suddenly scrod, which no one outside of Massachusetts had even heard of before, became a prized delicacy among the only folks who could now afford it: Silicon Valley Internet startups. While Boston fish markets were reduced to selling canned Japanese tuna, you could find all the scrod you wanted at Palo Alto sushi bars, at $600 per piece.

Or were you one of those who nearly precipitated an international banking crisis on December 30, when you decided you had to get all of your savings into a safe place, like under your mattress, and stormed your local ATM? When the cash supply dried up, an obscure piece of code in bank machines programmed by a certain Seattle-area company kicked in that caused the ATMs to actually print new currency. However, instead of Andrew Jackson's picture on the $20s, there was a holographic engraving of Bill Gates. Although most people didn't notice the difference (after all, they'd been dealing with weird-looking $20s for a while), there was enough of an outcry to cause deep concern at the Federal Reserve Board, and several Texas Savings and Loans teetered once again on the verge of extinction. But calm prevailed when it was announced the bills (or "Willies," as we now call them) would be accepted at 100% of face value at all Starbucks.

Then there was the afternoon of December 31, when the "Super Bowl Halftime Effect," which until then had been considered an urban myth, became reality. But instead of all of America flushing their toilets at the same time, at 6:30 p.m. Eastern Standard Time, just as all three networks' nightly news led off reporting that unemployed persecutor Ken Starr had filed his 422nd sexual-harassment suit against Bill Clinton (this one involving an airline flight attendant who claimed he pinched her buttocks on a flight to England at the start of his Rhodes scholarship), approximately 92 million households simultaneously decided this would be a good time to turn off their TVs and start filling every empty bucket, jug, bottle and bathtub in their house with water, in anticipation of the nation's water system breaking down. Of course, that precipitated the very event it was supposed to mitigate, and the resulting loss in pressure caused cooling failures and emergency shutdowns at several major nuclear-powered electric plants, thereby throwing large chunks of the North American power grid into blackness, and all three networks off the air.

The madness wasn't confined to our shores, of course. A couple of hours later, as midnight came to the Middle East, some 200 white-robed, blond-haired individuals appeared on hilltops overlooking the city of Jerusalem, each claiming to be the Messiah, come again to redeem humankind. Upon spotting each other, these individuals at first tossed insults, then began invoking divine wrath upon each other, and when that failed to have any effect, they resorted to hair-pulling, fisticuffs, and eventually stone-throwing. Local police, who fortunately were stationed close by collecting firearms and explosives from thousands of smiling pilgrims to the Holy Land, quickly quelled the altercations and arranged for the wackos to be deported back to the U.S. Today, of course, their talk shows fill Fox's afternoon schedule, which those of us with battery-powered televisions can enjoy.

The technology didn't fail us: We managed to screw things up all by ourselves, just by expecting that the world was going to end.

Finally, at midnight in New York, the 30 million who called the recorded telephone time lady to hear the year officially tick over not only got busy signals, they caused a voltage spike that erased James Earl Jones' voice from thousands of Bell Atlantic announcement chips, thus invoking a $100 billion severance clause buried deep in Jones' 214-page endorsement contract, immediately driving the not-so-Baby Bell into insolvency.

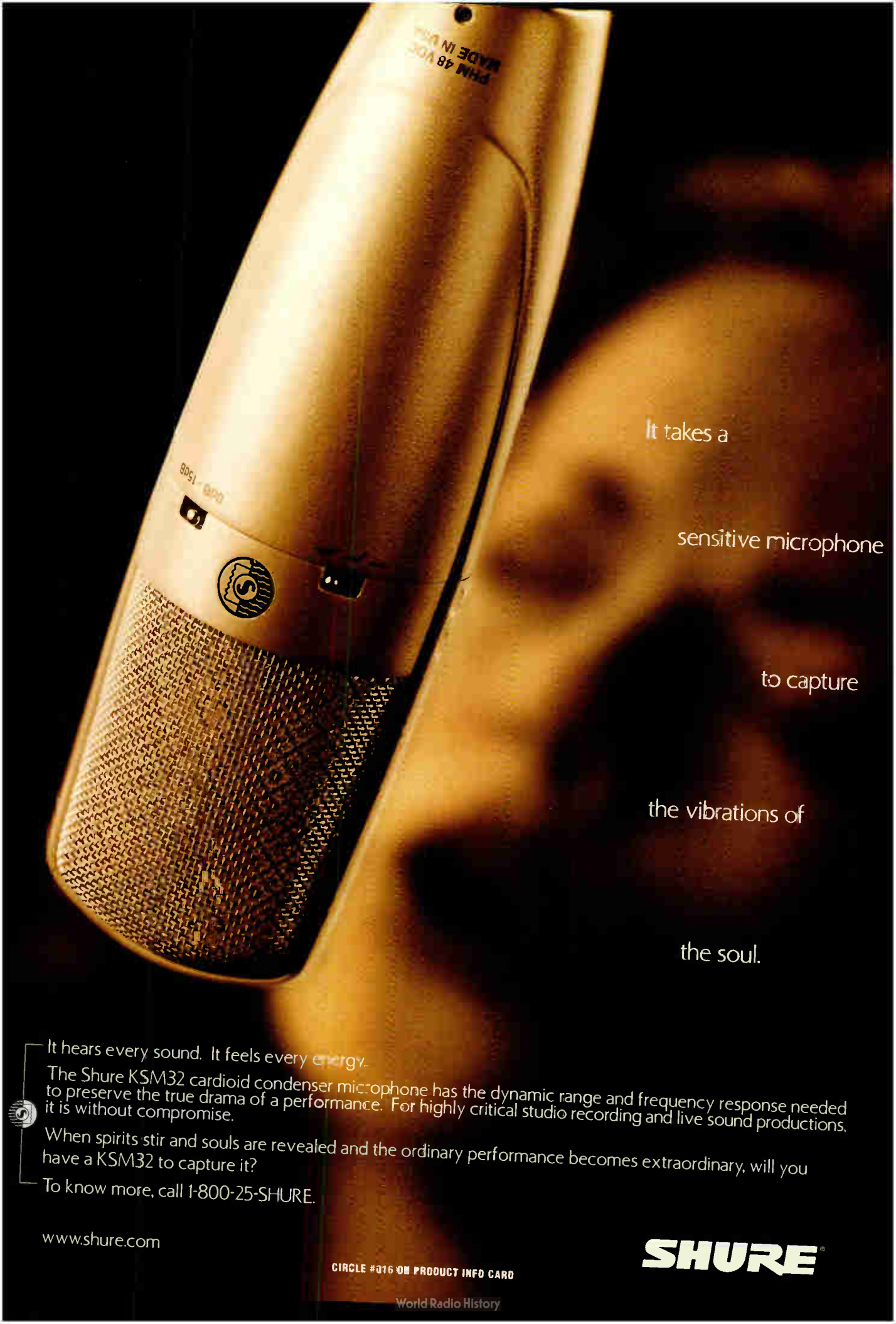
Those of us who still had electricity witnessed the spectacle of the Internet being brought to its knees, as a reported 65 million Web surfers tried to watch the AOL-exclusive live Webcast of Dick Clark riding the light ball down the TV transmitting tower atop the World Trade Center. Because of the overload, almost nobody saw Clark's panic attack, which climaxed in his screaming, "I don't care what century it is, I'm still a teenager!" and his subsequent rescue by a TV station helicopter.

Since that date, which has come to be known as "ECAWKI"—the End of Civilization As We Know It, pronounced "ïee-*kau*-keeï"—the professional audio industry has been confronted with some of the biggest challenges in its short history.

Home and project studios—which, because they typically couldn't afford floating floors and double-studding have always had to deal with the problems of ambient noise—were hit particularly hard by ECAWKI. The wood-powered electric generators they now have to rely on typically raise the noise floor in the control room/studio to 98 dB SPL. Many project studio owners are solving this problem by building "generator cellars," and a few, especially in the suburbs, are lucky enough to have old '50s bomb shelters in their yards, which proved perfect for this function. These cellars have the added bonus of protecting the unit from acquisitive and probably hungry neighbors.

Another problem faced by small-studio owners has been a sudden increase in competition from large numbers of new entrants into the field. These newbies, all former white-collar frustrated rock stars, found themselves with huge windfalls when the companies they worked for, all of whom used personnel-maintenance software designed in the '70s by Ross Perot, received computer-generated letters informing them they had due them 100 years' worth of back vacation pay. The letters offered them up to 30 years paid vacation or a one-time payment, which in many cases exceeded $8,000,000. Naturally, many chose the latter and cashed out before their payroll departments knew what hit them. After they bought the Lexus and the Ford Explorer, their attention turned to fulfilling their adolescent rock 'n' roll dreams, and digital consoles, multitracks, copies of vintage guitars, and overpowered monitors started flying out of dealers' warehouses. While this burgeoning market has been a boon to manufacturers and sellers of pro audio gear, ironically very few employees of those companies benefited from this particular Y2K bug, since almost no one in those industries ever sticks with

—CONTINUED ON PAGE 250



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Vocal Recording MASTERS

IN THEIR OWN WORDS

by Loren Alldrin

In the whole realm of recording, there's no place where art and technology are more hopelessly intertwined than in tracking vocals. Ask vocal-recording engineers about their craft and you'll hear words like "feel" and "vibe" as often as "tube condenser" and "compression."

We talked with three top vocal-recording engineers about the intricacies and challenges of recording vocals. With more than 40 years of combined experience in the recording trenches, David Reitzas, Chris Vogel and Joe Chiccarelli have worked with some of the biggest names in pop, rock and alternative music. Now, they share their wisdom with you.

Illustration: Will Terry

THE PRIME DIRECTIVE

Chiccarelli: I think the most important thing is trying to figure out what you want from the vocal. What are you trying to convey with the song? It's a matter of understanding the song, and trying to craft a sound that works right for the particular lyric or emotion or whatever.

In the end, nobody really cares what the vocal sound is like—it's the vibe, the emotion that people buy records for. If you have a rough vocal from a tracking date that maybe isn't the sound you want, or has some pops or distortion, who cares? If it has the vibe, that's it. Performance is everything.

Vogel: With single vocals, the biggest challenge is just getting the performance on tape. It sounds simple, but the vocal is the most important element of the track.

Reitzas: In music with a lead vocalist, the vocal has to be taken the most seriously. That's where my attention goes to for all phases of making a record. If you're doing an overdub, you've got to see how it's going to work with the vocal. If you're doing a mix, you've got to make sure everything works in around the vocal.

Recording a vocal is not complicated. It's much more difficult to get a great drum sound than it is to get a great vocal sound. But making a great vocal recording requires more than just getting a great sound. I have no objection to doing whatever it takes to get a performance that makes the blood boil.

MAKING ARTISTS COMFORTABLE

Vogel: If you can't capture the performance and keep the artists happy, then you're missing the whole point. You just have to make sure that they're comfortable. That's 90 percent of the job.

I'm not a purist in the electronic sense, but I am a purist in that I go back *beyond* the microphone to the performance itself. I'll use whatever I can to make the artist comfortable. Without exception, I always ask, "Are you comfortable with the mic here?" If not, I put it where they're comfortable. Sometimes it sounds like it's in a closet, sometimes it sounds like it's off-axis, but I'd rather deal with the sound and have a good performance.

If a vocalist isn't happy with a mic hanging on a boom in front of them, then take it away. I'm not so into having the ultimate $8,000 mic if it's not going to make the singer comfortable. It can be an intimidating thing to have a big studio mic hanging in front of your face while you're trying to be intimate with a vocal. Steven Tyler just did not like having big mics hanging in front of him—he freaked out—so I just gave him an SM57, and he sounded great.

Reitzas: When I was recording the vocals for the *Evita* dying scene, Madonna was doing a take and the feel just wasn't right. After she left the studio I had the assistant bring in a couple of couches and set it up like a bed, and got some test equipment, made a morphine drip-type bag—made it like a hospital scene. Madonna came in the next day and chuckled a little bit, then she laid down and sang the take on her back and did it in the first pass.

Normally, I use simple ambience to make the artist comfortable—some candles, low lights, making sure there's tea and water and honey, maybe a couple plants around the area.

Chiccarelli: I'll record anywhere. The best environment is where the artist feels the most comfortable and is going to give you the best performance. I've recorded in the control room, outdoors, inside live echo chambers, in bathrooms, on the porch, lying on the floor, in the closet...

MIC PLACEMENT

Chiccarelli: Sometimes the best thing is if the microphone is half an inch from a singer, and other times you want some air between the mic and the singer. Obviously, proximity effect works to your

SELECTED CREDITS

David Reitzas
Madonna, Whitney Houston, Barbra Streisand, Natalie Cole, Michael Bolton, Celine Dion, Gloria Estefan.

Chris Vogel
Alanis Morissette, U2, Aerosmith, Stevie Wonder, Robbie Robertson, Sneaker Pimps, John Hyatt, 98 Degrees.

Joe Chiccarelli
Tori Amos, Beck, U2, Hole, Etta James, Bob Seger, Frank Zappa.

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advantage for singers with thinner voices. I personally like to get the vocal as fat and up-front as possible as a general rule. Nowadays, it seems everybody wants that drier, closer, more personable type of vocal.

I think it's most important to just figure out what the song is trying to say, and what the singer is trying to do. If there's a general rule, it would be to let your ears and your heart be your guide.

Vogel: I always start with the mic right in front of the mouth, then I move it up about an inch or so and angled back. I make sure it's at least a flattened hand width away from the mount, sort of pointing down onto the bridge of the nose. Obviously, when you're working with someone like Alanis who's got pipes from here to New York, I put it a little bit farther away.

Reitzas: I usually do the straightforward three baffles behind the vocalist, pop filter about four fingers away from the mic.

MICROPHONES

Chiccarelli: To me, vocals are not like electric guitars or drums, in that certain techniques are pretty much standard for every instrument. Every singer is totally different, every song is totally different, and what works for one singer doesn't work for another one.

Take Danny Elfman of Oingo Boingo—the only thing he ever sounded good on was a Neumann U47 FET. For Etta James, the blues singer with whom I've done a lot records, it was a Neumann M49. For Tom Cochran it was the Shure SM7. I did some stuff with Beck a while ago, where he wanted a fuller sound from his voice—we used a Neumann tube U47. Tori Amos used a Milab VIP-50, which has a weird rectangular-shaped diaphragm. Alison Moyet sounded best with the Neumann TLM170. The best mic for Poco's singer was an EV RE20, but it never had enough air for me. So we actually mounted an AKG 451 on top of the RE20 and blended in just a little bit of it to get some air on top.

The brand-new Neumann M147 sounds really good, as does the Audio-Technica AT4060. Just recently, I tried the new Audix CX-101 large-diaphragm condenser. We did an album with country singer Mindy McCready, and we tried the Audix. In the end, we ended up using an old Telefunken 251, but the Audix was in the running down to the very end. In fact, it was one particular 251 that won—the Audix actually beat another 251.

Reitzas: I don't like to spend a lot of money on mics because they're temperamental, and I think that they're a little overpriced. I don't want to spend $6,000 or $8,000 on a microphone—I'd rather spend it on gear. So for the most part, I rent microphones. I mostly use an AKG C-12 or a Neumann U67, U47 or M49. Sometimes, I use a Telefunken 251. I'm using a tube microphone almost all the time.

My new favorite mic is the Audio-Technica AT4060 tube mic. The Audio-Technica is reasonably priced and has the kind of frequency response that I like in a tube. And it can handle high SPLs, which some of the older tube mics can't. The kind of music I've been doing goes from a whisper to a roar. I don't like multimiking with different mics for the verse and the chorus. I like to record from top to bottom, so I need a mic that can handle the quiet and the loud stuff and still sound great.

It's not always about getting the best sound, but being prepared to get the

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best performance. I've had situations where the vocalist is in the control room with an SM57, just figuring out the arrangement. I'll always record everything, so I'll have the take with the handheld mic. There have been occasions where we'd get a great vibe on a line or two and we'd use it right up against the recording from a $4,000 mic. If you had a listening test and you put engineers in the room and asked, "Where does the 57 come in?" they could probably tell you. But to the people that are just listening and loving the music and the song and the artist, it doesn't matter.

Vogel: If I'm doing a male vocal, I generally reach for a Neumann U47 or M49. If I'm doing a female, it will probably be the AKG C-12 first, and then maybe I'll switch to a Neumann U67 or a Telefunken 251. If I need one mic to cover both male and female vocals, it would probably be a 251 if it's in good shape. I like the new RØDE mics, as well as the new AKG C-12VR reissue. And the Audio-Technica 4033 is not bad for what I've been doing lately.

SIGNAL PROCESSING

Chiccarelli: Just like you pick a microphone for a singer, I spend time auditioning mic pre's and compressors. A lot of times I'll use an LA-2A, sometimes an 1176. There was one singer I did not too long ago that the best compressor was the dbx 160X. It didn't seem to color or change his vocal in any way. Sometimes Fairchilds can be really colorful. Etta James sounds best through a Focusrite Red 3 compressor.

Vocals are the most emotional thing on the record. If you don't pack a vocal track with all the emotion in the world, there's no point in making that record. So whatever you can do to connect the listener with the vocal, do it. If it means using a dirty, ringy old iron compressor that adds a whole lot of color and personality to the singer, then that's the thing to do. A lot of people have bought this old gear that can give a not-so-exciting singer a lot more personality. It's not like a cut-and-dried scientific thing. It's much more about art and emotion. I've used Sansamps, telephone filters and rack guitar processors. I'll even put vocals through guitar stomp boxes and cheap guitar pedals.

A lot of times I'll use Neve modules because they're really fat and smooth. If I'm going to do any type of EQ, I like to use tube stuff because it's broader, warmer and friendlier. Pultecs and Summits are really good. I find that with the EQ of the vocal, it's not so much what you boost but what you take out—that one little frequency that makes the vocal competitive with the other instruments in the track. Instead of boosting the upper-midrange presence frequencies, I might take them out. That allows you to turn the vocal up louder in the track.

Reitzas: My vocal chain has kind of stayed consistent over the years: a tube mic into an NTI PreQ3 into an NTI EQ3 into the Tube-Tech CL1B. Lately I've been going to my dB Technologies 122 A/D converter, directly to digital multitrack.

I'm lucky because most of the vocalists that I work with are veterans, and they know how to use a microphone. It makes life so much easier when you have a vocalist that knows how to act as their own compressor. Michael Bolton is one of my favorite vocalists to work with, because he has fantastic mic technique.

Vogel: I go for whatever sound I'm hearing in my head when I track, if it means no processing or tons of processing. I want to know when I do rough mixes that that's my record. I don't have to have a lot of guesswork in the mix.

I really like the sound of an ultra-compressed vocal. On the first Alanis album, we ran her into the dbx 160X and then into the LA-2A. I also use the Empirical Labs Distressor. I had Glenn Ballard's studio buy two of them, so I have one in each room. The Distressor is in my standard set now. I like the fact that I can limit the heck out of the vocal—really hold the vocal back—and I don't hear it pumping and breathing.

If I had my choice for mic pre's, I would use the Avalon M5—I also like their compressors quite a bit. We used Demeter mic pre's on Alanis because that's what we've always used on her and that's what we had in the beginning.

FIXING PROBLEMS

Chiccarelli: Sibilance is always a tough one, but I don't get too much into de-essing when I record. A lot of times, I'll actually dip problem frequencies with an equalizer. I'll pull out a little 7k or 5k in the vocal. Sometimes, when I mix, I

Chuck Ainlay

Photo: David Crenshaw Studio: Oceanway Nashville

on BASF tape

"I've worked in digital for a good deal of my career, finding it a better alternative to noise reduction or high-output analog tapes. The tapes seemed a bit harsh to me. Then I ran across BASF SM 900 analog tape. I love that warm bottom end and the tape compression you can get by pushing it. SM 900 holds up. I've been mixing to it for archiving purposes as well as for its sound. A tape's stability over time is definitely something to consider."

Chuck Ainlay has recorded such artists as **Trisha Yearwood, Vince Gill, George Strait, Wynonna** and **Reba McEntire** during his 20-year career. His recent credits include the **Dire Straits** reunion album **On Every Street**, as well as several **Mark Knopfler** solo albums and movie soundtracks.

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might set up two channels on the board and either high-frequency limit that second channel, or dip the EQ on the channel and just switch over. If I have a couple of words that are sibilant but everything else is fine, I'll just switch back and forth with the automation. That will save putting a de-esser in the line, because those things can be kind of evil.

Reitzas: I have a tendency to not be worried about too much sibilance or too much popping. Sibilance and popping can always be fixed. If you don't concern yourself with that, what you get on tape when a vocal is not "essing" or popping is more bottom end and more presence. Usually, on tape, I like to get a full-frequency sound and then just correct the problems at the mix or before it's handed over to a mixer.

Most of the time I'm on digital. For pops, I'll do a D-to-D to another channel, bus that channel back to the main comp channel, roll off the bottom end and just punch in around the pops. I just got Pro Tools 24 Mix+, and I'll probably start doing more fixes with the waveform.

Vogel: I usually don't have pop problems. If I do, I'll use the board's filters to roll it out. Sometimes, I use the old "tape a pencil to the mic's grille" trick.

BEING PREPARED

Reitzas: I like to do some "personal preproduction," which means I'll listen to a vocalist's record if I haven't worked with them before. I determine what their tonality is, and I combine that with what I've learned over the years about the characteristics of the different microphones. Nine times out of ten, I'll pick the right microphone so when the vocalist comes in and is ready to sing, we'll be able to keep the first take. That's extremely important, because so much uninhibited personality and spontaneity comes out of a vocalist on that initial pass. They're not thinking about it too much, so it's important to me to try and guess which is the right microphone to use before they sing. Often we'll end up with something that's usable from the first pass, but occasionally I'll try a different microphone to see how it works with the song.

Chiccarelli: The trickiest thing is capturing a performance, and a lot of times that means having everything set so when somebody walks in the room, you can turn the mic on, turn the tape machine on, and that's it—first take. Etta James is an old-school blues singer; when she's in the right frame of mind, you better have everything set because that first take is going to be it. It might be *it* top to bottom—flawless.

I think the biggest thing somebody can do is not burn a singer out getting sounds. Get really ready, and use a little bit of forethought about mic selection.

CONCLUSION

Technology may have progressed in past decades, but the essence of vocal recording hasn't changed one bit. As David Reitzas, Joe Chiccarelli and Chris Vogel have so accurately stressed, effective vocal recording isn't about moving air—it's about moving hearts. ■

Loren Alldrin is an engineer, producer and studio owner.

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MARGARITA MIX DE SANTA MÓNICA

ON THE COVER

"If you build it, we will come." That is what loyal clients at Hollywood's Margarita Mix remarked about the company's plan to open a Westside version of the colorful commercial audio post house.

"Our clients asked, 'Can you come to Santa Monica?'" explains Jesse P. Meli, COO of parent company The L.A. Studios Inc. "We responded by asking them what they would want in a new Margarita Mix. It is a simple, yet ingenious concept—we gave them exactly what they asked for because we asked them to tell us what they wanted. We polled clients verbally and with questionnaires, asking them what they appreciated at Margarita Mix, and to comment on what needed to be improved. Then, we followed suit internally. We analyzed every square inch of the place and critiqued it."

The new studio (button-designed facility (Alofsin Design Inc. supervised the decor and theme) retains Margarita Mix's signature south-of-the-border flavor. Its outer areas feature bright, saturated colors with an extensive use of Mexican-themed art, from papier mâché Day of the Dead figurines to Andy Warhol-inspired silkscreens of matadors and marquesas.

PHOTO: ED COLVER

Left to right: Jimmy Hite, Joan Webb-Ewen, Jesse Meli, Verena Karalla, Keith Scheyving.

"We modified the original concept," elaborates Meli. "Our clients needed more common space, more private space and additional access to the outside world. The real estate was chosen primarily for two reasons: easy freeway access and the variety of industry-synergistic tenants located in the same building. At Margarita Mix de Santa Mónica, there is also Internet connectivity throughout—you can log on just about anywhere. Our clients park, and then they don't have to leave; everything is under one roof."

While the public spaces are festive at the Santa Monica facility, the five control rooms are more tranquil, the better to set off their central feature: All five rooms are fitted with Digital Studio Processing Postations. Margarita Mix de Santa Mónica is the first West Coast facility to acquire the Postation, a digital production system made in Australia. The Postation offers 32-track recording, 32-channel onboard mixing with the capability to accept 48 additional inputs, and nonlinear video. The ability to accept OMF files directly was considered an important feature because, as senior engineer Jimmy Hite says, "Ninety-nine-point-nine percent of our clients work on Avids."

The Postation was tested for several weeks at the Hollywood facility before the decision to purchase, and plenty of dialog had gone on between Margarita Mix and dSP before that trial period.

"It's an ergonomic beauty," asserts Hite. "So easy to work on, all touchscreen-operated and all programmable—everything is done in software. The U.S. is a new market for dSP; we're their flagship, so we really put them to the test and they've been incredibly quick to respond to our software needs. It's impressive. If we found a bug, or a feature that we would like, we would call them and their response time would be remarkable."

All of Margarita Mix de Santa Mónica's suites are networked via video Fibre channel, audio Fibre channel and Ethernet links providing simultaneous real-time access to data. Monitoring is the same in each room, with a customized Genelec 5.1 setup incorporating side speakers for a "spherical" approach. The facility is wired for 7.1 should that need arise.

"We wanted the clients to feel that if they started the project in one room, they could finish it in another room with a different mixer and it would be a seamless transition," says Meli. "Multiple aspects of a project can be worked on simultaneously in all the rooms. We also addressed the concerns about 5.1 for HDTV and 7.1 surround sound, which our clients see the industry migrating toward."

The L.A. Studios Inc., which encompasses The L.A. Studios, Margarita Mix Hollywood, Zona Playa and Margarita Mix de Santa Mónica, was started by Sunny Blueskyes and Jim "Bunz" Bredouw, former jingle writers who opened their first facility in 1980. An ESOP (Employee Stock Option Plan) company since 1995, the majority of the business is now employee-owned.

"Basically," laughs Meli, "we are 60 owners, and everybody has a voice. The L.A. Studios had built three studios before this one, so we knew what we were doing. To that accumulated experience, we factored in our client comments and our critical analysis of what we do right and what we do wrong. The good news was there was a helluva lot more right than there was wrong! Clients wanted convenience and the Mexican theme. They wanted our superior talent and our over-the-top service. They just wanted it all to be in Santa Monica, so we gave them exactly what they wanted." ■

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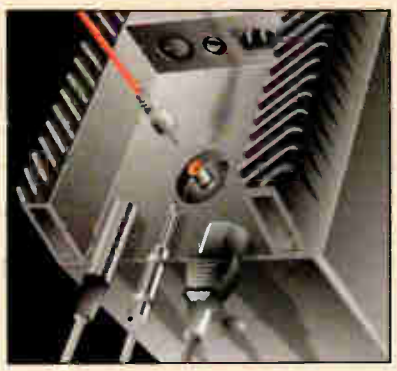

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Disk-Based Recording To Go!

A Guide to Stand-Alone Nonlinear Multitracks

by Sarah Jones

If you've been thinking about making the move to a digital recorder, there's no time like the present. By now, the benefits of going digital are widely known: Nondestructive and random-access editing, configuration and automation add flexibility to your setup and save time in your sessions. And many disk recorders are designed to emulate analog machines, simplifying the transition from analog to digital. Units can often be tailored for specific applications, with effects cards, expanded configuration and software upgrades. Most of these recorders are compact or rackmount, making them ideal for portable applications, while offering solid performance at an affordable price.

Following is a guide to the top-of-the line offerings from various makers of disk-based recorders—emphasis on recorders. This is not intended to be a roundup of digital audio workstations; there are hundreds of DAWs available, from simple sound cards to elaborate proprietary systems that offer recording, editing and mixing functions in one comprehensive package. We narrowed this selection down to units designed to be "single-box" recording solutions. Systems that require a separate computer or monitor interface, offering more workstation functionality, such as the SADiE Octavia, Fairlight MFX3 and AMS Neve AudioFile, are outside the scope of this article. (However, we will be covering these and other workstations in an upcoming issue.) Meanwhile, we've limited this list to standalone machines offering at least eight tracks of nonlinear recording (leaving out 4-channel units, such as the Zaxcom Deva, and 360 Systems' 2-channel Shortcut; and tape-based systems, such as the Nagra decks, the Alesis ADAT and the Tascam DA-88). Lastly, we've omitted playback-only units such as Fairlight's Digital Audio Dubber. This is not meant to be a complete listing—there are a wide variety of machines to choose from; we encourage you to research all available platforms and configurations to find a solution that's ideal for your needs.

The latest in Akai's DR series of stand-alone hard disk recorders, the DR16 Plus is a 16-channel, 24-bit/96kHz-capable recording system housed in a rackmount chassis. Editing features include nondestructive copy, repeat, move and insert functions; 109 autolocate points; and a Take function that can store up to five trial recordings on one track for easy auditioning of a performance. The 16-channel mixer offers 99-scene snapshot automation, fully dynamic automation via MIDI, two aux sends and a stereo bus for internal mixdown. The DR16 Plus' standard SCSI interface allows for connection of external drives including MO and Jaz drives; up to seven SCSI devices can be connected. In addition, multiple units can be linked for up to 128 available tracks. Options include SCSI-B and MIDI interfaces, SMPTE read/write capability, RS-422 interface, ADAT I/O support, 24-bit/96kHz AES/EBU digital I/O, and a 16-channel digital EQ board. Also available is the MT8 remote mixer controller, offering real-time control of the DR16 Plus' mixer functions via dedicated sliders, panpots and track select switches. Individual control of up to eight DR16s and/or DR8s in any combination, plus dedicated controls for two send levels, and optional EQ8 and EQ16 parametric EQ boards, are included. The DR16 Plus will be available in July at a suggested retail price of $3,995.

DAR OMR8/SAM

Augan OMX 24/48 MkII

The OMX 24/48 MkII—the latest generation of optical disk recorders from Augan—offers up to 48 tracks with 48 analog and digital inputs/outputs. It is capable of recording 24-bit data, has 24-bit A/D converters, and features nondestructive editing with virtually instant waveform display, with track arming, input repro switching for all 24/48 tracks, real transport controls and an ergonomic editing layout. Real-time DSP functions include 4-band parametric equalization (segment based), time compression/expansion and pitch shifting, varispeed and sample rate conversion. Other features include CMX auto-conform and reconforming, constant sample rate output during jog/shuttle or off-speed playback. Full synchronization capabilities include RS-422, parallel, timecode, bi-phase, VITC, Word Clock, and gen lock. The OMX 24/48 also offers film dubber emulation with up to double-speed forward and reverse-locked to timecode or bi-phase. Other features include parallel or serial track arming for all 24 tracks, feet/frame operation and support for all timecode formats and frame rates. An available dedicated remote control can simultaneously control and edit on up to 48 systems.

Now distributed by Studer, Digital Audio Research's SAM (Scalable Audio Multitrack) is an 8-track digital dubber/recorder that can be configured and expanded for any number of tracks between eight and 1,024, in blocks of eight tracks, with a scalable architecture that provides centralized control and editing as a single virtual machine. Features include segment- and region-based editing functions, 9-pin RS-422 protocol support and user-adjustable threshold record. SAM is based on three-rackspace modules, each with onboard 24-bit DACs and ADCs, with options available for eight channels of AES/EBU I/O and a wide range of storage media, including removable hard drives, MO disks and Jaz drives. Audio is stored as .WAV files, compatible with the current OMFI spec, and support is planned for the upcoming AAF and AES 31 specs. Recording resolution can be set for 16/20/24 bits, with sampling up to 192 kHz; looping, full-bandwidth scrubbing and forward/backward lock to biphase or timecode should all appeal to the post user. Pricing is about $9,000.

Euphonix R-1

The Euphonix R-1 is a multitrack recorder with 24-track, 24/96 capability, featuring 24-bit conversion and 40-bit floating-point internal DSP (four Ana-

log Devices SHARC processors). The system has a rackmount CPU and storage/backup units, plus a remote control interface (with MADI interface), and is designed to emulate a traditional analog tape recorder with a familiar tape-style remote. Standard features include MADI digital I/O, constant-sample-rate varispeed, serial machine control, sample/timecode synchronization, reverse play, jog, shuttle and modular hardware. The R-1 is expandable, with an open architecture supporting future I/O options, sample rates, machine control, track expansion, editing and networking. Premium quality 24-bit A/D and D/A converters are optional. (Price, $25,000 for 24 tracks, converters extra.)

Fostex's D160, the flagship of its stand-alone hard disk recorder line, is a rackmount 16-track (plus eight virtual tracks) unit with removable 2.55GB hard drive, plus ADAT LightPipe I/O, SCSI and S/PDIF interfaces and 20-bit ADAs. The D-160's front panel detaches to become a full-function remote with a jog/shuttle wheel. Features include selectable 44.1/48kHz sampling rate, cut/copy/paste/move editing of individual or multiple tracks, and a Virtual Reels function that allows the user to partition the hard drive into 99 nameable sections, each with independent settings. Recently released, the D-160 V2 adds .WAV file compatibility, graphical preview function, level envelope display and 6-point edit memory and 99 locate point memory. Multiple D-160 V2s can be cascaded. Fostex also offers D-160 V2 models featuring a balanced I/O option, a built-in timecode option, or both options. A basic D-160 V2 with removable drive is $2,195.

The new GX8500 is the top of the line in a family of stand-alone disk-based recorders from Genex. A single-rackspace unit designed for use in multiformat mastering and multitrack recording, the GX8500 offers up to 24-bit/192kHz performance (with optional internal converter cards) and offers the capability to record Direct Stream Digital, for use with DVD and Super Audio CD. An internal drive can be specified as either a 5.2GB MO drive or a hard disk drive, and a SCSI interface allows connection to other disk media. In addition, a GXNet Ethernet port allows transmission and reception of digital audio over a local or wide area network, and AES/EBU and SDIF2 digital I/Os are included. Editing features include an 8-channel built-in mixer, punch-in and out with adjustable crossfades and scrub, plus I/O routing facility. PC session management and logging software, and seamless switching between internal and external drives for continuous recording times. The GXR48 optional remote controller ($3,420) offers a comprehensive feature set for accessing and expanding multitrack facilities. The GX8500 starts at $8,035 (without drive).

Korg's D8 Digital Recording Studio combines 8-track recording, editing and mixing in a single portable unit (weighing 5.7 pounds). Processing is 24-bit internal, with 16-bit recording and playback at 44.1 kHz, offering 2-track simultaneous recording and eight tracks of simultaneous playback. The included 1.4GB internal hard disk stores up to 4.5 hours on a single track, or 34 minutes of 8-track material. A 12-channel/4-bus mixer stores pan, EQ and fader settings as scenes, and up to 20 scenes are available per song. The 65 onboard effects programs include amplifier emulators and settings preprogrammed to simulate a variety of recording styles. Other features include internal rhythm patterns, scrub function, punch-in and out, and nondestructive basic editing functions. I/Os include TRS ¼-inch, SCSI, S/PDIF and MIDI. List price is $1,250.

Otari RADAR II

The Otari RADAR II, the successor to Otari's long-popular RADAR system, is a multitrack hard disk system capable of 24-bit operation at a 48kHz sampling rate. (The unit features 24-bit architecture and records 24-bit to disk; the 24 A/D and D/A converters are 24-bit; plus a TDIF link 24-track digital I/O card allows RADAR II to communicate directly with digital consoles.) RADAR II is supplied with a single 9-gig removable hard drive, providing 42 minutes of 24-bit/24-track recording (or about 4.6 track-minutes per MB) or 64 minutes of 24-track recording in 16-bit mode (or around seven track-

Manufacturer Contacts

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minutes per MB). Additional record time can be achieved by adding extra hard drives: The configuration can accommodate two drives internally; and front panel drive-bay slots are designed for either narrow devices such as removable Jaz or hard drives or wide devices such as Exabytes. Multiple RADAR II systems can be interlocked to provide 48-track operation via a single RE-811 full-function remote. (Other remote features include a set of macro keys for programming and recalling common button-press sequences; additional key features include Zoom In, Zoom Out, RADAR-Link, RADARLink Solo, Mark Sync and Auto Reclaim.) Optional 48-track metering is also provided. A fully fitted 24-track system with 24 channels of digital I/O, plus backup drive, costs less than $25,000.

Roland VS-1680

The flagship of Roland's VS line of stand-alone disk-based recorders, the VS-1680 offers 16-track playback, 8-track simultaneous recording and a 26-channel fully automated digital mixer with 256 "virtual" tracks for recording multiple arrangements. Features include a 2.1GB internal drive, 24-bit internal processing mode, built-in effects and EQ, nondestructive editing, an intuitive 320x240 LCD screen graphical interface, built-in CD-R writing system (CD-Audio and backup to CD-R), and two optional multi-effects boards offering four independent stereo effects processors, including a Voice Transformer, Mic Simulator and a COSM-based guitar preamp with Speaker Simulator. Audio inputs include two balanced XLR inputs with phantom power, six balanced ¼-inch inputs, and one stereo digital input (optical/coaxial); outputs include eight RCA outputs (Master L/R, Aux.A L/R, Aux.B L/R, Monitor L/R), two stereo digital outputs (one optical, one coaxial) plus headphone output. A SCSI port is also standard. New updates to the VS-1680 include a V-Xpanded software upgrade that gives users 18-track playback, allowing mixdown of up to 16 tracks to two additional tracks for mastering. Also included is the new Mastering Tool Kit effects algorithm with split-frequency compression, plus the new COSM Speaker Modeling for use with Roland's new DS-90 powered monitors. Roland will start bundling a special version of EMagic's Logic Audio software with the VS-1680 this quarter.

Sony's DADR-5000 is a 16-channel disk recorder with selectable 16/20/24-bit resolution, housed in a four-rack-space box. Designed as a digital replacement for analog mag film dubbers, The DADR-5000 operates either in stand-alone configuration or as part of a network; recording is to Jaz drives or external devices. Features include jog/shuttle wheel control, chase lock at all frame rates and reverse play. Sync modes include the ability to lock to biphase, video sync, word clock, SMPTE/EBU, LTC, VITC and Sony 9-pin. Base price is $15,860, less sync card.

The Tascam MMR-8 is a multiformat, cross-platform, digital audio recording/playback system designed to work seamlessly with popular digital audio workstations. The MMR-8 can

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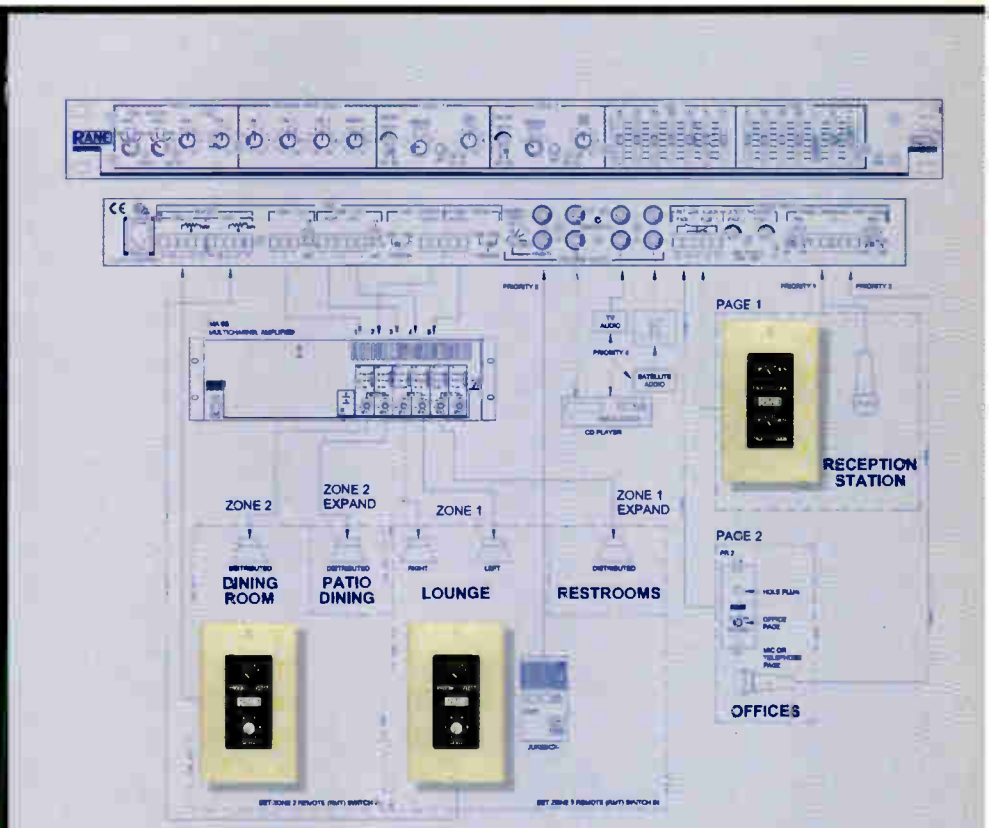

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record up to eight channels of 24-bit digital audio with punch-in/out on all tracks and features track slip plus region and event-based editing capabilities. In addition, it can directly load and play back Digidesign Pro Tools session files, WaveFrame projects and OMF compositions with no audio transfer, file import or translation. A removable hard drive enclosure and standard SCSI interface are included, and the MMR Bus allows simultaneous control of up to 100 machines; the unit offers direct interface to TimeLine Lynx bus. Sample rates supported include 44.1 kHz and 48 kHz plus all pull-up/down variations. Also, the MMR-8 can sync to timecode and 9-pin serial; features such as parallel track arming and play lock to biphase add to its post-production functionality. Recent software MMR-8 upgrade additions include MIDI Machine Control, support for Akai DD-8 files, varispeed mode, Serial Transport mode, Dailies mode, Project Rename, a new highly optimized SCSI driver and support for Tascam's new MMU-16 meter bridge. Also available is the Tascam MM-RC, a full-featured remote unit that allows control of any combination of up to 100 Tascam MMR-8 and MMP-16 Modular Multitrack machines. When multiple MMR-8 and MMP-16 machines are connected via the MMR Bus, the MM-RC can control the entire system as one large machine.

Yamaha D24

The D24 from Yamaha is an 8-channel recorder capable of recording, punching in or playing on any number of tracks with eight inputs and outputs active simultaneously, storing audio on rewritable, removable magneto-optical disks. Initially intended as a companion recorder for use with Yamaha's 02R mixer, the three-rackspace deck can record/play at 16/20/24-bit resolution at a choice of 44.1/48/96kHz sampling frequencies (at 96 kHz, four channels of simultaneous record are available), offering features such as chase sync to SMPTE timecode, forward and reverse play, cut/paste editing capability, 99 locator memories, and onboard DSP providing time compression/expansion or pitch shifting (-50% to +200% range). Multiple takes of each track can be stored on eight virtual tracks, and up to six recorders (for 48-track capability) can be interlocked in sample-accurate sync. The D24 has four I/O card slots; available I/O cards include ADAT, TDIF and AES/EBU digital ($299 each); other options include 4-channel, 20-bit D/A ($199); 8-channel, 20-bit A/D ($349); and 24-bit, 4-channel A/D ($449) cards. The rear panel includes the 4-card I/O bay; BNC video sync and word clock connectors; XLR SMPTE I/O; SCSI; 15-pin D-sub remote in/thru for interlocking multiple D24s or connecting a future hard-wired remote; and a 9-pin for P2. Tracks can be converted to AIFF, .WAV, OMF and SD2 formats with the enclosed software. ■

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The Spirit Digital 328 represents a refreshing departure in digital console design, retaining the ease of use of a conventional analog console, yet providing all the advantages of 24-bit digital. The 328 is nothing like a computer with faders. The key to the 328 is the unique "E-Strip", which avoids the need for tedious menus and brings instant access to all 16 channel inputs. 16 tape returns, auxiliary sends and returns, EQ and effects for each channel. Included as standard are two on-board Lexicon effects processors, two dynamic processors, Tascam TDIF® and Alesis ADAT® optical interfaces and a built-in meterbridge, with no hidden "options" to add to the cost. If you want the functionality of a digital console, but the common sense approach of an analog 8-bus board, you need to check out the Spirit Digital 328. It's a refreshing change!

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JONATHAN DEANS

LONDON, NEW YORK, LAS VEGAS: A SOUND DESIGNER'S ODYSSEY

Jonathan Deans is one of the most successful sound designers in the current musical theater. His credits as sound designer include *Fosse*, *Ragtime*, *Mystére*, *O*, *La Nouba*, *EFX* and *Parade*. When Disney opened the New Amsterdam Theater on 42nd Street, Deans designed the sound production for a concert version of a show called *King David*, which included a 70-piece onstage orchestra and a cast of 40 with ten principles. Deans-designed shows currently running on Broadway include *Ragtime* and *Fosse*.

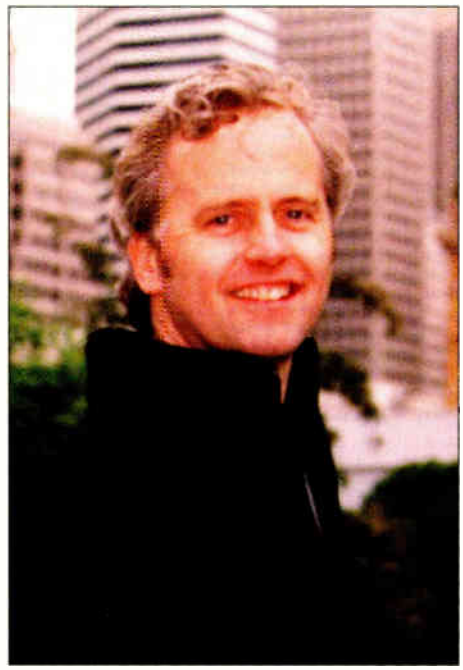

PHOTO: KEITH CLARK

Born in England in 1954, Deans became a successful child actor and was fascinated by electronics and sound at an early age. "I bought myself a tape recorder and taught myself how to edit tapes, and I was really interested in anything that made noise," he says. "I blew myself up a few times looking into the backs of TVs and stuff like that. I'm going back [to] when I was like ten, 12 years old."

At 15, Deans joined the Royal Shakespeare Company, and it was there that his interest in sound began to coincide with his passion for theater. At 18 he secured a position as Technical ASM (Assistant Stage Manager) at a theater near his home in Richmond, Surrey. When the theater closed, Deans found a job at Pye Recording Studios (site of the classic early Kinks and Searchers recordings) and then moved on to Morgan Studios. As an assistant engineer at Morgan, Deans worked with such engineers as Mike Boback, Roger Quested and Robin Black and was involved in sessions for Blue Mink, Cat Stevens and Paul Simon, among others.

But the pull of theater was irresistible and Deans moved again, this time to the Royal Opera House, Covent Garden, where he spent about two years as a member of the sound department. "And then a show called *A Chorus Line* came to town," he recalls. Deans was picked to mix the show at the Drury Lane Theatre, and the show's success started a boom for musicals in the UK. Having proven himself to Abe Jacob, the sound designer of *A Chorus Line*, Deans was a first choice sound mixer for subsequent productions.

Deans became a full time sound operator and mixed such groundbreaking shows as *Evita*, *Cats*, *Bugsy Malone*, *The Sound of Music*, *They're Playing Our Song* and *The Best Little Whorehouse in Texas*. After a trip to America to open *Evita* in L.A, San Francisco and New York, Deans returned to London and joined the staff of Autograph Sound, the leading UK-based sound equipment rental company for West End productions. At Autograph, Deans began designing sound in addition to mixing shows, and his early sound designs included *Time* (starring Cliff Richard), *Mutiny* with David Essex, *Marilyn*, and the traditional musical *Kiss Me, Kate*. *Mix* recently interviewed Deans at length while he was at his home in Las Vegas, where he was relaxing after the successful opening of a new Cirque du Soleil show, *La Nouba*, at the Westside Disney theme park in Orlando, Florida.

I wanted to start off by asking you about the typical process in a live theater production when the sound person might have only heard the show once or twice by the time of the preview.
It sucks. [Laughs]
And does it seem to be an unchanging rule of theater?
It's all to do with budget and costs. For a producer to bring in an orchestra too early is sort of suicide with budgets. So to deal with those costs, they bring the orchestra in at the last minute. And, of course, sound needs the actors onstage and the musicians in the theater. And it needs everybody else to have finished their work so we can do ours. In other words, the stage needs to have been built, and everyone else needs to have got their things sorted. Not the lighting, necessarily, but certainly the costumes need to have been made because costumes, and hats especially, make a big difference to how you mike a performer. We're very involved with costumes and wigs and hats because of mics being tucked behind people's ears and in their hairlines. So that all needs to be done.

One of the best-sounding shows on Broadway was *The Capeman*, the Paul Simon show. Instead of just having a rehearsal pianist, Paul Simon actually had nine musicians working from the beginning. So when they were rehearsing, they were actually doing it with their core musicians, the rhythm section and keyboards. When I saw that show, it sounded fabulous, A: be-

BY CHRIS MICHIE

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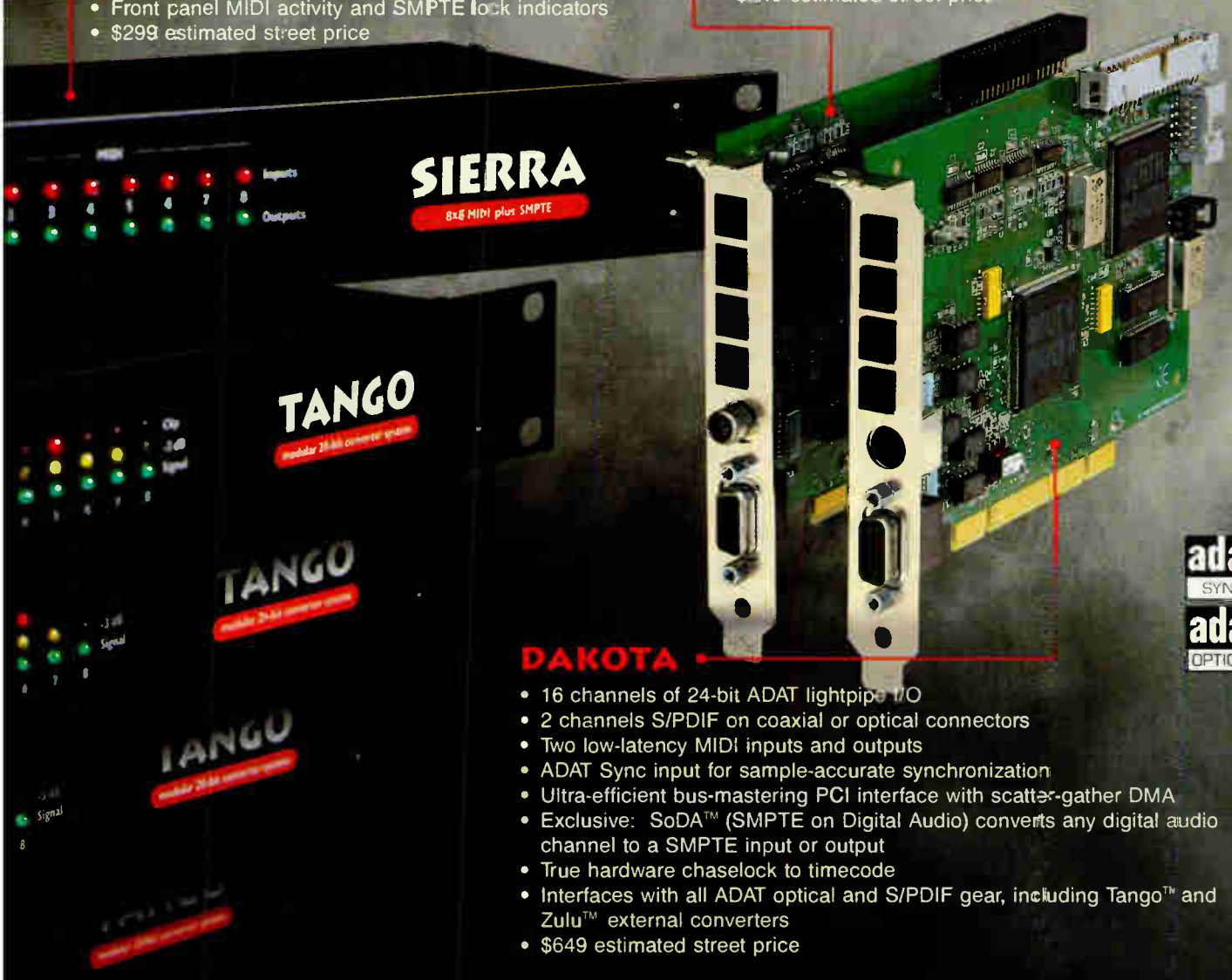

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cause you had a composer who really cared about the sound, and B: because you had a producer who really cared, with the financial backup to make it happen. So we know that sound can do that, but it actually just takes more time and costs more money initially. Now, it didn't save the show. The sound never saves the show, but the sound can kill a show.

Having said that, I've done lots of experiments with an audience and with producers and directors, just to see if one can make something really good, and then the next day make it really bad to see what the difference is. It's amazing how many people don't notice. It's kind of sad. Those are times when I think I should've done something else in my life, because it's very depressing.

THREE DAYS OF REHEARSAL

Your first show in Las Vegas was the Siegfried and Roy show, which came out of a recommendation. Somebody had seen your work on Time ***in England. I wondered whether the production, pre-production, was any different from what you'd been used to?***

Yes. It was completely different because when you do a production in Las Vegas the shows are very technical. And in Las Vegas I've never done a show with less than four months of technical rehearsals, whereas I've had to do an off-Broadway musical with three days of rehearsal. On Broadway, the technical rehearsal period is probably an average of two weeks.

I have to mention another couple of shows in Las Vegas, the Cirque du Soleil shows, *Mystére* and *O*, because we have live musicians there. The Siegfried and Roy show and *EFX* are all prerecorded, so nobody can move without the sound. Nobody can perform, can do anything, unless the sound is there because the sound gives the tempo. The sound is the heart and creates the timecode, does the time stamp for the show, whereas for productions with live musicians, there is no time stamp and therefore it has change.

When you do a production in Las Vegas, you get so much time to do it because usually they're trying to do something new in terms of production, quality, creativity, technology. And a lot of times you're going into a new hotel that has all those difficulties getting everything up at the same time. In fact, that's why the Cirque du Soleil theater at the Bellagio was built before the hotel. We were actually rehearsing while the hotel was being built so that we could open our show at the same time as the hotel. And it did.

BUDGETS FOR MUSICALS VARY

Are there any generalizations you can make about production philosophies, or what the big producers are willing to pay for?

PHOTO: KEITH CLARK

Interior of the Bellagio Theater, Las Vegas

All the producers that I've worked with—and some I haven't actually got to work with, but I know of—are usually very, very interested in audio from the beginning. They want it to be the best, and they want you to do a good job. Then you go away and you start specifying things with that point of view in mind. And you go for the high-end items. Then your equipment list goes back to the producers or general manager, and it gets sent out to the rental shops. And then usually what happens, a week after that you get called in to the producers and you sit down and you have to tell them why your equipment costs three times more than the budget! [Laughs]

The budgets for musicals vary greatly. In some cases, you go out and buy what you want, what you need for the show. Usually those are more permanent installations, such as shows that I've done like *EFX* and the Cirque du Soleil shows, because they're buying it for long term. You specify it, they buy it. And it gets built two or three years later, and by that time it's out of style or whatever [laughs]. But in the legit theater, it's a tighter thing.

One has to remember that when you're in the theater industry, you're going to specify things that are generally used in the industry, because you know that there's a good chance that the different rental shops will have them on the shelves, or they're interested in buying more of them. Both the UK and the USA theatrical rental shops keep similar stock because of all the English musicals that started coming over to America, *Les Miserables* and *Miss Saigon*, obviously *Evita*...or *Phantom of the Opera*, how could I forget that? And it's not just one production. They do three, four productions, so that makes a huge impact on what the rental companies have got on their shelf.

MICROPHONE PLACEMENT

Let's talk about the kinds of problems you face in a new production—microphone placement, for instance.

I'm going to use *The Capeman* as an example because it's not my show, and so I can talk about this show in a way that is objective. On *The Capeman*, they got a very good level on the stage with theatrical mic positions behind the ears, and on top of the head. They were in an acoustically dead theater—the Marquee Theater—that sucks the sound right out of the speaker and doesn't put it anywhere else. It's very dead. And on top of that, they had several months with the actors onstage and with a producer and a composer who wanted it right, who would spend the time to work on the sound.

More typically, the problem is that we have someone in a Victorian costume on the stage, and nobody wants to see the microphone. And usually the first thing that the audience complain about is that they cannot understand the words. Besides the performers themselves not being intelligible, which is usually part of the problem, there is the problem of the microphone being buried and not being in the correct place for that performer. So you need the costume and wigs departments and the performers themselves to be responsible about the mic placement. When they go onstage, that's their lifeline to the audience. Certainly, that's true for too many of the performers, because they're not going to be heard without a microphone.

Also, when you have the microphone so far away from the mouth, you are reproducing sounds that are not just the performer's voice, but all of the sounds around that performer as well, the whole ambience of that stage.

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Contrast this with the movies. If you go to a movie theater, the average performer's head appears to be about six foot high. There's a lot of visual information that you get as you look at the lines and pores on the performer's face when you're in the movie house, and because you're looking at something so big, the voice can be loud. You cannot make it that loud in a theater, and you wouldn't want to, because it would have nothing to do with that person on the stage.

The audience obviously wants to hear the voice, but the voice has got to stay with the performer. You have to cheat, and this is when the orchestra begins to suffer, because you have to then reduce the orchestra proportionally to how the voice should be placed with that performer.

Now, as soon as you put a headset mic on a performer, you don't have that problem any more. Because you're not trying to squeeze sound out of a microphone that's tucked behind the ear. As soon as the audience has got over the fact that there is a thin line—and the new headset mics are the size of a long matchstick—as soon as the audience gets over the fact that there's a microphone on the performer's face, you have got as much level as you need and the quality of the voice multiplies by a thousand times. It's just completely night and day.

WRITING FOR TECHNOLOGY

What are some of the changes you've seen in the way mics are used in musical theater?

Any time *A Chorus Line* is done now, it's done with body mics. Originally, it was done with ambient miking. There were five Sennheiser 802s going across the stage and three Neumann 82s hung overhead and then more two upstage, and that was your miking of the stage.

So you kind of chased people around by area?

That's right. And there were eight areas that you could choose from. Nowadays, the audience doesn't want to listen. They've paid big bucks, they want to see something, and they want it in their faces. But in a theatrical way, as opposed to an aggressive way, if there is a difference. So that has changed.

Originally, *Les Miserables* was done with 16 transmitters. And then some actors would be picked up on area mics for single lines. I mentioned *Les Miserables* because it's been going now for I've forgotten how many years—I did 11 productions of *Les Miserables*. But now the number of transmitters on that production has nearly doubled because everybody has to be miked for the audience to listen. Everybody has to be heard.

I think there are several aspects to how this is changing. First of all, when new musicals are written, they're written for the microphone. Whether it's done intentionally or not, it doesn't matter. Also, they're being directed 95 percent of the time for the body mic. I just did a production with Hal Prince in New York, called *Parade*. It was at the Lincoln Center, which is a small theater, 500-odd seats. The first big number where the cast come on, which is the first thing that happens in the show, the cast walk on, they turn upstage and

THE DEANS LIST

A Selection of Jonathan Deans' Sound Designs

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Ragtime, New York, Los Angeles, Toronto, Washington D.C., Vancouver, Chicago, London
Damn Yankees, New York
King David, New York
Streetcorner Symphony, New York
Candide, New York
Beauty and the Beast, national tour
Cirque du Soleil—*Saltimbanco*, *Mystére*, *O*, *La Nouba*
EFX, MGM Grand Hotel, Las Vegas
Beetlejuice, Universal Studios, Los Angeles
George Lucas Live Show, Japan tour
Siegfried & Roy, Mirage Hotel, Las Vegas
The Death Of Klinghoffer, Brussels, Lyon, Vienna, Brooklyn, San Francisco
Nixon In China, Frankfurt, Los Angeles
Magic Flute, Los Angeles
Madame Butterfly, Los Angeles

Deans was chosen as Sound Designer of the Year for 1990 by Lighting Dimensions International Magazine and has also won awards for *Ragtime* and Cirque du Soleil's *O*. (But no Tony Awards.)

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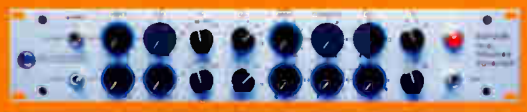

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sing the big number facing upstage. You wouldn't direct or write a show in that manner, if you weren't going to use the technology. So that's what I mean by "it's written for the technology."

And the music arrangements are written for the technology. If you listen to the old arrangers, they don't have a brass section playing at the same time as an individual on the stage because you wouldn't be able to hear them. But now you can, because you can crank up that voice and get it over, and if the brass section is wailing, you can open up the voice and get it to wail over the top of it, or not.

But when you add up all these trends together, it adds up to a potential nightmare that is thrown at the sound team to fix. And the most annoying thing is that then people come in and say, "It doesn't sound natural to me." There is an actor running around the stage with a tiny little microphone half the size of your little fingernail tucked behind their ear, or in their hairline with a hat on, creating huge reflections, with a band that's in the pit playing on top of the vocal lines that they're singing, and your loudspeakers are probably not in the places that are right for the sound design to be perfect because you've had to negotiate positions with scenery designers and lighting. And then people have the audacity to walk in and say, "Well, it didn't sound natural." It's kind of crazy. As soon as you put a microphone out onto someone's face, the sound becomes so much better, so much clearer, but then everyone starts having a fit because you can see the microphone. [Grimaces]

I have a story related to that. I did a show called *On Your Toes* in England in 1985. It was originally done in 1935, approximately, and we did it again at the same theater with the same director, George Abbott, and the same choreographer. And we did it without sound. But in 1985, for the previews, the audience just wiggled around in their seats. When a fire truck went by, they just looked at the wall that the fire truck was behind—they could not concentrate on the show at all. We had to start adding in sound. And once we started doing that, then the cast couldn't hear because it changed how they were balanced and we had to put more sound on the stage. And once we did that, it made the stage louder, then we couldn't hear the actors and we

PHOTO: JOAN MARCUS/CIRQUE DU SOLEIL

Cast of Cirque du Soleil's O at the Bellagio Hotel in Las Vegas

had to start miking everyone individually. It was very interesting to see what the problems were, and really it starts at the audience. The problem starts with the audience.

You've seen a generation or two in speaker development. Are there any high points over the last 20 years?

Yes, Meyer Sound. When we were doing *Cats* in London, we got to use the first UPAs. There was a speaker that was a great size and sounded fabulous. Our other choice at that time for the theater market was the Bose 802. But the UPA just sounded so much better, surprise, surprise! And Meyer cared about the theater market. A lot of speaker manufacturers pretend to care about the theater market but actually don't hang in there. Meyer does, and have consistently cared about the theater market and have carried on developing more speakers and many other things, as well. Then Apogee came out with a similar design, but different-sounding. And there are designers who've used Tannoys. Martin Levan has used Tannoys out of their cabinets. I've used Renkus-Heinz on *Ragtime*, and of course EAW has been around. I have just been using Jason Sound theater speakers on *Fosse*. Those have been the major speaker companies that I've used in the theater over the last decade.

Speaker designs have changed as a result of the manufacturers listening to the sound designers and sound engineers. In the last couple of years, I've gone for a wider-dispersion speaker. Quite a few years ago we were all going for a tighter dispersion for better gain-to-feedback control, but then you can get real hot spots in the audience. Also, you have to put in multiple cabinets and, by putting in multiple cabinets you get combing effects if they're not positioned correctly. I've recently gone for a dispersion angle of over 100 degrees, as wide as possible. I'm careful of the position of where that 100 degrees hits the stage and how far down stage a performer's going to come, and I really don't find too much of a feedback problem. Don't forget, in the theater, a microphone is so far away from their mouth, you have a huge gain loss immediately, before you even get to do anything with the sound. But I like a wider spread. It feels more open, and I just like that kind of warmth that comes from that. It seems to help take the hardness out of the procedure.

I like to put in as many speakers as I can around the proscenium, and, in fact, around the auditorium, with as much wider dispersion as I can. And I can take a sound and send it to any speaker at any time, and maybe on the next cue it comes out somewhere else. One of the reasons I like Renkus-Heinz is it's a passive speaker. Passive means that I've got less amplifiers and it ends up being more cost-effective. It's not that the speaker's cheap, it's just that you don't need as much of the other stuff to go with it, the controllers and amplifiers. I like that.

PHOTO: JOAN MARCUS/©CIRQUE DU SOLEIL

Cirque du Soleil's O at the Bellagio Hotel in Las Vegas

So instead of going for arrays of narrow-beam components, you're now going for single wide-dispersion speakers, which presumably requires a fair amount of power—for the loud shows—out of a single box.

For *Fosse*, I needed a speaker of a certain size, with a very wide dispersion and as loud as it could get. So Jason Sound built their R23 speakers using JBL components in a cylindrical-shaped speaker, and I put them all the way up the proscenium and around the top of the proscenium, and back down the other side. And Jason also made a unit called a P80, again with JBL components, a front-fill speaker with a height less than six inches. It fits in the front of the stage, and it cranks. I feed all those individually, because they're passive speakers. For *Fosse*, I send the whole orchestra to different speakers. So this is not an A/B system, this is...

An A-to-Z system.

Yeah, a whole alphabet system. I find that the difference that you get is night and day. Of course, it's expensive to do that and you've got to be able to have the control. What controls something like that? You can't then send that out of a mono system, so you've got to have some automated system to do that, which is, in this case, the LCS.

Tell me something about how Level Control Systems (LCS) came about.

It started when I was offered a George Lucas show, the *Super Live Adventure* tour that went to Japan. There were things that we wanted to do on that show that we couldn't really do with any automation system at the time. I took my ideas around to all these different people who were doing automation at that time, and nobody was really interested. Or if they were, they wanted too much money up front. So I got some object-oriented programming software and taught myself to write the software to do some of the things I needed. Then, when I was doing the John Adams opera *The Death of Klinghoffer*, I wrote a little software that would track the performers around the stage. It was a contemporary style of opera, and they were all wearing body mics. I did time zones across the theater and across the stage by sending MIDI commands to a Brooke Siren 804 to change time delays and levels, depending on where the actors were standing. And it worked really well.

Then I met a guy called Steve Ellison, who saw what I was doing. And the next day, he had rewritten something that had taken me six months. And it suddenly made what I had done look really good. At the same time, the George Lucas show was happening, and we started writing software for that project and got together with a hardware guy called Carl Malone, and we came up with the first LCS system. That was how Level Control Systems started. Although I am part owner of it, I have nothing to do with the day-to-day running of it.

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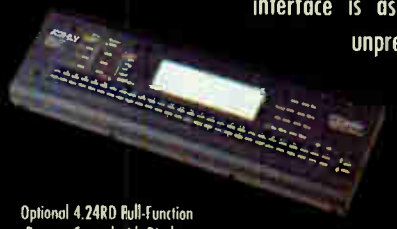

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ing the seats back to the producer, you could be giving back an easy quarter of a million dollars per year if the show's a hit. Maybe you could get a couple of extra orchestra calls for the sound at the beginning. What a nice thought!

I think that part of the reason that sound gets a raw deal in rehearsals is because the sound mixing console is at the back of the auditorium. Therefore, you're not plugged in to the heart of everything in the same way as the scenic and lighting designers are when they sit in that huddle in the middle of the auditorium. Until we can bring the mixer down into the middle of the auditorium, and then unplug it and put it back in the console position for the show, I think this situation will continue. A big change will happen when the console is put in the middle of the auditorium for technical rehearsal. There will be a big change when digital consoles come out and they can be put anywhere.

Because they're small enough, or because you can take a remote head with you wherever you go?

One hopes that you'll be able to get rid of most of the processing gear, because you'll be able to do it internally. Of course, people will want to bring in their own gizmos to plug in, and the time delays and everything else, but I think that will be short-lived, and I think that everything will be done inside the console. And you'll be able to buy plug-in devices. I also think that all your network delays, your crossover delays, can be done internally, so you won't need them. If you use a self-powered speaker, you can plug direct from your console straight into the speaker, so you won't need those amp racks, you won't need the racks full of delays and EQs, because it's all done internally. Less trucking space, too.

Plus, you can change all your time delays cue by cue. You'll have time delay on your inputs, and as that person is walking around the stage, you'll be changing that time delay constantly to match where they are. That is one of the main goals for live theater, to trick the audience into believing that the performer can actually project. Because there are some actors who are unbelievable, you cannot believe how loud they are. And then there are other actors who should not be allowed on to the stage, not to mention musicians. ■

Chris Michie is a Mix *technical editor.*

The very name evokes a sense of power and control normally associated with high-performance automobiles. And rightfully so, as KRK's latest incarnation of the active studio monitor strikes the necessary balance—much like a fine-tuned engine—between the power and control you need in today's studio environment.

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CIRCLE #039 ON PRODUCT INFO CARD

Top Ten Product Hits From Musikmesse

Nearly 100,000 industry enthusiasts ventured to Frankfurt, Germany, to see the latest audio and music technogadgets at the 20th annual Musikmesse, held from March 3-7, 1999. Although the show was just a month after NAMM, there was no shortage of new and cool products. Here are a few that caught our eye.

Electrix™ (www.electrixpro.com), a new division of IVL Technologies, unveiled three signal processors housed in wedge-shaped chassis for rack-mounting or use as slant-faced tabletop devices. Touted as "The Ultimate Vocoder," WarpFactory ($499) has gender, Q, "order" and formant freeze controls. Mo-FX ($599) creates effects such as autopan, tremolo, delay and flange, along with band filters and variable distortion. Filter Factory ($499) is an analog stereo filter with tap-tempo, LFO, distortion and selectable waveforms. No presets. No menus. Just spin a knob or two and you've got monster sounds, ASAP. Awesome!

WarpFactory

ML Audio + Carbons (www.mlaudio.com) demoed MusicaNova 2001, a five-way sound reinforcement speaker built into a 58x58x22-inch (HxWxD), 418-pound enclosure. A 15-inch woofer is set into each corner; the rest of the face is a massive 90x90° carbon fiber horn fed by three 12-inch mids, a 1-inch compression driver and 32 ribbon tweeters set into the horn surface. Add 15 kW of amps and the optional 4x18 sub and you've got one BIG system.

MusicaNova 2001

SADiE (www.sadie.com) debuted Artemis, a DAW designed for music editing, stereo or surround mixing, CD mastering, DVD production and post work, with 24-bit/192kHz capability, eight to 24 inputs/outputs, 32-bit internal processing, 9-pin and timecode sync, and support of various file formats (.WAV, SDII, AIFF, AudioFile and more).

TC Works' (www.tcworks.de) Spark editing/processing/mastering software package for the Mac platform offers waveform editing, fast file access, real-time dynamics and time stretch, sample rate conversion, VST plug-in compatibility, AIFF, SDII, .WAV and QuickTime file support, dithering, hi-res on-screen meters, 24/96 support and a powerful FX-Matrix allowing up to four parallel streams with up to five effects on each. Price? $499.

Can't sing on key? The Intonator from TC Electronic (www.tcelectronic.com) is a vocal intonation processor that provides 24-bit pitch correction (with 96kHz internal processing), along with de-essing, Adaptive Lo-Cut filtering, simultaneous outputs of dry and processed vocals, and a unique "do not process anything but this note" feature. Retail: $1,499.

Soundcraft's (www.soundcraft.com) Series Four live sound FOH console, shares the name of an earlier Soundcraft board, yet is based on the layout of the company's acclaimed Series Five, but in a smaller footprint, with 24/32/40/48-frame sizes. Series Four has eight VCAs and eight mute groups, 4-band EQ with parametric mids, ten aux sends (four mono/stereo switchable) and a 16x8 matrix. Optional are Showtime™ Virtual FX snapshot automation and Virtual Dynamics (adding compressors, gates and autopaners on every input.)

Ideal for DJ mixing or just plain audio fun, the Kaoss Pad from Korg (www.korg.com) combines a compact sampler/multi-effects box with an X-Y controller providing real-time, fingertip control of multiple effects parameters simultaneously, and slick tricks such as scraping, tapping or skipping across the pad for results unattainable by knobs, sliders or wheels.

Emagic (www.emagic.de) announced Logic Audio 4.0 for Mac and Windows 98/NT, a major upgrade to its flagship digital audio/MIDI sequencer/scoring package, which in its Platinum version, offers 24-bit/96kHz digital audio recording, including 31 audio plug-ins, 16 effect buses, and up to 128 audio tracks, along with an elegant new graphic user interface. Hot!

Logic Audio 4.0

Novation (www.novationuk.com) showed the Nova MIDI module, based on the ASM (Analog Sound Modeling) synthesis engine used in its award-winning SuperNova synth. Nova features 12-voice polyphony, 36 voices, three oscillators, two ring modulators, resonant filter, up to 42 simultaneous effects, two audio inputs (20-bit DACs), six assignable outputs and a combo tabletop/rackmount case.

Audio-Service's (www.audio-service.com) PP02R is a plug-in adapter providing XLR inputs with switchable phantom power for the channel 9-16 TRS inputs on a Yamaha 02R console. No word on U.S. availability, but any 02R could use this smart, simple accessory.

We'll present other Musikmesse product hits in our product columns in future issues. Meanwhile, we're off to Las Vegas for the NAB convention in a couple of weeks. See you there! ■

BY GEORGE PETERSEN

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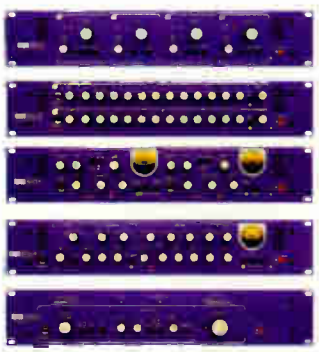

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CIRCLE #040 ON PRODUCT INFO CARD

ROY THOMAS BAKER

TAKING CHANCES AND MAKING HITS

PHOTO: VIC STILES

Instead of simply giving rock fans more of the same, Roy Thomas Baker has managed throughout his long and distinguished career to produce audacious and distinctive projects while successfully reading the pulse of the mainstream rock audience. His credits include a staggering number of bona fide superstars, including Queen, The Cars, Foreigner, Journey, David Bowie, Cheap Trick, Ozzy Osbourne, the Rolling Stones, Free, Alice Cooper, Devo, Santana, Ten Years After, T-Rex, The Who, Yes and Frank Zappa. Many other less vaunted artists have benefited from his creative touch, too.

He got his start at Decca Records in England at the age of 14 and later at Trident Studios, where he was fortunate enough to work under such producers as Gus Dudgeon, Peter Sullivan, Tony Visconti and Ken Scott. RTB became one of the founders of Trident's in-house production company, Neptune, where he signed Queen and other acts.

During the last half of the '70s, RTB relocated to Los Angeles and scored huge successes with Journey, Foreigner and The Cars, among others. By the mid-'80s he'd become a senior VP of A&R for Elektra; during his tenure there the label signed 10,000 Maniacs, Simply Red, Yello, Peter Schilling and Metallica. But late-'80s American rock and pop held little interest for him, so he found himself spending most of his time back in Europe, where he produced a number of commercially successful and critically acclaimed releases, including discs by The Stranglers, Chris De Burgh and T'Pau, whose chart topping album and singles remained on the European charts for over a year. T'Pau's "Heart and Soul" was a Top Five hit in the U.S. as well.

Today, Roy Thomas Baker spends most of his time in the U.S. While keeping Los Angeles his home base, he has built a beautiful studio complex of his own, complete with tennis court and olympic swim spa. His elegant facility is a three-and-a-half hour drive from L.A. in the foothills of the Mojave mountains, above the shores of Lake Havasu. His fabulously appointed and well-equipped studio contains hard-wired TLA, Summit and Neve mixers; a rare Stephens 40-track (fine-tuned and maintained by John Stephens) with Dolby SR; and six Tascam DA-88s. Fans of his work will want to look for upcoming releases by Local H, Other Star People and Caroline's Spine.

BY RICK CLARK

Much of your production work draws from the best of American and British popular music idioms. What music helped form your tastes growing up, and what elements of that have carried over into your work?

The thing that I loved was the way American blues went over to England and got bastardized with artists like Clapton and the Stones, and then went back to America. It was this continual bouncing back and forth between the two places that all started off with Southern blues players. One of my main inspirations was black music. It didn't matter whether it was Tamla/Motown or Stax or the early blues, which I loved. In fact, I didn't know that the early blues existed until I heard the Stones and Clapton as a kid. I suddenly realized, "These guys are great. Where did they get it from?" That's how I learned about it.

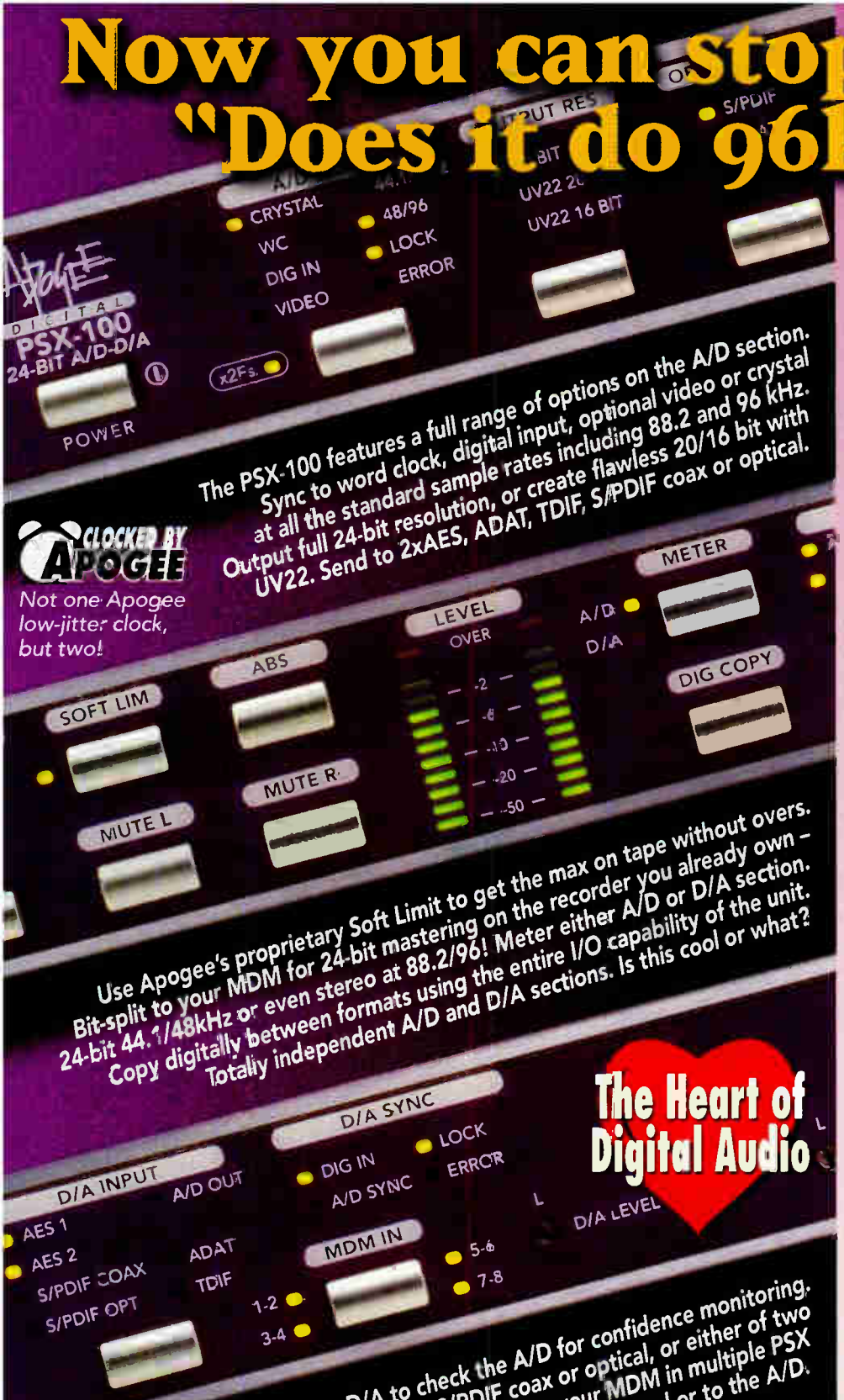
I also loved American pop. I loved the stuff that was being done by Bob Crewe and Phil Spector. When I think of the Four Seasons, The Ronettes and the Beach Boys wafting away with their four- and five-part harmony vocals—those kinds of great vocals were not coming out of England at the time, except in opera.

One common element found on many of your records is huge, thick harmony vocal parts. Now I can see the connection with the Beach Boys and the Four Seasons.

Oh, yeah. You can hear what was inspiring me as a producer, to inspire bands I was working on to do that, or connecting me with the bands that were good at doing that.

With The Cars, you had this band with a sparse rhythm section and a

Now you can stop asking "Does it do 96kHz?"



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unique singer in Ric Ocasek, but when the harmonies kicked in, it was a wall of sound. They came at a time when rock radio really needed some freshening up.

I was going through my own little demons at the time. I had been doing Queen, which was kitchen sink overproduction, which I loved. But in the same way that we had the alterna-music thing in the early '90s, the end of the '70s had the punk era. I would run into the Sex Pistols, because they were working over at Wessex. They were saying the usual, "All you bands are going to be gone because you're overproduced and you're all fags," and all that. [Laughs] It was really funny. I thought, "Maybe there is a point where I should be a bit more sparse." So when I did the first Cars record, we purposely did it very sparse, but when the harmony vocals come in, there are as many vocals there as there were in a Queen record. The only difference is it was in and then it was gone. "Good Times Roll" is a classic one for that. When they sing those words, it's huge and then it's gone, and everything is back to sparse again. I was able to put big vocals on a sparse, punkish background, sort of inventing post-punk pop. With Other Star People, which I recently finished, we're inventing post alterna-pop. [Laughs]

I remember when the first Cars record hit Number One on the charts, I was driving on Sunset Boulevard with Ric Ocasek. We drove past a billboard for the Cars' record, and he said, "If someone had told me a year ago that I would be driving along Sunset Boulevard with Roy Thomas Baker looking up at a billboard of my record that is Number One, I wouldn't have believed him."

On T'Pau's "Heart and Soul," your approach to the rap portions of the song was unique.

We did "Heart and Soul," and there was this rap vocal for the first verse; total rap. Instead of just going out to a mic and just talking, I did 12 tracks of talking vocal for one speaker, 12 tracks for the other speaker, 12 for the middle, and then 12 tracks that were put out of phase to wrap around you, and that was just for the rap section, before any singing started. It was scary and was hard work, and it took a couple of days to do it. I remember Carol Decker [the singer] walking out of the studio, bursting into tears, and saying to my wife, Tere, "I hate your f—ing husband," but when the record hit the charts everywhere, it was all fun. [Laughs] So even when I did a straight rap record, it wouldn't be someone merely rapping into a mic; it would have to be something totally unusual and different.

PHOTO LESTER COHEN

Roy Thomas Baker with Alice Cooper, right

With Queen, the whole idea of big vocals were taken to outrageous, operatic levels.

"Bohemian Rhapsody" was totally insane, but we enjoyed every minute of it. It was basically a joke, but a successful joke. [Laughs]. We had to record it in three separate units. We did the whole beginning bit, then the whole middle bit and then the whole end. It was complete madness. The middle part started off being just a couple of seconds, but Freddie kept coming in with more "Galileos" and we kept on adding to the opera section, and it just got bigger and bigger. We never stopped laughing.

That was at a time when rock bands were so intent on being heavy. This was not exactly a cool idea. It was very left of center.

Exactly. It started off as a ballad, but the end was heavy. For the technical people, who may want to know, the end of the song was much heavier because it was one of the first mixes to be done with automation. What happened was we had VCAs built into a Trident board over at Sarm Studios in London. They put it in with the old Allison computer. If you really listen to it, the ballad starts off clean, and as the opera section gets louder and louder, the vocals get more and more distorted. You can still hear this on the CD. They are clearly distorted. When we got to the end section, the part in *Wayne's World* where they start doing this [he bobs his head up and down], there was no headroom on the VCAs, yet there was loads of headroom on the Trident mixer. So we got them to disconnect the computer and literally take all of the VCAs out of the faders and give us a direct feed for the faders to the mixer. And we mixed the whole of the end section by hand.

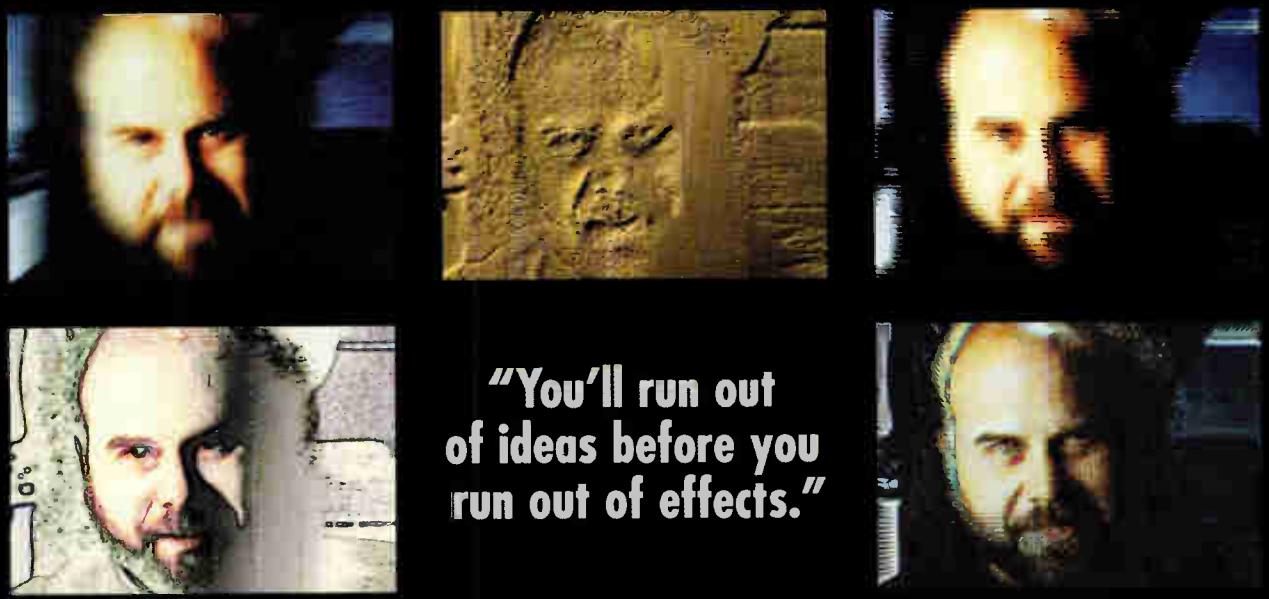
The way we used to mix Queen was very odd, and it evolved over time. We had a big Trident board in the control room, and every one of the guys would have to look after their own little parts. They were turning on tom-toms and riding bass runs and Brian [May] was turning on and off all of his guitar parts. Then we would take all of the outputs from the Trident down to a separate mixer, and I would control all of the drum fills and bass fills and do all of the stuff that I'm good at. So they would be looking after their little bits, and I would actually be using their fingers as automation. Then I basically had the main mix in front of me. It wasn't done on computers. It was done live. The main feed from my mixer was going to the 2-track. So that was the way we would mix a record.

"Killer Queen" was done that way. All the phasing parts weren't done in the mix; they were done live. For example, the part about the "laser beam" was printed to tape with the effects during recording. If you listen to the multitrack, all the effects are on the tape. The only thing different is the end of "Killer Queen" is actually real tape phasing. That was a post-production decision.

So do you typically print effects to tape when you record?

I'm not one of these, "Oh, we'll cut this and leave the effect for the mix." I actually record the effects. There is the artistic reason: People play differently when they hear the effect and are playing to it. Secondly, it makes it so much easier to mix, because the effects are already

The New PCM 81 Digital Effects Processor



"You'll run out of ideas before you run out of effects."

Scott Martin Gershin
Sound Designer

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CIRCLE #042 ON PRODUCT INFO CARD

there. You've got to make these decisions up front. Except for just basic echo, I tend to also use the effects as we go, when we record vocals.

For the really effected vocals on the new Local H record, we did the effects live with the performance. We had already visualized what we needed, so we did that as we went along. When Scott, the singer, sang with the effect in his headphones, he could work with it and make the effect work a million times better.

I always visualize the overall sound of the album at the beginning. You voice the parts and arrange the instrumentation that you use right at the very beginning. With Local H, we knew the running order of the album before we even started recording, so we could work out our segues. We had the plans on how one song would go into another and make the whole album a nonstopping entity. We even recorded everything in the running order, so we could actually edit together the tracks from the 40-track Stephens, so they were flowing together before we even did any overdubs. I never just leave it up to the mix and just hope.

PHOTO: LESTER COHEN

Roy Thomas Baker (center) with The Cars

One characteristic found on many of your records is the artful segue.

I love segues, because I like records to be continuous and it gives me a good excuse not to turn off the music and put on something else. Sometimes the record company initially didn't like them, not for artistic reasons, but because they thought that disc jockeys would have a problem taking the record off at that point. So an alternative copy for radio with these big five-second spacings between each song would be made, as in the case of Journey's *Infinity*. What made it funnier was disc jockeys played the segues even more on that album. They played the first three or four songs of The Cars' first album together, too. [Laughs] Even now, they are still playing the segues.

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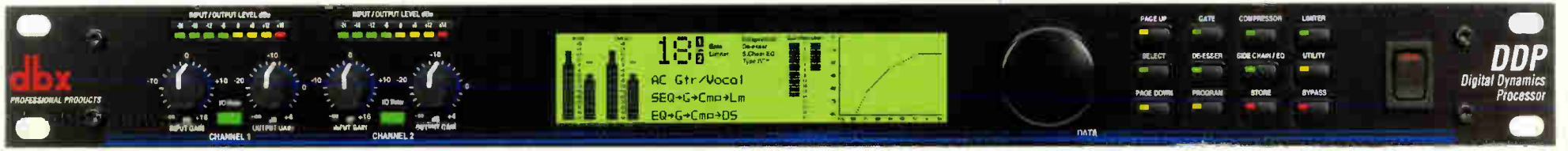

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- Threshold at -17dB
- Ratio at 2:1
- Gain at 3.5

Gate:
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- Ratio at 1:2.6
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- Providing comprehensive vocal processing in a single unit

Mix It Down

Bypass the on-board converters on your DAT or DAW and add sensible processing at the same time

When you're ready to finish it off:

Gate:
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- Ratio at 1:3.5
- Attack at .1 mSec
- Hold at 18 mSec
- Release at 100dB/Sec

Compressor:
- OverEasy knee #1
- Auto attack and release - On
- Threshold at -10dB
- Ratio at 2.4:1
- Gain at 7.0

Limiter:
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- Attack at .1 mSec
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During Mix-down the DDP can:
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they were practically exploding out of the radio. What things did you do to help ensure that effect?

As long as you know up front that a certain song is destined for radio and MTV, you should come at it straight out of the gate from the beginning in preproduction. We make sure that the sound is together from day one. The whole idea is to make you sound louder, so that it jumps out in your face. The trick to this has to do with creating apparent volume, as opposed to actual volume. See, the radio station's compressors will react to actual volume and turn the music down. That's why some people's mixes will actually sound quieter than the song previous and the song being played after.

When we first record, we're always saturating. We have all the machines lined up in such a way that we have everything hitting the end stops. I run everything in the red all of the time. I don't look at meters. We run the consoles in the red, especially the tube ones like the Summit and TLA tube mixers and the Neve. We run the machines in the red, right down to the tape. We check back to the tape to make sure that we're not over-saturating.

From what I understand, you've startled more than a few "proper" engineers with your methodology.

Oh yeah! All the time. I just whack those faders up. That's what I do. Especially when I'm mixing the drum rides—I would whack them up so loud that they would saturate the mixing board and then they would saturate the tape machine. Obviously, after a certain level, they don't get any louder on tape. It gets louder when you're watching it, but it doesn't get any louder on tape, because it has reached its peak. What happens is the bottom end fills out. It is technically distortion, but it is also bringing out those nice third and fifth harmonics that you want to hear. Doing it this way adds a tremendous value to the bass end. It makes it grind and pump out on the radio more. It's apparent volume, as opposed to actual volume.

Many artists seem to feel that they should produce themselves. What are your thoughts on that?

Every artist would like to produce their own records. That to me is a bit like someone wanting to be their own lawyer in court, and even if you are a lawyer, you shouldn't represent yourself in court. I think, even if you're a great producer who happens to be an artist, and you're great at working with other artists, you should never produce yourself. You still need somebody else around to make sure you get the best out of yourself, because you can't be in two places at once.

A lot of artists will go to an engineer, who is probably a great engineer, but as of that stage has not seriously produced anything. They forget that there's more to a production than getting a nice, polished sound. People will not go out and buy a nice drum sound if the song isn't there. When Ric Ocasek does his own records, he doesn't always produce himself. He lets other people produce him. Yet, Ric is a very good producer and has produced some hits himself, like Weezer.

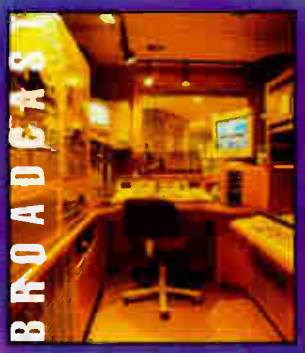
Was there a pivotal moment where a light went off and you thought, "I want to be a producer"?

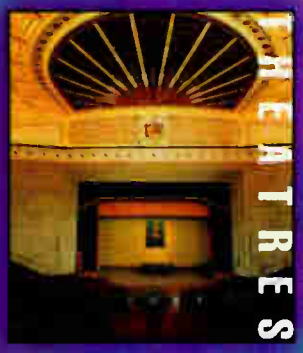
No, I think I always wanted to be a producer from the age of 11 or 12. My opportunity came with my internship at Decca. We called it apprenticeship over there; you call it internship in America. It's basically where you do all the dull work for 24 hours for no pay. [Laughs]

And nothing has changed.

Nor should it change. It's a great way to sort out the people who are really gen-

The Versatility Of MiniDisc





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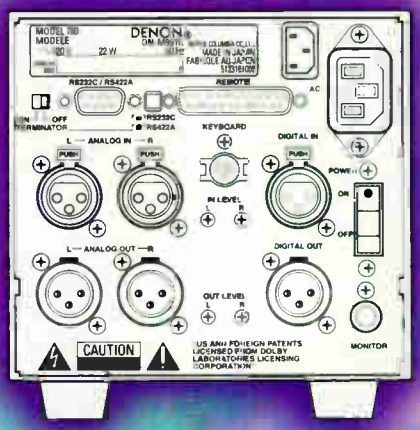

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uine and the people who are in it for a quick buck. You can't make a quick buck in that route. You have to work very hard and eventually, if you are given that opportunity, and you succeed at that opportunity, then there are big bucks to be made. It is hard work up to that point. I think I was paid the equivalent of 12 pounds a week; no overtime, nothing. I subsidized my pay by being a race car mechanic, which I actually thought was great fun anyway. It gave me Saturdays making sure there were great fuel injectors on these race cars.

What would you say is a primary guiding philosophy behind your production work?

My whole thing is, the more different you can sound from anything else around but still be commercially successful is great! Over the years, I've always hearkened back to that philosophy. Back when I did "Bohemian Rhapsody," who would've ever thought of having a single with an opera section in the middle? The first Cars record was totally unique. Even projects I did when I was going from second engineer to engineer, like T-Rex's "Get It On (Bang A Gong)" or Free's "All Right Now," had a different twist on what was basically the same thing.

People need an identifiable sound. When your song is being played on the radio, people should hear who that is, even without the DJ mentioning who it is. That's true with all the great bands, even ones that have been around for hundreds of years, like the Stones. Even though they have had a lot of different changes of sound, you can hear who it is instantly. That rule applies for every great band of the last 30 years. There are thousands and thousands of bands out there with these really smooth, great, generic-sounding records that nobody gives a toss about. Then somebody like Beck comes along and he hits a can and sings about being a "loser" and he gets a Number One, and who knows what that was recorded on? [Laughs] And who cares? I loved it!

If you don't have that identifiable sound, you are getting merged in. If the DJ isn't mentioning who it is, then nobody will know who it is. It will just be another band, and nothing is worse than being anonymous. That is exactly what you don't want. ■

Rick Clark is a producer, songwriter and writer based in Nashville.

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GLEN PHILLIPS

GOING SOLO AT HOME

PHOTO: MATT STRAKA

As the singer and principal songwriter for now-defunct modern rockers Toad the Wet Sprocket, Glen Phillips logged many hours at high-end studios. For the 1994 release *Dulcinea*, Phillips and the band recorded at The Site (Marin County, Calif.), "which is a great studio," he says. "We were just sitting there enjoying it...and spending $2,000 a day for one channel of this incredible 80-input Neve! I just kept thinking, there's gotta be a better way than this." For their next and final album, *Coil*, the band recorded at Master Control in Burbank but overdubbed at their practice studio using equipment Phillips had acquired in the interim, including a Stephens 821B 24-track and Neve 1064 mic pre's.

After this experience, Phillips really got the bug. When he subsequently set about remodeling his Santa Barbara, Calif., home, the plans included building a new two-car garage. "I kind of thought, hmm, we may as well make it sound good!" Phillips says. So the new structure became a garage that doubles as a personal studio, built from the ground up with the help of locally based designer and acoustician Chris Pelonis.

Pelonis achieved a high degree of isolation using all double-wall construction. The 600-square-foot space is essentially one large room that is divided down the middle with a wall and treatments that create a live tracking room on one side and a control room on the other. "It's just two rectangles side by side," Phillips says, "but basically Chris managed to maximize the cubic feet in the live room and [implement] some really good bass trapping by using some of the space we weren't using from the control room. It sounds great—it's a good, punchy little live room—and Chris managed to not force me to spend tons of money where I didn't have to. He was good at being creative on the parts where I needed to be creative."

Not long after the studio was complete, Toad decided to call it quits (after selling 4 million albums over their 12-year career), but Phillips has been making use of the studio to demo solo material with the help of local engineer Bruce Winter. "I've ended up working a lot with Digital Performer recently," Phillips says, "just playing with loops and having fun with that. It's a brand-new way of working for me, so a lot of stuff came out, some of which I'm loving and some of which I have no idea if it's a complete waste of time!"

In addition to the Neve pre's and the Stephens, Phillips' studio is equipped with Neve 33122s, 1176s, LA-4s, a Manley Variable Mu and a Focusrite Green 5. Mics include a Manley Reference cardioid, a Stephen Paul 87, a pair of Earthworks TC30Ks, KM84s, a pair of C-500s, the Audix D Series (Phillips' basic drum mics) and an OM-6. His favorite new mics are a pair of UM70 Gefells that were modified by Inner Tube Audio. "They tubed 'em up," Phillips says, "and they're pretty damn nice—perfect on acoustic guitars." All the digital cabling is Monster Cable, and Phillips monitors through Mackie HR824 active monitors.

When *Mix* spoke to him, Phillips had finished demoing and was looking forward to beginning tracking on his first solo album with Winter, using the studio's newly installed Mackie D8B. "We wanted the D8B because we're going to be doing a lot of switching around between tracks," Phillips says. "Some stuff is going to be very acoustic, live-in-the-room oriented; other stuff's gonna be really built up around loops and layers. Just saving the down time when we reach a stopping point will be a very good thing—reset the console and it's on the next song. We also just wanted a hub that was in the digital realm. I have the D8B patched in kind of post-patchbay, so for mixdown I can use all the analog outboard I have coming off tape, have complete automation, and I can have Performer running into it and then just get my mix out of the back end of the console."

Phillips lives with his wife and their two toddlers, and he says that working at home "is both a blessing and a problem. Sometimes I'm really ready to see everybody and it's easy; sometimes I'm just deep in the middle of something when there's a knock on the door and I know I'm not gonna get back to it for an hour! Learning how to sequester myself while still being in the garage is interesting." But having his own studio gives Phillips a kind of freedom that's hard to beat. He's making his own record in his own way, while, at present, sitting out the worst of the chaos in the wake of the Seagram/PolyGram merger. "I'm just trying to get as much control and security as I can," Phillips says, "especially now that the band's not together. I chose what I bought very carefully to make sure I would get the best sound I could without having to go into the hole and be forced into making it a business. As I have it, I know that if I need to do albums for nothing, I can." ■

BY ADAM BEYDA

Adam Beyda is an associate editor at Mix.

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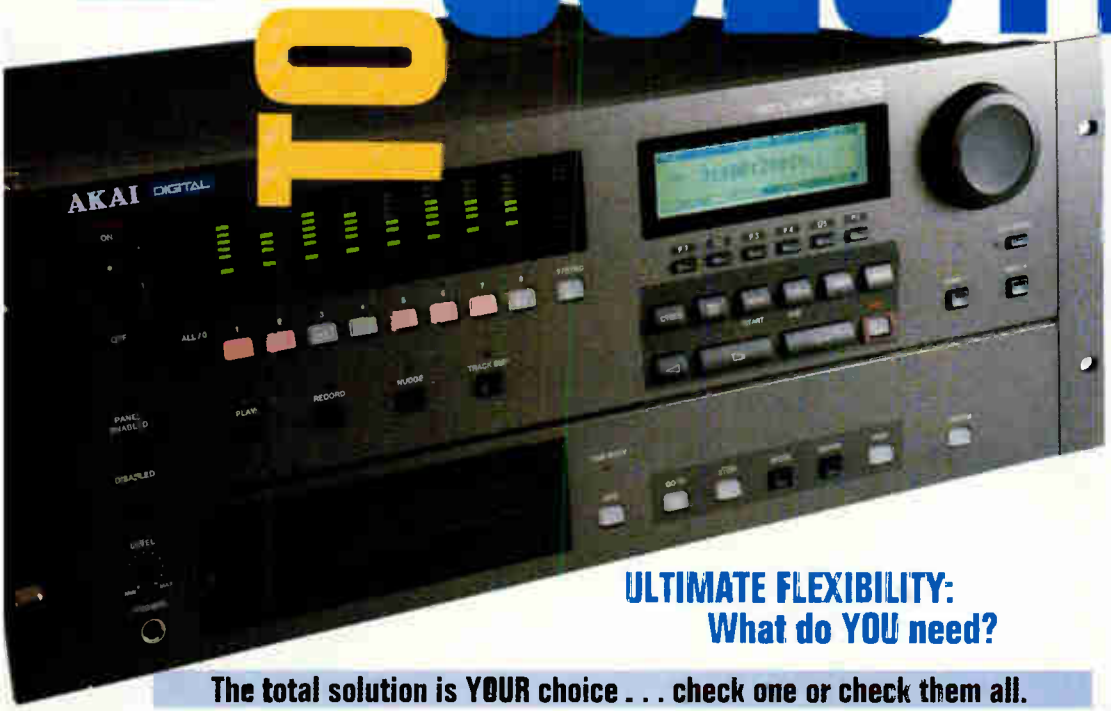

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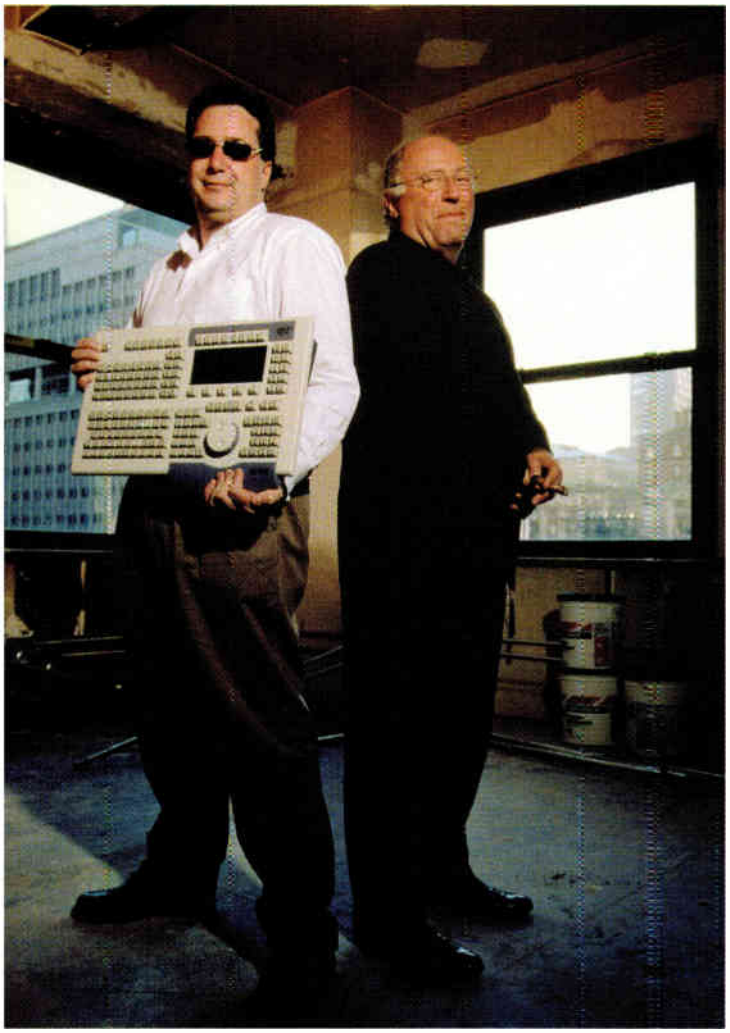

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CIRCLE #052 ON PRODUCT INFO CARD

Welcome to the Future

Digital Sound & Picture

From Glass Console to Facilitywide Network

SOUND FOR PICTURE

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SPRING 1999

John Ross has lived the past decade with one foot comfortably in Hollywood and one foot decidedly outside. His facility, Digital Sound & Picture, handles the edit and mix for films such as *Austin Powers* (he's now working on *Austin Powers II*), *Lost Highway* and *American History X*, as well as TV movies and series such as *Hercules*, *Young Hercules* and *Xena: Warrior Princess*. Source material arrives at the South La Cienega Blvd. address, and print masters go out in whatever format the client desires, just like anywhere else.

But inside the building, Ross and his team (Evan Daum, MIS; Gene Conway, technician; and Brian Flack, chief engineer) have created a working system that is anything but traditional. Nearly ten years ago, he bought serial number 003 of the Euphonix console, then bought three more and linked them to create a three-operator film board for the main stage, a full five years before Euphonix came out with its own version. While the rest of the world waited patiently for digital dubbers, he was using DAWN workstations for playback and recording. And now, while "network" is the current buzzword and facilities are shopping, he's already up and running on his own FORE Systems hub, working off a 1.2-terabyte SGI Origin server feeding 21 edit bays, four mix stages, an ADR stage, a Foley stage and a couple of transfer rooms.

But all that seems like noodling around compared to his most recent development, the Glass Console, pictured on this month's Sound for Picture cover. Borrowing a page (and the name) from developments in cockpit design (he's also a private pilot), Ross has designed a hybrid touchscreen/fader controller and put it to work on Stage D, for mixing *Xena: Warrior Princess* and *Young Hercules*. There is a distinction between digital audio and audio that resides in a computer, he says, and because of advancements in workstation capability, the console can now be thought of as simply another node on the network.

Ross has lived with the concept of the Glass Console for a few years now, waiting for certain technologies to develop. First, he needed a screen, and after considering various methods, such as binding multiple LCDs and glass projection, Fujitsu came along with a 42-inch plasma display. Then he found a small company that would tackle the touchscreen and co-developed it with them. Then other pieces began falling into place, and the plug-in world matured. (He reserves special praise for Mark Gilbert of Gallery Software, raving about his ADR Studio.)

"The Pro Tools hardware was a logical extension, just because a lot of the code has been written to make it basically be a console," Ross says. "That was pretty sub-

stantial and pretty solid. But it doesn't have to be that hardware. There are some new DSP cards coming out—Creamware and E-mu being some examples—and I'm sure in the future there will be other DSP-type cards going into computers that will do some powerful automation and console functions. And those can be displayed and manipulated within this environment.

"Obviously, we've incorporated traditional ways of working that are not conducive to working on a keyboard, mouse or screen," he continues. "We decided that with consoles there are two types of controls: There are are the 'go-to-occasionally' type controls and there are reflex controls, the ones you want to reach up and grab instinctively. It doesn't make sense to hide everything on the screen because there are moves that would be tough for a mixer if he had to page through multiple layers. I'm a mixer, so I know what it feels like. We came up with the number 32, which we thought was a good number of physical faders for each cell."

Surrounding owner/mixer John Ross, seated, are l to r: Evan Daum, MIS; Gene Conway, technician; and Brian Flock, chief engineer.

PHOTO: ED FREEMAN

The two-operator version seen on the cover (soon DS&P will have a three-operator board for the film mix room) comprises three discrete systems, or "cells," hooked together on the drive level via Fibre channel, which in turn is hooked up to the Silicon Graphics server, along with the rest of the facility, via an ATM network. One cell is for dialog and music, one for effects, backgrounds and Foley, and the third is a monitoring matrix system that takes the digital outputs of the other two, sums them into 5.1, Dolby Surround or whatever format, then records the stems at the end of the day. The third cell also runs the digital picture.

Enough control protocols exist that each cell can control outboard units from the screen, and each of the cells can be taken offline at any time while the other runs the mix. So if the dialog editor needs to match EQ on an ADR line that is flown in at the last-minute, he can work in the background while the effects mixer runs the show. Or if you need to add an offscreen gunshot, the mix doesn't have to stop. The fact that the lines are blurring between the edit and the mix is not lost on Ross.

"I think it's a natural progression," he says. "When an editor is sitting at a workstation designing sound, he's not doing it in a vacuum. He's designing the sound with reference to other sounds. What do you want to call that? Mixing? I would say there is a certain component of mixing involved. But his primary role there is to create new sounds and manipulate them against picture—hence, editor. The primary role of the mixer, on the other hand, is to mix all those elements with reference to the picture. But they still would need to blur into the editorial sometimes in order to make the tracks work that much better, or to tailor them specifically to what's going on with reference to new material, such as music, or sound effects that were not present at the editorial stage. At a certain point in time, the mixer is the best person to make editorial choices. You could tell somebody offline how to do it, but now we can just think it and do it. It makes far more sense."

Still, the editing component looms large at DS&P, and editors are on staff. Each of the 21 Pro Tools-based edit bays is fitted for 5.1 monitoring, with three Alesis speakers behind perforated screens, all laid out to the correct aspect ratio, and B&W monitors for the surrounds and subs. Digital picture, which is digitized through a Macintosh audio/video card and Adobe Premiere in the machine room, runs directly from the server to Sharp Vision video projectors.

The machine room houses most traditional equipment, along with a couple of Pro Tools systems, a digital router and various other components, all of which can hang on the server. A standard track layout for stems has been set up in the Dolby plug-in, and the ouput of one Pro Tools system is directly wired to either mag or a 24-track for final delivery. MOTU 2408s are used for taking stems or anything else that needs to be a Sound Designer II file and recording them to the server, then exporting them to Pro Tools as an OMF file. For example, music that comes in on DA-88 can go out TDIF, through the 2408, straight to the server for manipulation in Pro Tools—an effective digital throughput.

The server room contains a FORE Systems ASX1000 with 40 OC3 ports (meaning 40 stations can run simultaneously) and an OC12 between the hub and the SGI server. Each OC3 run, at 155 Mbits/sec, is discrete to edit bays or mix stages, working out to well over 100 tracks per physical cable. The 1.2-terabyte SGI Origin is used primarily as a reservoir, as most of the work takes place on local drives. Xynet software runs on the SGI and handles UNIX-to-Mac translations (the Macs think the server speaks Mac). The system is scanned each night at 3 a.m., and any alterations from the day's work are backed up to a 12-tape AIT jukebox-type system. The Geffen M&E Pro library search system runs off the server, and individual show libraries can be called up from anywhere at any time. A separate 100baseT network runs in conjunction and handles administrative functions.

Ross freely acknolwedges that not everybody will want to work along his model, but he's moving full-speed ahead and building Glass Consoles for all his mix stages and looking ahead to high-speed access to other facilities in town through something like the developing MediaOne network. He's not sure yet whether he wants to be a manufacturer, but if he does, it's a safe bet that he wouldn't go about it in the traditional manner. ■

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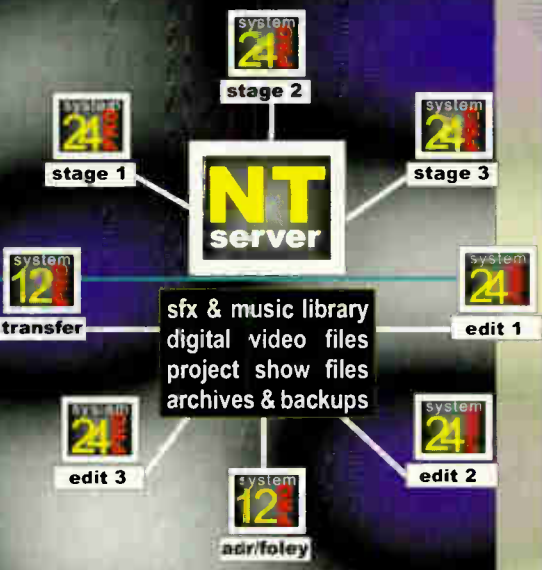

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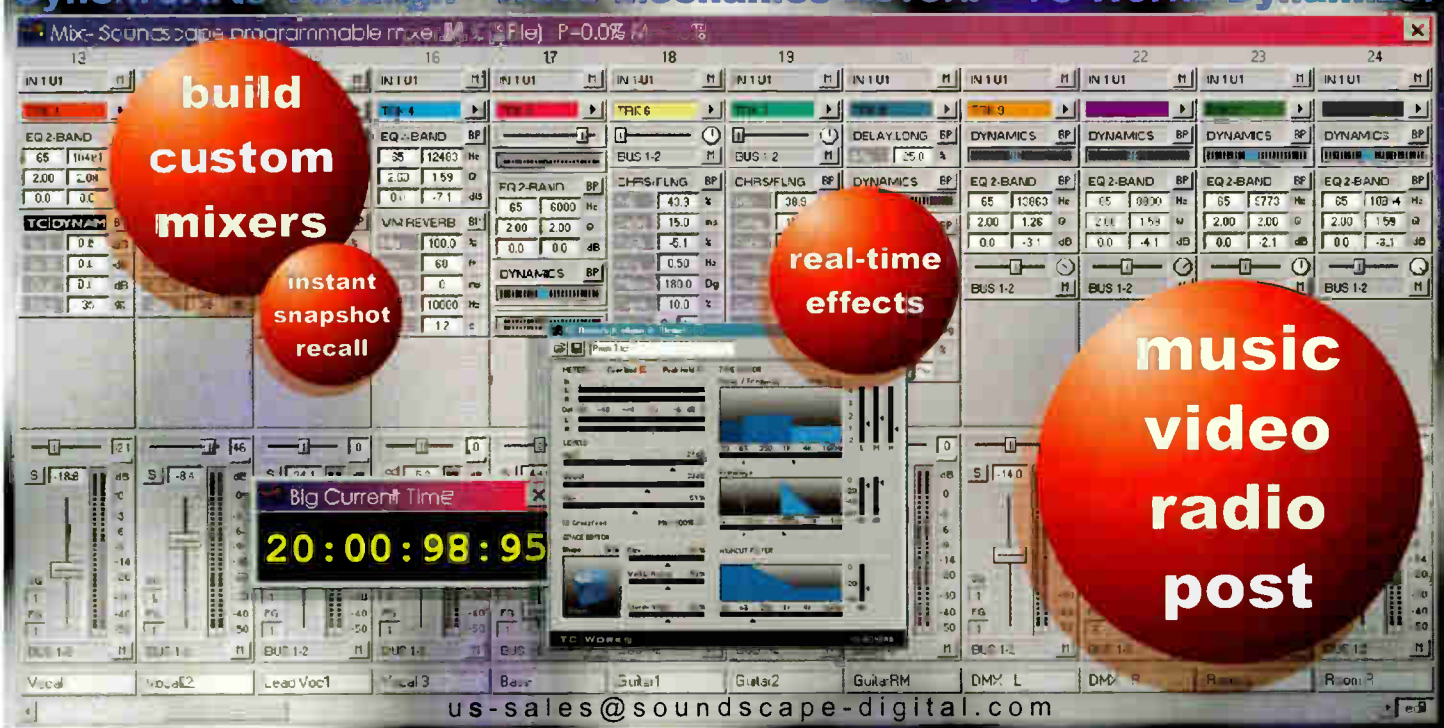

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The Wacky World of "Ally McBeal"

by Sarah Jones

WHERE WERE YOU LAST MONDAY NIGHT? If you're like millions of television viewers, you were settled in to catch the latest episode of *Ally McBeal*, Fox's Golden Globe-winning comedy/drama about the life and loves—real and fantasized—of a quirky, self-obsessed, young Boston lawyer with a vivid imagination. The weekly series, written and produced by David E. Kelley (*Chicago Hope*, *Picket Fences*, *The Practice*), is different from typical comedy/dramas in that it is rich in special effects, mixing "real" events with fantasies, flashbacks and dream sequences that take us inside the mind of the main character, played by Calista Flockhart. Ally's CGI tongue hits the floor when she sees a romantic interest; the now-famous Dancing Baby boogies through her bedroom to the tune of "Hooked on a Feeling"; her head swells and pops like a balloon after an uncomfortable moment. There are signature audio effects, too—characters growl at each other and hear bells in their heads.

PHOTO: RANDY TEPPER / FOX

Editing and mixing for the show takes place at West Productions in Burbank, a full-service audio post-production facility founded 15 years ago by Dave West. The company is somewhat of a family business: Dave's cousin, Scott, is general manager; the staff at one time included their now-retired father Ray West, who won an Academy Award as a re-recording mixer on *Star Wars*. West Productions also works on such blockbuster television shows as *The X-Files*, *The Practice* and *Millennium*, and various animated shows, movies and miniseries. The team that works on *Ally McBeal* brought home a 1998 Emmy Award for Outstanding Sound Mixing, a Golden Reel nomination for music editing, and at press time they had earned a nomination for a Cinema Audio Society Award for Outstanding Achievement in Sound Mixing for a holiday episode of *Ally*.

The show is filmed in Manhattan Beach, south of Los Angeles, and takes place in four main interiors: the law offices (including the co-ed bathroom), the apartment Ally shares with her district attorney roommate, the courtroom and the bar the lawyers frequent. It's a single-camera production, not the three-camera setup typical of most sitcoms. Despite the sometimes laborious filming, with take after take, audio is a priority, says *Ally McBeal* re-recording mixer Nello Torri, who adds that if Paul Lewis, the production sound mixer, feels that a particular setup is going to compromise the sound, he is comfortable bringing it to the producers' attention.

Boom mics are used on the set as much as possible, with the exception of the occasional outdoor scenes. Torri says the producers won't switch back and forth on the same scene between a boom and radio mic because they are conscious of the differences in sound and how hard they are to match in

Calista Flockhart (center, seated) and the rest of the cast of Ally McBeal

SOUND FOR TELEVISION'S MOST TALKED-ABOUT SHOW

post. "That's just so rare," he says. "On most shows, they'll set up the camera, and whatever the sound guy can come up with, they'll do that." Production dialog, as a result, is quite clean—principal loops are rarely necessary, averaging only a few lines a show, according to Torri.

Re-recording mixer Peter Kelsey, re-recording engineer Steve Coker and re-recording mixer Nello Torri at the Otari Concept Elite at West Productions Stage Six.

STORY THROUGH SCORE

While the picture is being shot, music for the show is written and recorded in various studios around town. A huge amount of music, both score and source, is worked into each show, designed to help tell the story. "One unique thing about *Ally* is that there are two composers," explains re-recording mixer Peter R. Kelsey, who mixes the music on the dub stage. "There's Vonda Shepard, who's onscreen but also writes songs that appear in other areas as score; and there's Danny Lux, who writes the underscore."

Shepard is the soulful singer/songwriter who

wrote and performed the show's theme song, and she appears onscreen as the bar singer acting as the "voice" for Ally's emotions. She often collaborates with David Kelley, writing originals for specific storylines or picking existing music to be used as score. The impact of her music has led to a regular role, often ending the hour, sometimes with speaking lines. And the *Ally* soundtrack, featuring Shepard, went Platinum within weeks of its release last year.

Shepard has a recording session for every episode at various local studios, including the Village, Ocean Way and Conway. West is supplied with eight tracks of Shepard's music on DA-88 for each program. Although a stereo composite is often supplied on tracks 7 and 8 of the DA-88, "Vonda's tracks are usually split out into band, vocals, backup vocals," explains Kelsey, "so if I want to change the vocal level against the band, I'm able to do so." This is especially important when characters converse in the bar, over the music of Shepard and her band. "There are times when there's a bar scene where somebody's talking and you need to hear them," adds Torri. "The vocals [from the music] get in the way, but if you lower it as a stereo mix, too much of the music goes away and you lose the feel, whereas if it's split like that, you can pop down the vocals and still keep the band up. And you still get the feeling that there's something going on in the club, without sacrificing the actors' words."


PHOTO DANNY FELD/FOX

Sometimes plot lines are developed and/or resolved in the bar, and "live" music is a major element, providing a soundtrack for the events. Characters other than Shepard will often perform there, in which case there might be a prerecord on the set. In one episode last year, the law firm put on a Christmas show in the bar, with characters singing into the onstage mic. The sound crew set up and recorded a P.A. on the set, with mics in front of the speakers, to capture room ambience. "[We got] two stereo pairs of that, one pair direct out from the console and one pair of room mics for ambience," says Torri, "plus the sound guy did his regular thing with the boom [mono track], so we got their song as well. So we basically had five tracks that we could control; I could add what I wanted to flesh it out."

Underscore is written by Danny Lux, who at the young age of 28 has earned an Emmy nomination for his compositions for *Crisis Center*. He's also contributed pieces to *LA Law, News Radio, NYPD Blue, Law & Order, Party of Five* and *Sliders*. "Danny writes very well around the dialog," says Kelsey. "He'll leave an opening in the music so you can play it loud and the opening is still there for the dialog. A lot of people writing for TV will just write it straight through and you have to make huge moves—the only thing you can do is take everything down—whereas Danny tends to write stuff that's in your face. And when somebody's walking and they have a line, he'll pause the music, or he'll lose a solo instrument or some other element to allow for clear dialog."


PHOTO DOUG HYUN/FOX

After the final cut is made, Lux, music editor Sharyn Tylk (president of MICDI Productions, which shares office space with West and collaborates on many productions) and producer Steve Robin will have a spotting session; they've come up with an innovative way to collaborate from across town. "When *Ally* decided to move their production to Manhattan Beach, Danny invested a lot of time figuring out a way for us to do spotting sessions because he lives out in Agoura Hills and I'm in Burbank, and Steve Robin is in Manhattan Beach," says Tylk. "We investigated teleconferencing, [but] we came up with a simple way to do it: Danny and I use computer video cards, and we'll get the final cut of the show, which has a timecode window burn in it, and we digitize that. We set up a phone line to send timecode, so Steve's machine in Manhattan Beach sends out a timecode signal, and he calls me with it, and I do a three-way call and call Danny with it." Notes are produced right away, and Lux begins writing. Tylk will also pass notes on to Fox's legal clearance department to give them a head start on clearing music rights.

FUN EFFECTS, NO CARTOONS

"The biggest battle is always the sound effects, [to make them] funny but not too goofy," says re-recording engineer Steve Coker. Torri agrees: "It's really a fine line, because [the producers] don't want them to be too cartoony, but they want them to be silly and funny at the same time. A lot of times they have pretty specific ideas, but they're happy for us to try stuff."


PHOTO DANNY TEPPER/FOX

Many of the effects they try out end up in the show, but sometimes preconceived ideas die hard. Torri cites as an example one scene featuring a character's tongue rolling to the floor: "We put a rope rappel plus four to six effects just on the tongue coming out, and we ended up putting an anvil hit at the bottom, just for fun, because the tongue bent like that and it looked kind of cartoony. [The producers] cracked up when they saw it, but they also said it was a little too cartoony." Eventually Scott West, the general manager, ended up in a back room with a mop, "and he was back there slamming a wet mop on the cement while we were recording it live on the stage, and that's what we ended up using, and it was brilliant. It was perfect, exactly what they were looking for," says Torri.

Improvisation and layering of effects are relatively common at West—a mixture of in-house Foley, library sounds and, like the mop, off-the-cuff elements they create. "We'll mix and match just to get something that sounds like what we see and is funny too—more like an enhanced-reality silly, rather than a cartoon sound," says Torri.

Most of the silly sounds are usually related to CGI elements, transitions or a character's internal thoughts, but the show is full of sounds that are repeated throughout the season. "There are signa-

ture effects that we always use, even the backgrounds—the sound in the bathroom, the sound in the courtroom—that are basically the same [all of the time]," says Kelsey. Many recurring dream sequences, quirky habits, and even some of the characters, include their own audio effects, from cowbells to record scratches to litigious Ling's particularly nasty growl.

"That growl is four different things, and we went through various permutations of that until we found something we really liked and made us laugh every time," says Torri. "That actually is the test—if every time it goes by everyone in the room laughs, then we're pretty sure we're onto something." Once a signature effect is signed off on, it is saved in the show library so it's the same each time. "We've asked if the actors ever felt upstaged by the effects we add," adds Coker. "It's actually the opposite—they all want their own sound now."

West has amassed a huge collection of effects to draw from, and they are always adding to their library, says Torri. "We have zillions of library sound effects, ranging from racks of things that have been recorded over the years to anything that's available on CD and DAT libraries. We'll go out and record unique things specific to the different shows—we've recorded things on the set of *Ally* to get the exact sound clean, without anything else going on." Supervising sound editor Dave Rawlinson often records sounds such as doors opening and closing, and people going up and down stairs or squirming around in seats. "Dave has had people go down and sit on the chairs in the courtroom and wiggle around to get the sound of movement that's absolutely the correct sound of movement for what we're seeing," says Torri. "Nothing you could ever do in Foley could sound like that."

WE ALWAYS TRY TO ESTABLISH A SENSE OF LOCATION WITHOUT BEING OBTRUSIVE. THE MUSIC IS LIKE THE SOUND EFFECTS—YOU CAN'T TAKE AWAY FROM THE WORDS. —*NELLO TORRI, RE-RECORDING MIXER*

PHOTO LARRY WATSON/FOX

PUTTING IT ALL TOGETHER

Even though music and effects play a more prominent role on *Ally* than on many TV shows, the post-production timeline is typical of most hourlong dramas. After about eight days of shooting, a preliminary cut is made by the picture editor, then the director and producers make their cuts—this editing process could take up to 15 days. The show is then turned over to West Productions on the day of the spotting session, when Dave Rawlinson and the producers will go through the show.

Over the next couple of days, the crew at West begins work on ADR, effects, reacts and other audio elements. Dialog and effects are edited on WaveFrames. "We'll shoot the walla here [and work with] the loop group people—there's usually about eight of them. They'll do the people in the background legal office, courtrooms," says Torri.

Effects come to the stage on 2-inch 24-track; dailies are loaded into a WaveFrame and auto-assembled according to an EDL provided by the picture editor. "Nowadays, everything's back to dailies," explains Torri, "because we automatically assemble it so it's all first-generation, and then the editors take it from there. They go through everything and split out angles, so we can manipulate ambient shifts and split out production effects—door closes, things like that, on different tracks—and then I have the option of using it or not. If I've got ADR, they'll split out the production line for me and backfill the rest of it so that I have the option of using the production line, or I can take that out and put the ADR in and have production backfill."

Effects are recorded in both mono and stereo. "We tell the [effects] guys that if it's point-source, we want it mono; if we're surrounded by it, give it to us in stereo and let us figure it out from there."

Composer Danny Lux sends the score to music editor Sharyn Tylk, who then transfers it from DA-88, makes sure it's in sync and prepares cue sheets. By the time Vonda Shepard's eight tracks of music are added, along with effects, inputs on the dub stage reach at least 88 per show. When the episodes are effects-heavy, that number often reaches 96.

Ally is mixed on Stage 6 at West, which is equipped with an Otari Elite automated console and a Genelec surround monitor system, plus outboard gear from Lexicon, Eventide and Avalon. Departing from the traditional two-person mix assignments of effects/Foley and dialog/music, Kelsey mixes effects and music, and Torri works on dialog and Foley, "which is a little unusual, but it's been working out well for us," says Torri. "Music is Peter's strong point; why change that? We're going with each others' strengths. And because the whole job of Foley is to fill in what isn't in the production—the feet, the movement—it makes sense for the dialog guy to do it, 'cause I know immediately what I have, where it is, and we don't have to do the communication."

During the two-day mix, the schedule differs from most of the other Fox shows that West Productions works on, such as *X-Files* and *Millennium*. On those shows, picture and audio are sent over Pacific Bell's AVBS fiber-optic lines directly to Fox, where producers review the show in a screening room. On *Ally*, the show is broken into four segments, and the first two are finished by the wrap on the first day. The next morning, those segments are laid back to ¾-inch, while the mixers begin working on acts 3 and 4. A driver will race the video over to the set in Manhattan Beach (in a best-case traffic scenario, a 45-minute drive through Los Angeles), where the producers will review the audio and call in notes. The crew must be finished with the rest of the show by mid-afternoon on the second day, in order for the producers to review the material. The schedule changes with each episode, says Torri, but there are specific playback times, "like on the second day they'll play back acts 1 and 2 at 11:30, acts 3 and 4 at 3:30," he says. The mix is recorded to 2-inch 24-track with Dolby SR.

At West Productions, the philosophy is to treat every show

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as if it were a feature, despite the one-week turnaround. Re-recording mixer Nello Torri says this approach differs from what some consider the old TV mentality, where mixes often contained effects loops that were repeated every few seconds, always in the same position in the room, always at the same level. The team mixes for surround, constantly striving for depth in the mix. On *Ally*, "some stuff is close, some stuff we put far away. When people move from one location to another, if they're walking into one of their offices, we'll gradually crossfade between the office BGs and bring up the traffic and stuff so it feels real." But everybody agrees that they spend the most time on dialog, right down the center. "It's always important to hear the words, that's first and foremost," says Torri. "Other than that, we always try to establish a sense of location without being obtrusive. The music is like the sound effects—you can't take away from the words. The show is about words. You're telling a story, you've got to get the jokes."

The mixers still aim to bring other audio elements to the forefront as much as possible. "We mix loud—as loud as we can get away with and still understand all the dialog," says Kelsey. "Peter's nickname is 'the hammer,'" adds Torri. "That was coined because sometimes the act-ons come up and Danny Lux writes what we call 'viking chords' that get you in the mood for the scene. We hit them pretty hard."

Torri says they take a very different approach to mixing the music, "because sometimes it's approached as score, sometimes it's approached as source. Sometimes it starts as source and ends up as scorce, sometimes it starts as score and ends up as source. Sometimes it stays halfway in-between all the time."

THE FINAL PRODUCT

Torri and Kelsey note that they mix the show for the highest-quality end system. Torri says he has an aversion to mixing for the lowest common denominator, "for a couple of reasons: One is there's almost no such thing as the lowest common denominator anymore, because almost everybody has at least an average stereo TV these days. You can't really mix for something that you don't know what it is. Some people when they mix TV also tend to mix all the backgrounds louder than usual, because if you listen at a reduced level, especially on a smaller speaker, they do tend to fall off a little bit. What you tend to do is mix the dialog louder because you want to get above all that stuff, and then they air it according to the level of the dialog, and all the other stuff goes lower. So we try to mix everything like it's really a feature—we tend to make it work for us here. And if it falls off on TV, it falls off. If somebody's listening on a good system, it'll be brilliant."

The team say that one of the best aspects of doing the post on *Ally McBeal* has been working with producers who truly value quality audio as an element in telling a story. "They've given us a pretty long leash," says Torri. "They've been very trusting and have had a lot of confidence in us, which has been really wonderful. We were a new team working together for *Ally* from show one, and from show one, it was obvious that it was working well." ■

Sarah Jones is a technical editor at Mix.

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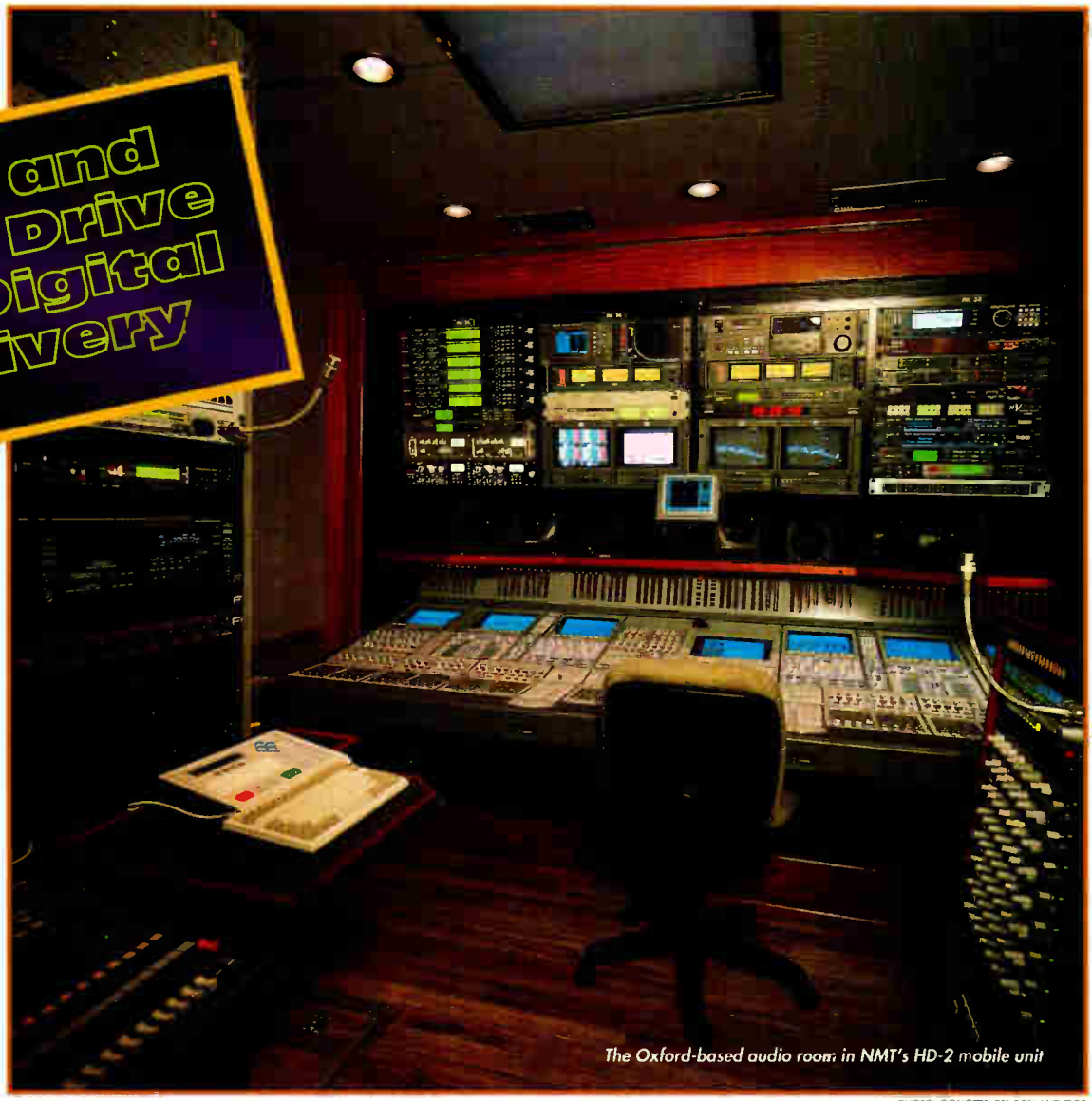
HIGH-DEFINITION ON THE ROAD

BY TOM KENNY

NMT and Sony Drive For Digital Delivery



The Oxford-based audio room in NMT's HD-2 mobile unit

PHOTO: CONCERT BENSON AND RICE

We have been spoiled by the pace of technological advancement in the '90s. If a new product, process or format has been announced but isn't ready for the holiday buying season, skeptics rashly predict failure before the first unit is shipped or the first release hits the shelves. Witness DVD a year ago vs. today. Look at HDTV right now.

Most of the negativity has been focused on the consumer front, where acronym confusion and a "my TV works just fine" mentality prevail. But this hasn't stopped the professional community from plowing ahead. From Roland House in Washington, D.C., to Post Logic in L.A., HDTV edit suites are being set up across the country. Corporate presentations are being shot in Hi-Def. Roadshows are touring the country. And now, Sony, along with National Mobile Television, has made a significant push into live sports and entertainment-based programming.

A couple of years ago, Sony began building a High-Definition mobile vehicle at its San Jose, Calif., facility. It was to be built for demos and training, but about that time NMT approached Sony about putting together two vehicles, one for each coast. Last year at NAB the deal became official. The first truck, HD-1, is frequently used at Madison Square Garden, broadcasting New York Rangers hockey games and all-purpose events from the midtown Manhattan arena, which includes an HD master control facility. On November 8, 1998, the truck rolled into Giants Stadium in East Rutherford, N.J., for the first HD broadcast of a professional football game, in conjunction with CBS.

HD-2, based on the West Coast, also made its debut on CBS, at a Saturday Raiders-Chiefs game from the Oakland Coliseum, on the final weekend of the NFL regular season last year. The signal went direct to Good Guys stores and the like but was not broadcast through a local affiliate. From there, HD-2 went south to Pasadena for the Rose Bowl Parade, where a Hi-Def video signal with 5.1 (AC-3) audio was broadcast over KTLA in Los Angeles. Then it was on to the Mike Tyson fight in Las Vegas to gather three-camera footage (no broadcast) for a reel. After that it went to New Orleans for the NAPTE convention, before returning to the Bay Area for a live broadcast of the Chinese New Year's parade over KTVU in San Francisco, followed by a private pre-Oscars affair for the Producer's Guild in Hollywood.

Mix caught up with the crew of HD-2 on the

PHOTO: CONCEPT, BENSON AND RICE

PHOTO: CONCEPT, BENSON AND RICE

PHOTO: ZACK HORSIAN

Inside the double-expander HD-2, from the top. The production team at the controls on Game Day. Middle: the backbone of the audio crew, from left, Ben Jenkins, NMT engineer in charge for audio; Nequin Scott, audio system designer for Sony; Dave Crivelli, consultant to Sony and NMT; and Gary Rosen, Sony regional audio manager and trainer on the Oxford. At right, freelance Bay Area sports mixer Rom Rosenblum, who guided the Oxford on its maiden voyage in HD-2.

HIGH-DEFINITION ON THE ROAD

maiden voyage at the Oakland Coliseum. Frank Coll, vice president of the Western division of NMT was there; Glenn Rosenthal of NMT served as engineer in charge on the video side, with Ben Jenkins, universally praised for his patience and understanding, as EIC for audio. Representing Sony was Gary Rosen, regional audio manager and trainer for the Oxford. Dave Crivelli, a consultant to NMT and veteran of countless broadcast remotes, was there to offer signal flow suggestions. The show was mixed LCRS on a Sony Oxford digital console by Rom Rosenblum, a veteran from the Bay Area freelance pool who was "finally" into telecasts of the Golden State Warriors' NBA season for Fox Sports as this story was being written.

HD-2 pulled into the Coliseum on a Wednesday afternoon. Rosen and Crivelli, who had been hired by NMT to consult with Sony and make the overall audio system more ergonomically and electronically functional (for both sports *and* entertainment, which have very different requirements), began by setting up foundational snapshots on the Oxford in anticipation of Rosenblum's arrival the following day. On game day, Crivelli, for years a mobile unit engineer, sat behind Rosenblum and handled routing and transmission issues.

"It's important that somebody who knows something about that room and that console be there for the freelancers the first time out," Crivelli says. "There's so much now for a mixer to do that to have to think about hardware allocation so that you don't max out the resources of the console is really something they shouldn't have to worry about. The console can handle a huge amount of inputs and outputs, but there are limitations on where those hardware inputs and outputs show up from a virtual standpoint—you can't just have any output go to any input, if you will. Since I had some input into the design and signal flow of the truck, Sony and NMT asked that I be there, just so I could step in and say, 'You know what? We might not want to use this digital I/O; we might want to go with an analog I/O here because we'll need the digital I/O later on.' You want to make sure that you don't misuse the resources you have, because once you use them up, you have no more aces in the back of your pocket."

On Thursday, Rosenblum arrived for his first look at the Oxford, and he got the equivalent of about three hours of training. (Three hours on a digital console!) Some groupings were reconfigured, Rosen helped him link some compressors, and they spent some time with Crivelli becoming familiar with the concepts and operation of the GUI interface, which takes over many of the functions of the familiar patchbay. Whether by accident or design, it seems NMT and Sony chose right in Rosenblum when they could have brought in a hired gun on the Oxford. Rosenblum is typical of sports audio mixers across the country ("We're all carnies and cowboys," he says), who may jump into a new truck at any time and be forced to work with what's available, under tremendous pressure. In that sense, the companies get in-the-trenches feedback on what works and what doesn't on a board that, by most accounts, was designed for music mixing.

"I like to think it was a good experience for Sony, too, because I am Joe Six-Pack," says Rosenblum, whose background is as a musician and studio engineer. "I'm just your regular guy who usually works on a [Yamaha] 3000 or 4000, occasionally a Harrison TV3. I've been on a Neve 61 now and again. I was also one of the first in the area to jump on a Euphonix, in the old Linn truck. And you know, I lived to tell the tale about being on the Oxford. I did a show with a day of training, but if you can't do that, you should not be in the business.

"It took me a quarter to get the show," he admits, "where it should have taken me one commercial. But that always happens, on any new console, that the first bit of a show is like the first few songs in a gig. Until you get to the first commercial break, things aren't really dialed in yet. Well, it took me till the first quarter."

He can be forgiven. When the tech manager, Greg Doyle, arrived, he announced a slight reordering of the videotape room needs, based on the producer's requests. Essentially, he wanted the 4-channel outputs of 11 VTR-type devices (which

CHINESE NEW YEAR'S ON KTVU

On February 27, HD-2 rolled back to the Bay Area for a live broadcast of the San Francisco Chinese New Year's Parade over KTVU, the first Hi-Def broadcast in the Bay Area. Park and Power was delayed three hours so that President Clinton could get out of Union Square on Friday, and the station made a last-minute (literally) swap with its decoder for quality control, but other than that, the show went off without a hitch.

There were eight cameras for the parade, plus one in the truck; 28 mics were employed for talent and crowds, with the odd PZM Velcro'd to the curb (fireworks!). There were three PL zones and complex IFB mixes. The Hi-Def show was broadcast LCRS in 1080i format on Channel 56 (it was taped in 5.1), with the analog signal going to Channels 2 and 26 (Chinese-language station). KTVU mixers Joe Johnson, Alan Palamos and Mark Metzler were in the audio room; Rich Sussman mixed the parabolics on the street, and George Craig provided audio maintenance help. Later the show was syndicated and sent free to ten other Hi-Def-capable stations in the country.

"This show was kind of unique," says Ed Cosci, manager of engineering operations at KTVU. "The truck output was 1.5-gig, high definition. We also downconverted the output of the truck to NTSC 525. We also had a 525 NTSC signal going to Channel 26, and then at a certain point in the telecast, we took the center crop of the 16x9 Hi-Def and squeezed it down for the Channel 2, NTSC. We letter-boxed it and had the announcers say, 'This is what you would see if you had a 16x9 screen, all the things off to the side.' We did four different feeds out of that truck. It was a nightmare trying to get this whole thing set up, but it came off quite well. We showed what it would be like at 4x3, and then we squeezed it down right before your eyes, then went back again."

If you get a chance at NAB, check out the NMT reel. The colors alone from the Chinese New Year's Parade will sell you on the format. ■

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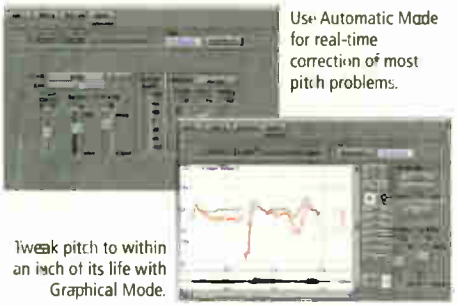

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HIGH-DEFINITION ON THE ROAD

included an SGI computer for graphic effects and a Tektronix Profile nonlinear VTR, in addition to five HD playback machines and two Digital Betacams) to land simultaneously in the AES router and in the console, so that the video room could work with quick bounces and transfers and the console could have everything for potential signal to air. Because Rosenblum was a GUI virgin, it wasn't the equivalent of a simple patch swap.

"The truck can handle 16 tape machines," Crivelli explains. "But the original design was that all signals from the tape machines would feed the routing switcher, and then there would be four buses, if you will, from the routing switcher to the console so you could select which machines were your playback machines, using the routing switcher basically as an AES distribution amp. Due to limited amounts of AES distribution amps, it was impossible for the AES pairs of every VTR to appear in both the routing switcher and the console. To get around it, we allowed the tape machines to normal into the AES routing switcher the way they always do. Then we took the analog outputs of each and every tape machine and brought those into the console's analog-to-digital inputs. Where we got saved was when the show didn't grow past ten or 11 mics. We had 30 or 40 extra A-to-D converters in the console that weren't being used, so we were able to get into the console analog. If it were an entertainment program, it wouldn't have worked because the entertainment boys are the ones who have upwards of 100 mics. Obviously it's not the best way, and nobody wants to go digital to analog—and back—too many times, but when you're on the road, you have to make it work."

"This is a very tape-intensive show, and they do a lot of real-time replays," Rosenblum adds. "On those machines, they have four channels of audio—stereo program left and right on 1-2, then on the other two we have stereo effects, the sounds of the field of play. When we do what's called a real-time replay, I have to turn up channels 3 and 4. Well, we had 11 machines on that show, 44 inputs, just for replays. That's not announce mics, not music sources, not all the effects mics, not talkback circuits and other things that have to go through the console. So on the Oxford you have the blessing of having layers. You put all those channels 3 and 4, the stereos, on a layer you're not going to touch—the third layer down—and you VCA them over into your middle groups. That's another blessing—you have 32 groups of VCAs, if I'm not mistaken. I don't have to go down two layers to get to those two channels. They're right in front of me, and since they're stereo, I'm going to raise them both at the same rate. I just teach the board this group, raise one VCA and I'm there. The console can go anywhere; I can put things anywhere I want."

Flexibility is obviously a hallmark of all-digital production tools. It's not just that it's a new board, it's really a new way of working. An audio mixer must now worry about the wider image, fear of fiber optics and multiformat monitoring, but new opportunities abound. Rosen has been touting the use of the console's in-channel dynamics, especially regarding compressors. Because Rosenblum had enough to worry about on opening day, much of the discovery and feedback on group links came on subsequent dates. He did, however, say that once he found the right settings, which were above what he would normally set, "the effects were incredible. That dynamics package is superb. There was nothing I could do to a signal to make it square, nothing I could do to ruin the sound."

"Traditionally, mixers take a series of microphones—let's say audience reaction mics—and they put them in a stereo pair and bring the stereo audio bus into a pair of compressors," Rosen explains. "Because we have an individual dynamics package on each channel module, we had the equivalent of using, in this case, 22 individual compressors. We linked the physical controls so that any knob you turn, whether it be ratio, gain makeup or threshold, was then adjusting 22 compressors from a single channel's compressor control panel. That meant that only the mic that started having a bit of overload or too high a level was compressed, and all the others stayed the same. That makes for a much cleaner signal, much higher intelligibility.

"Another element of concern to Ron Estes [who mixed the Rose Bowl Parade] was he wanted the ability to be able to adjust how hard the mic pre was hitting

HIGH-DEFINITION ON THE ROAD

the compressor," Rosen continues. "Because of the way the OXF-R3 signal path routing section works, I was able to give him another fader in the path that then became kind of his gain input to the compressor. That allowed him to have a separate control available on a single fader that would allow him to hit the compressor harder without affecting the mic preamp gain or the monitor level."

The Raiders game was broadcast in LCRS, and Rosenblum mixed for that environment, realizing it was a showcase event. Despite his personal feeling that surround audio for television is a work-in-progress, he made judicious use of the umpire's lavalier mic in the rear channel. "You get a lot of good effects with the umpire's mic," he says. "I've found that it widens the image and gives you a feeling of space. I spent a lot of time in the first half playing with the positioning, and the joystick was fun for that. I was mixing for the wide shot."

Rosenblum freely admits that those listening in mono (probably not too many, as the HDTV broadcast was run in parallel to a full-blown NTSC transmission) received a very different mix, though the truck has fingertip facility for switching between all transmission formats. Crivelli recommends that mixers mix in 5.1 mode. That mix is then down-matrixed through NVision 1055 cards, and stems are created. Those are then sent through a Dolby SEU encoder for Pro Logic encoding. The Lt-Rt-encoded signal is also sent to a Dolby decoder and then on to the monitoring section of the Oxford. The mixer then has the ability to listen in mono, stereo Pro Logic or 5.1 for compatibility issues.

As the year moves on and HD-1 and HD-2 begin amassing their respective resumes, technical issues will be ironed out, and new creative techniques will be employed. Perhaps the final obstacle will be minimizing the digital "fear factor" among a corps of engineers who are used to a certain way of working. Right now, if Rosenblum loses a pair on a mult, he grabs a spare. But if he loses fiber...? And if a digital console goes down during a live show?

"We felt a need to offer a safety net for the mixers," Crivelli says, "and we did it with a [Yamaha] 03D, 16 True Audio Precision 8 preamps and a Jensen split system. That console has two functions, depending on the show. The first is obviously an A2 playback situation, with the console running in 5.1 mode. Six multiformat stems feed the Oxford and allow the playback person to place sound effects anywhere in the image, where they are integrated via faders that the mixer likes.

"The second option is as a backup for the Oxford," he continues. "During setup, the mixer chooses the 16 most important mics and sends them into the Jensen split system. The direct out of the Jensen goes into the True Audio preamps—where you have constant phantom power if you desire—and then continues to the 03D. So if the console were to go down, the mixer would scream at the audio maintenance person, the audio maintenance person would reach over, hit a Recall Scene file on the 03D and turn the console into a backup audio device. He would then route the 03D onto the TX paths in place of the Oxford, so that the Oxford is no longer feeding the world; this 03D is. Now the main elements—the announce mics, host RF and videotape-to-commercial—are still accessible, and he can limp his way to a commercial. I must say, though, that I had two days with the console in San Jose and couldn't even make it hiccup."

The world of HDTV will shake out over the coming years, but you have to give Sony and NMT a lot of credit for a heavy investment in new technologies and a concerted effort to learn from real-world mixers. It's an exciting time to be working in television.

"With the introduction of the Oxford into a remote broadcasting unit, TV audio has hit a new level," says Jenkins, audio EIC for the truck. "No longer is audio just an afterthought to go along with the video, but it's an integral part of the HD viewing experience."

"I felt like a little kid," concludes Rosenblum, who in his spare time plays goalie in pickup hockey games and pilots small planes. "I was crawling out of my skin with excitement, and I'm pretty jaded. I've been around the biggest people, I've done Olympics and all manner of shows. I've played in front of 10,000 people. I don't usually get fun-shaky-nervous like I did on that console. This was a hoot! Scotty is behind me, and I'm about to be transported. All things set aside, I would say that that day is a major highlight of my career, and I have a few to talk about." ■

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CIRCLE #063 ON PRODUCT INFO CARD

Making The Most Of the Market

Success Stories From Reno And Phoenix

by Tom Kenny

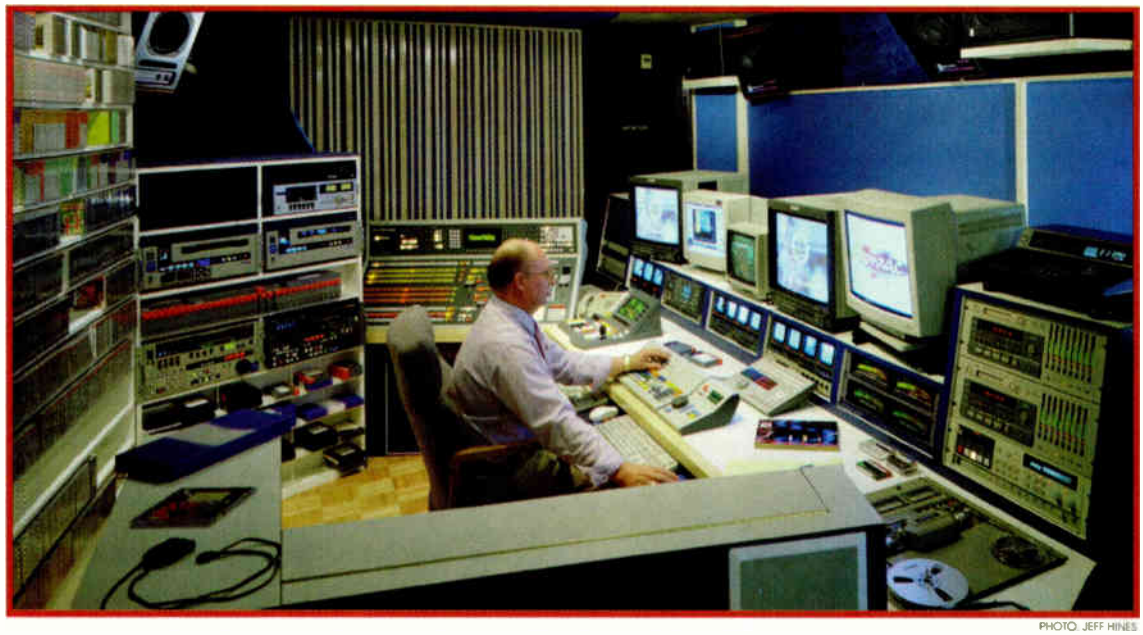
If you read the industry trade magazines regularly, you can be forgiven for assuming that all audio post work comes out of New York and L.A. Granted, the overwhelming majority of big shows do come out of these two major markets, and we in the press devote a lot of attention to the high-profile productions. But down South, in the Heartland, in the Great Northwest and in the Southwest, stellar work is performed day in and day out. The facilities may be smaller, and the work may sometimes consist of mattress spots and car dealer ads. But the talent and commitment to quality are every bit as evident.

In this issue, we profile two success stories, both of them full-blown video and aduio production houses, out of secondary markets. One facility has been built piece by piece in Reno over a 30-year period, with the fruits of a small group's labor paying off. The other facility was given new life by a new owner who was committed to raising the quality level with a facilitywide makeover. There are lessons in each for anybody working in sound for picture.

CAMRAC

Big Sound in the Biggest Little City in the World

It's refreshing to speak with a character like Jim Mitchell. He's colorful, loyal, a straight shooter, self-



Jim Mitchell edits video and audio from the sweet spot in his Carl Yanchar-designed 5.1 room.

PHOTO: JEFF HINES

deprecating nearly to a fault, and after 32 years in the film/video/audio production business, he's maintained the boyish enthusiasm of a 13-year-old who just picked up his first tape recorder. He calls himself "one of the little guys," in reference to the fact that he works in the small market of Reno, Nevada. But his reach is global, and he's sitting on a gold mine, though you'd never hear it from him.

As the owner of CAMRAC Studios (the name is both a reference to "racking a camera lens" and an homage to George Eastman, who gave Kodak its name because it was a two-syllable word that was easy to pronounce in any language), Mitchell is a resident generalist in an age of specialists. He produces, directs, shoots, edits, designs soundtracks and creatively markets his productions around the world. He co-owns the business with his wife, Shirley, and has a small staff that does everything from design print ads to operate the cyc stage. As he puts it, "We're bigger than a breadbox and about a size 3 in a gray flannel suit. There's 12 of us hopping around on stilts doing the job of 20 angry men."

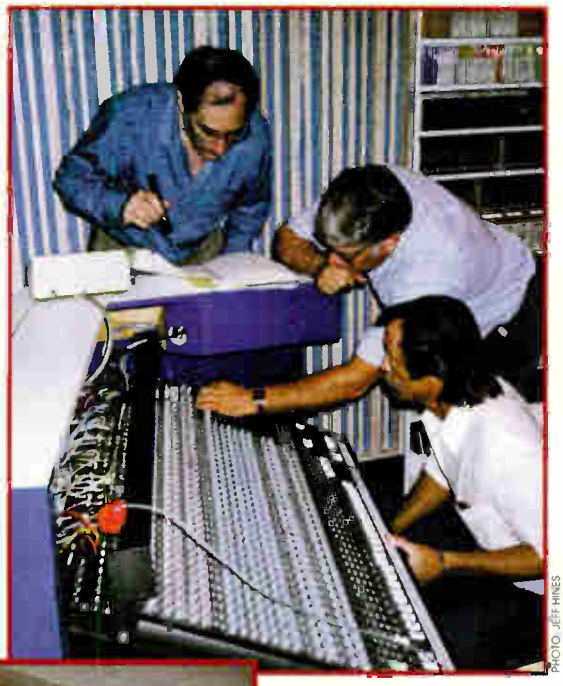


PHOTO: JEFF HINES

PHOTO: JEFF HINES

At left, an F-4 fighter plane flies in over the DA-88s, Dorrough meters and Mackie board (since replaced by a Panasonic DA-7). Above, designer Carl Yanchar, left, engineer Jon Holloman and recordist Jody Peterson during installation.

It would be hard to pigeonhole the type of work that comes out of CAMRAC. They shoot and edit commercials; they've won a New York Film Festival award for a Las Vegas Convention & Visitors Authority production; they have corporate clients in medicine, manufacturing, steel, construction, etc.; and they have a home video series under the trademark Skyfire: America's Video Storyteller, which now includes upward of 60 titles—everything from *The Great Reno Flood* to a profile of the F-4 Phantom fighter plane to *Travels With Shadow, the Baby Snow Wolf.* Mitchell has a complete library on the history of steam locomotives in North America (many with discrete 4-channel sound), as well as footage and sound of every U.S. fighter plane since World War II. Did I mention that he's also a budding geologist and amateur historian? And that he regularly works till midnight?

The history of CAMRAC serves as a model for any up-and-coming small-market enterprise in that smart purchasing decisions, savvy trend-spotting and growth within limits rule the day. Mitchell started the company in 1967, working on film. When video came along in 1979, he purchased a ¾-inch system, then in '84, he updated to a seven-machine 1-inch bay. ("We've always been heavy in transports," he says, "because we do a lot of multicamera shoots.") Today he works primarily in Digital Betacam, and in defiance of the norm, he edits video and audio out of the same room, usually at the same time.

The suite was designed in 1994 by Carl Yanchar of Wavespace. Yanchar came recommended by longtime Mitchell friends Jody Peterson, a sound recordist, and Jon Holloman, now director of sound recording at BYU. The space Mitchell had was, in polite terms, problematic—32 feet wide by 15 feet deep, with a plethora of panels and housings related to the video editing equipment.

"Carl came in and said, 'Acoustically, you're killing me! I have no spread here!'" Mitchell recalls. "But he came in, did all his measurements and went back and built all these traps. And I tell ya, you just can't believe the sound in here."

Yanchar designed a series of eight individually shaped baffles and traps to reduce standing waves. A bass trap was fitted into the back-wall ceiling, leading to an upper chamber that measures eight feet high by 80 feet long. The four Digital Betacam and Beta SP machines were housed in air-conditioned, pressurized cabinets with rear vents to draw off noise and heat. The same airtight/exhaust design was used on all housings for source monitors, color correctors, and DATs and DA-88s. Because of the odd room shape, Yanchar specified a Bag End surround monitoring system because he knew Mitchell had loud source material and needed a "big-room sound" in a near-field environment. "I've never heard anything like them in my life," Mitchell says. "We feed some outrageous high-SPL material through these speakers, and I have never, ever heard a rattle in this room. They're faithful, and they don't mask."

Success Stories From Reno And Phoenix

Yanchar also sold Mitchell on the concept of separate Bag End subwoofers for each of the five speakers, debunking the myth that low frequencies are nondirectional. "We had this train clip that comes thundering in from the left and moves across the room," Mitchell remembers. The room was just up, and I wanted to play it for a friend. I went to playback and said, 'What happened to the sound?' All the power coming from the left had disappeared. Well, it turns out the carpenters doing the carpet behind the speakers had accidentally disconnected the wire from the left subwoofer. Anyone who wants to tell me that low frequencies are nondirectional, I invite them to come up here and I'll show them how nondirectional they are."

The relationship with Yanchar extended way beyond that of a traditional studio owner/designer. Yanchar has continued to consult for the past five years, and Mitchell speaks of him as he would a friend. Yanchar developed a proprietary box to allow 24-channel monitoring, driven by the video preview switcher. And, taking off on Mitchell's love for 4-channel PCM, Yanchar built him a small collection of 4-channel discrete microphones for field recording.

"I really have to attribute the development of the mic to a great guy who recently passed away, Brad Miller," Mitchell says. "He made all the great late-train recordings in this country. He produced the Mystic Moods Orchestra Series and started Mobile Fidelity. He was a genius. I thought I knew a lot about sound, but this man knew more than I'll ever know in my life. For years, Brad had sung the praises of discrete 4-channel surround. I used to go out into the desert with my two Neumann KU100s side by side with Brad and his mic, and I would get hosed away. His stuff was clean and clear. I bought one of his mics and figured I needed to do this with video. But the mic was old technology at that point, so I started again from scratch and went to Carl. He built a mic with even higher SPL ability. It was quiet, shockmounted and came DC-powered, so you don't have to lug along a 12-volt car battery. It's actually powered right off the camera. It's brilliant. I had a bunch of them built about a year-and-a-half ago, and they're hot. Some of the nicest recordings I have were shot in the afternoon, out in the desert right before it starts to rain. You get a little tick, tick tick, then a semi truck goes by about three-quarters of a mile away and you get that strobing-type of sound. Then immediately behind that you get these late-afternoon crickets in the desert. It's a joy to hear."

Mitchell, it seems, likes to spend as much time outdoors as he does in the edit suite. CAMRAC specializes in aerial photography, and field production has taken him all over the world. One of the growing aspects of his business, the production and distribution of family entertainment programs under the name Skyfire, came about purely by accident. It's a lesson for finding that proverbial silver lining.

"In 1984, a company came up from Los Angeles and hired us to shoot the National Championship Reno Air Races," Mitchell recalls. "In those days, I was riding around in my '67 Volkswagen with three Mole-Richardson lights, a pair of baby sticks and a Bolex, and that's about all I had to my name. But they hired us, and someone said to me, 'Do you know anything about these guys? Why don't you see if you can get them to sign something where you don't turn the stuff over until they pay.' Well, they did not pay, and we had all this footage. I was facing about a $42,000 negative cash flow from that project. I called all my staff together and said, 'What are we going to do? We're in trouble and we're in this boat together.' That's the way I manage—we're all together. One guy says, 'There's this new thing called home video and people are actually buying these VHS tapes and watching them at home. I said, 'You gotta be kidding me. Who would do that? We got TV.' And that's how Skyfire started. We threw this hour long thing together, and in a weekend we sold 4,800 copies for $49.95, thank you very much. Man, I was rich. I said, you know, if people will buy that problem, let's show them what we can really do."

So, ideas are submitted and shows are produced, then marketed creatively. The graphics department creates ads that run in places like *USA Today* and *Parade* magazine. One title has sold more than 48,000 copies; another on the Reno flood of '97 sold 23,000 copies locally. CAMRAC has done a production on traveling up the New River Gorge in West Virginia, and another on the formation of Lake Tahoe, with integrated graphics depicting geologic formations over time. It's not an uncommon sight for him to have nine cameras set up on desert mountaintops, capturing the sonic boom from passing fighter planes. Right now Mitchell is working on a rockumentary about the late-'50s/early-'60s group The Diamonds. A Sonic Solutions system was just installed, and the company just authored its first DVD, called *Steam Clouds* and featuring the famous 4449 Daylight steam locomotive.

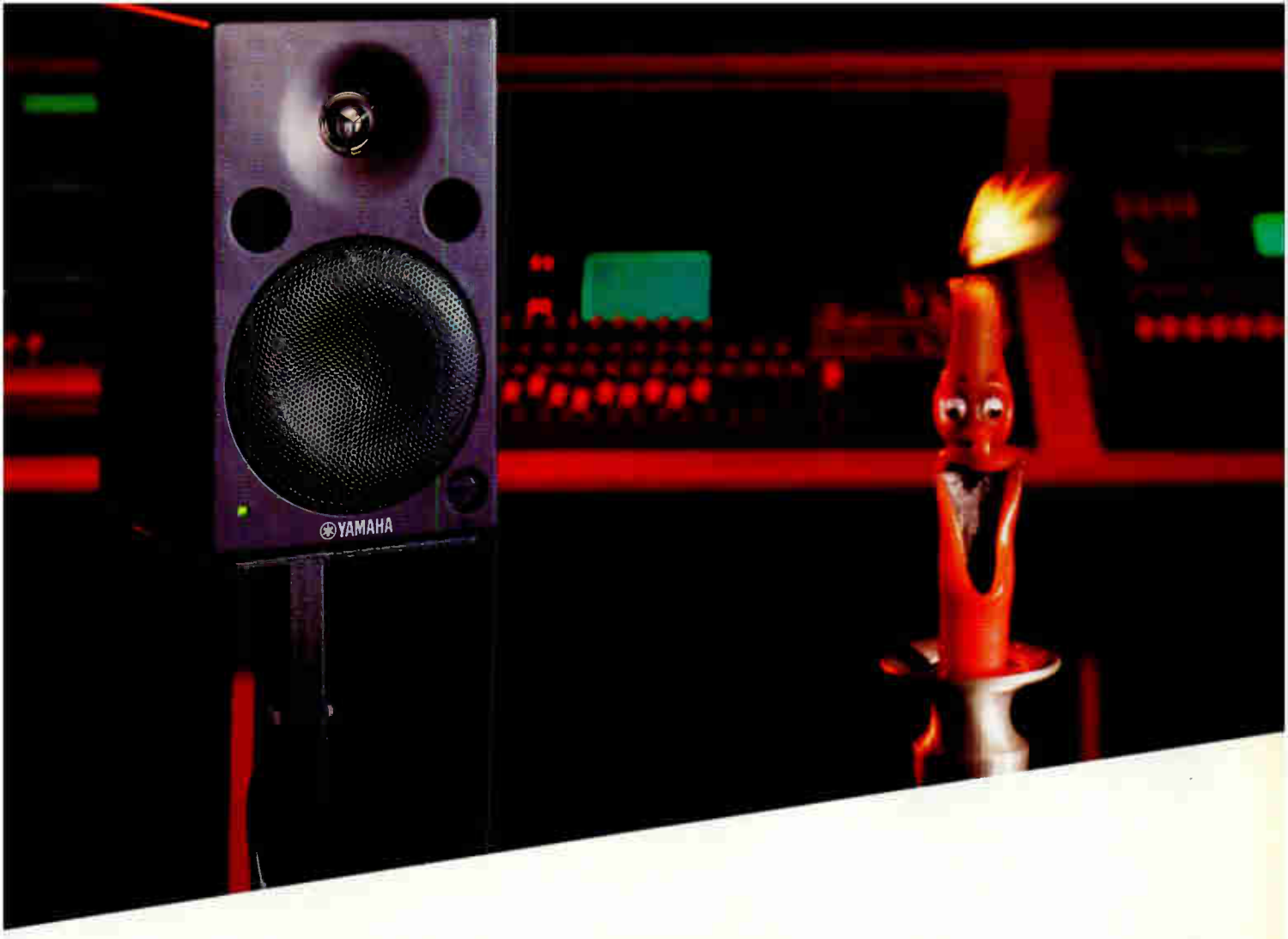
ALL THE POWER COMING FROM THE LEFT HAD DISAPPEARED. ANYONE WHO WANTS TO TELL ME THAT LOW FREQUENCIES ARE NONDIRECTIONAL, I INVITE THEM TO COME UP HERE AND I'LL SHOW THEM HOW NONDIRECTIONAL THEY ARE. —*JIM MITCHELL*

For the past 32 years, Mitchell hasn't thrown anything away. He has an incredible library, archived with care. Without giving away his future plans, look for much of it to be available on the Internet before too long. As is his style, he has a clever plan to reach consumers and Web page designers. But consumers aside, he's sitting on a gold mine with his multichannel sound library alone. You can hear the enthusiasm as he looks forward to the next 32 years. He'll be in his 80s then, and it's a safe bet he'll be hunkered down in an edit bay or waiting for the Space Shuttle to shoot across the mountaintop.

GREAT SCOTT PRODUCTIONS

Rebirth in Phoenix

In 1995, engineer Sam Esparza was working the night shift at PMI, the Phoenix satellite of Pittsburgh-based Production Masters Inc. The Phoenix branch had been semi-successful in its six years of operation, but technology had not really been updated (still 1-inch video and an 8-channel Pro Tools/Sony



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Success Stories From Reno And Phoenix

MXP-3000 combination) and the competition was beginning to pass them by. Esparza remembers getting a tip that the place was going to close at the end of the month. He warned a colleague, who in turn thought that maybe her stepmother, Heidi Scott, would be interested in picking up the pieces. Scott had no experience in production but had recently sold a couple of companies, according to Esparza. She laughed at the initial suggestion.

But, a few days later she set up appointments with the owners, interviewed the staff and asked for honest feedback about why the company was failing, met with clients to determine their needs, and within a couple of weeks bought the place, renaming it Great Scott Productions. Business picked up immediately.

"Heidi looked at the place and gave it a Great Scott makeover, with Great Scott attitude," Esparza says. "She painted it in purples, reds, greens, blues—very vibrant. She painted the edit bays black and put in leather couches. She hired a concierge to take care of clients, and I notice that people now come in at lunchtime or at 4 for the cookies. A tremendous improvement.

"Then six months after that, she bought a small one-edit-bay facility in town with Beta SP, D5, D2 and Abekas equipment, a really nice online suite," he continues. "She moved it here, with the editor. Talent and equipment. Right away we were a contender with the other edit facilities in town. Everybody had been putting in component digital and we were still stuck with these analog 1-inch machines and old Grass Valley switchers. Just stagnating. People wanted layers."

The character generator was updated, an Avid system was purchased, new lights were put on the shooting stage, the company finally bought its own camera, and a graphics company moved into the building. As for audio, Scott made Esparza director of engineering and told him to do whatever he needed to do. After beefing up the sound effects library, his first action was to order an ISDN line, with Telos Zephyr codec, which he had been trying to do with PMI.

Like many engineers who work in close proximity to, but not in, Los Angeles, Esparza is often frustrated that agencies leave town to record talent and/or finish spots at some of the higher-profile houses in Southern California. The ISDN line, he figured, would encourage them to stay at home. And he further proposed that the facility hook up with EDNet.

"I explained to the owners why I thought it would be valuable to be part of the network, that they would probably refer us," Esparza says. "They approved it, and our first week with ISDN I was doing a session with Pomann Sound out of New York. He said they had called EDNet and told them they needed a facility in Phoenix because the talent happened to be in Wickenburg, about 45 miles away. I put the guy behind the mic and did it like any other voice recording. Then my first recording here was with Cramer/Krasselt [local ad agency], hooking up

PHOTO: MICHAEL NORTON PHOTOGRAPHY

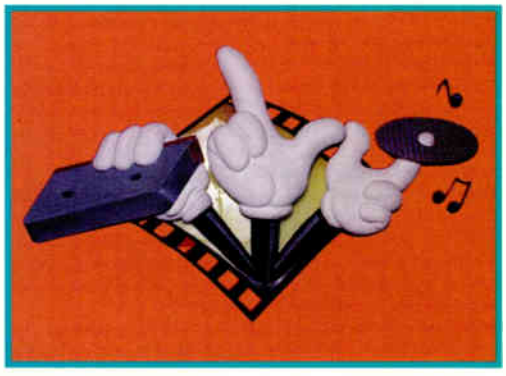

PHOTO: MICHAEL NORTON PHOTOGRAPHY

At left, the main audio room at Great Scott Productions, with 02R console, Pro Tools and Genelec monitoring. Below, Great Scott's logo. Bottom, director of engineering Sam Esparza with Joanna Kraemer in her room.

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—Michael Cooper, Mix Magazine

"...the AD-8000 is necessary for virtually anyone serious about digital recording... [great converters] simply are a must. And so is the Apogee AD-8000." **—David Frangioni, EQ Magazine**

Project studios running Pro Tools 24... should strongly consider buying an AD-8000... Highly recommended!
—Mike Collins, Sound On Sound

"The AD-8000 is a very flexible box...a natural companion to MDMs and DAWs. This one is going to turn some heads."
—Frank Wells, Audio Media

"...a complete digital toolkit which could quickly find itself the hub of a digital systems for high-quality recording, flexible dubbing and multiformat transfers" **—Dave Foister, Studio Sound**

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CIRCLE #065 ON PRODUCT INFO CARD

SINCE ITS INTRODUCTION, the AD-8000 has rapidly become an industry standard for high-quality A/D and D/A conversion. Owners and reviewers alike agree: the Apogee AD-8000 delivers a uniquely flexible, versatile conversion solution for any facility. And it's an Apogee – it sounds great! Quite simply, it's the heart of digital audio.

"I stopped a mix [on Prince of Egypt] to use the AD-8000 because it sounds so much better," **—Alan Meyerson, engineer with Hans Zimmer.**

"If you're doing any recording whatsoever on to digital, the AD-8000 is a prerequisite," **—Simon Franglen, music producer on the movie Titanic.**

"Nothing else I've used sounds so much like analog... I've never heard a digital system like it." **—Don Was, producer, Bonnie Raitt, Rolling Stones etc.**

"It's the sound of the AD-8000 we like most of all: we're using it on all our projects!" **—Marty Frasu & David Newman, Oscar-nominated for the music to Anastasia.**

"The AD-8000 is a massive improvement: it makes Pro Tools sound like a 2-inch tape machine!" **—Juan Patiño, producer with Lisa Loeb.**

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with Brian Boyd Studios in West L.A. EDNet kept referring us, and it seems that's what opened the doors to work outside Arizona."

The next order of business was to revamp the main audio suite. Esparza called in his "best friend in the audio business," John Gibson of EAR, a local pro audio dealer, to plot the layout and equipment package. While not given a blank check, they were thinking of an ideal situation. It was decided that Pro Tools would be the focus, updated to a 16-channel system, with a Yamaha 02R console, Rorke Data VMOD digital video, Genelec 5.1 monitoring system and Dolby encoding/decoding.

Success Stories From Reno And Phoenix

Esparza and Gibson did the layout, designed the furniture, patchbay and wiring, and installed the entire room over a two-week period in the summer of 1997. As soon as they finished, they set their sights on a second, smaller room, for night engineer Joanna Kraemer. (Kraemer now works a day shift, with transfers, laybacks and unsupervised work at night handled by a third engineer, Joe Corrao.) That suite, with another 16-channel Pro Tools system, Yamaha 03D console and Genelec monitoring, opened in March 1998. Kraemer handled the wiring; Esparza considers it important that the engineer knows where everything goes.

Although Esparza's first love is sound design/mixing for commercials, the facility has recently made forays into longer-format programs. A recent trailer project for the Harkins theater chain exposed them to the film mixing process and brought them to Todd-AO Studios in Los Angeles for the final. Also, Great Scott Productions has co-developed a pilot for a kids' game show, using virtual sets (created by Mirage Digital, now owned by Great Scott) and a robotic host, that they took to NAPTE in late January. Thirteen episodes have been shot; two were mixed as we went to press.

"It's a word game that takes place inside the computer," Esparza explains, "with two teams of three kids each, and Alex, the computer, is the host. We're still coming up with Alex's voice. We've done everything from put a hard flange on it, to a robotic sound, to today's version, which is a low-bit-rate sampled voice, adding in a bit of noise using DINR to create some artifacts. There was a bit of a hum, and the hum eliminator added a kind of comb filtering effect. So today it's kind of interesting. The voice of Alex is recorded on the set, from a booth, dry. Then I go in and effect him. We record all the kids, and it's laid down to Digital Betacam. It goes into the Avid digitally, they do the edit, and I'll either take the dialog right off the Avid or off the Digital Beta, drop it into Pro Tools and start cutting away. As far as sound design, it's been a lot of computer bleeps and bloops, some big sweeping moves of some of the sets, a lot of big whooshes and big rumbles. Right now it's just in stereo. We're talking about doing it in surround, but we'd need to get some more post time in the budget."

Esparza is a busy man these days. He's started an original music company, Big U Music, with a film composer friend, and he's getting the word out to the agencies that finishing in Phoenix is a real option. The next audio step is a second ISDN line, and if the game show gets picked up, can a third audio suite be far behind? ■

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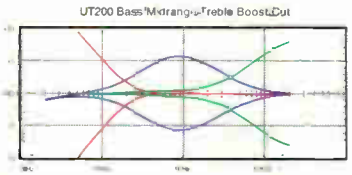

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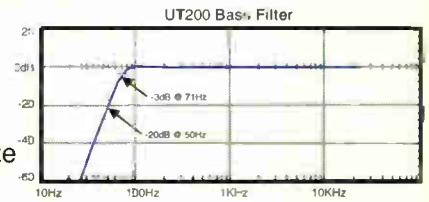

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BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

"WHAT'S A BINKY?"

LARRY BLAKE'S FILM SOUND GLOSSARY, PART TWO, E TO Q

by Larry Blake

Here is part two of my film sound glossary. Part one appeared in the March issue, and part three will come next month. Note that when you see a word in SMALL CAPS, this means that it will be defined elsewhere in the glossary, maybe even a different issue.

EARWIG Small earpiece used to give actors an audio reference (frequently a guide music track) so that their live audio, such as singing or music playing, can be recorded live. *See also* THUMPER.

COMPOSITE IMAGE: ALEX BUTKUS

EDGECODE Inked numbers applied outside the sprocket holes on film prints and MAG FILM, used for synchronization reference. *See* ACMADE.

85 The sound pressure level when pink noise is sent through one speaker (left, center or right) at 0 VU bus level, which is the equivalent of –20 dBfs in digital recording. (Measurement is at the console, with an SPL meter set to C weighting and slow response.)

88 The sound pressure level for Dolby Stereo SR films. If a film has been monitored at 85 during the final mix, the STEMS will be lowered 3 dB when making an SR Lt-Rt printmaster to accommodate for the increased monitor level.

EK NEG Laboratory colloquialism for "original camera negative"; used in film vernacular to describe a release print made from the original negative. "EK" stands for "Eastman Kodak," although the term is used without regard to a film having been shot on Eastman stock. Also called "OCN."

11 The highest number that can be found silk-screened on electric guitars and guitar amplifiers.

ENCODING/DECODING In audio, encoding refers to the altering of a signal prior to its being recorded or transmitted, with decoding during playback/reception resulting in the best possible reproduction of the original signal considering the limitations of the recording or transmission medium. In motion-picture sound this can have one of two meanings: Matrix encoding/decoding, used in 35mm DOLBY STEREO, encodes four channels into two in the studio, with the resulting optical print decoded from two tracks into four channels at the theater. For an explanation of encoding/decoding as they pertain to noise reduction, *see* NOISE REDUCTION.

EQUALIZATION, ROOM The process in which a speaker system is aligned by playing PINK NOISE into a room and adjusting an equalizer to obtain the selected response when viewed by an RTA. Common room EQ uses ⅓-octave controls, with 31 knobs spaced across the audible frequency range, although parametric equalizers are also used. Most room equalizers also have an overall "bass" and "treble" adjustment.

50% LEVEL The standard reference level for optical sound recordings that corresponds to the width of the track at 50% modulation, or 6 dB below clipping. In practice, there is about 2 dB of additional headroom available, assuming a perfectly aligned projector sound head.

FILL The sound between words in a PRODUCTION TRACK that is used both to replace undesirable noises on the track and to create "handles" extending the track at the beginning and end. Handles enable the re-recording mixer to crossfade smoothly between shots with differing background tones. *See also* ROOM TONE.

FILL LEADER The film that is inserted into UNITS of MAG FILM in order to keep synchronization during silent sections. Fill leader is usually made up of recycled RELEASE PRINTS.

FILM FOOTAGE There are 16 frames per foot of a standard 35mm film image (running vertically through the camera and projector), each lasting four sprocket holes

—*CONTINUED ON PAGE 36*

FACILITY SPOTLIGHT

"IT'S ALL WE DO"

SOUND FOR ANIMATION AT ADVANTAGE AUDIO

by Maureen Droney

Upon entering the premises of Advantage Audio in Burbank, the first impression is of decks cleared for action. There's nothing extraneous, nothing out of place, nothing cluttering up the cool-but-not-cold interior expanses of gray carpet, tile and brick.

A conversation with owners Bill Koepnick and Jim Hodson proves that the impression is correct—Advantage Audio is a *very* busy place. But Koepnick and Hodson, an articulate and business-like but very friendly duo, took time out to relax and chat for a few moments in their revamped Studio B, newly fitted with a Studer D950S digital console. Studio B, complete with a large, cozy fireplace set into a sandblasted brick wall, and a high, peaked ceiling, is an elegant combination of warmth, comfort and high-tech efficiency. It is also, as Advantage's brochure tells us, "a vast repository of cartoonal knowledge." These are the people who turn out the sound for *Hercules, Robocop, Godzilla, Men in Black, Jumanji, Spiderman, Earthworm Jim*—you name it. Or, better yet, have your kids name it.

"I think it's safe to say we do more audio for animation than any other single facility," comments Hodson. "*Spawn*, which is a late-night, adult show, is probably the highest-profile show we're currently working on; we also do a lot of work for Disney, and we just finished *Invasion America*, a Spielberg show for Dreamworks that was a lot of fun. Our client base is MGM, Universal, Disney, HBO, Columbia TriStar—over the years we've worked with just about everybody."

Emmy Award-winning engineers Jim Hodson, left, and Bill Koepnick at the newly installed Studer D950S console

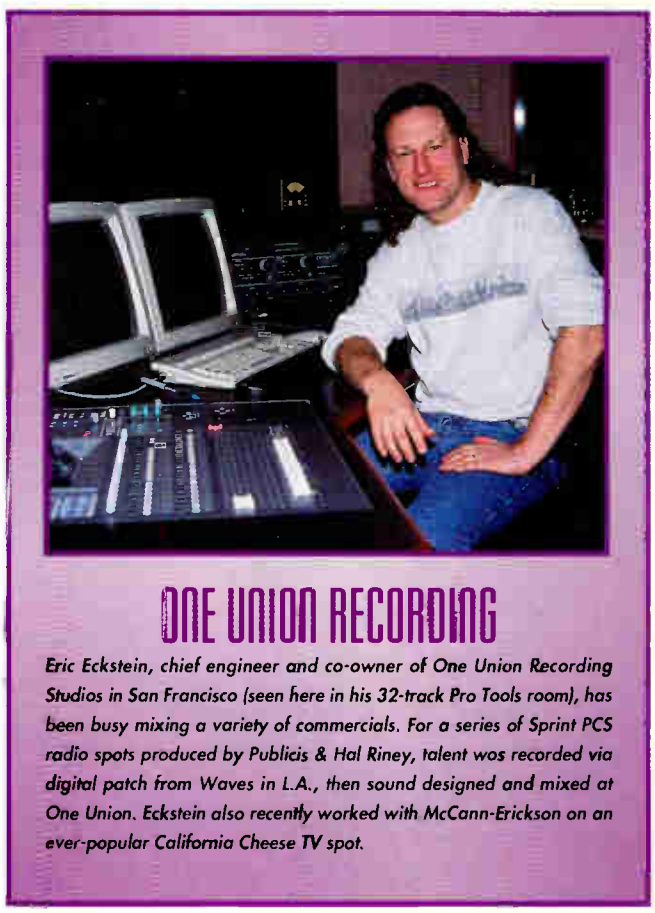
Besides the Studer console, other equipment highlights at Advantage are the Otari Radar 24-track hard disk recorder, Doremi Labs V1 digital video (nothing rewinds at this facility!), and something like 20 Pro Tools systems, including four in Studio B alone, used for most of the audio sources: sound effects, dialog and music. Foley is currently being recorded to the Radar but is

—CONTINUED ON PAGE 42

POST NOTES

The designers of the **Soundmaster Integrated Operations Nucleus** (ION), which serves as a "universal translator" for various technology standards in the film and TV post-production industries, received a Scientific and Engineering Academy Award in a ceremony on February 27. The ION system has been in use at studios including Sony Pictures, 20th Century Fox, Disney, Todd-AO and Universal. The design team, led by Sound- master president and CEO Robert Predovich, includes John Scott, Ken Husain and Cameron Shearer...Installations: **Superdupe Recording** in NYC has purchased a Fairlight MediaLink networking system to connect its six MFX3^{plus} DAWs and FAME console. Also **Creative Domain**, a theatrical trailer editing/marketing company, has built an audio division around a FAME-MFX3^{plus} package... **Tell-A-Vision Post**, Hollywood, has opened a new audio bay based around a Panasonic DA7 digital console, Studer Dyaxis DAW and Genelec surround monitoring system and Dolby DP569/DP562 encoder/decoder...**Soundtracs** is on a roll with its DPC II digital production console, recently putting in a board at **SD Post** in Utopia Village, England. SD Post does numerous projects for the BBC, as well as Sky Television's popular soap *Dream Team*...Also in the UK, **Grand Central** in Soho has added 16 BSS FDS-355 Omnidrive crossovers as part of its conversion to 5.1 mixing...Following MTV Europe's spec, **Sound Republic** of London has installed a Calrec Q2 dual inline analog console for its TV studio...Twickenham Film Studios, London, has ordered its second Bag End ELF sub-

—CONTINUED ON PAGE 44



ONE UNION RECORDING

Eric Eckstein, chief engineer and co-owner of One Union Recording Studios in San Francisco (seen here in his 32-track Pro Tools room), has been busy mixing a variety of commercials. For a series of Sprint PCS radio spots produced by Publicis & Hal Riney, talent wos recorded via digital patch from Waves in L.A., then sound designed and mixed at One Union. Eckstein also recently worked with McCann-Erickson on an ever-popular California Cheese TV spot.

—FROM PAGE 34, FILM SOUND GLOSSARY

(perforations or "perfs"). At the standard rate of 24 frames per second, film runs at 90 feet per minute, or 18 inches per second.

FINAL MIX The act of mixing the sound for a motion picture (or television show) into separate dialog, music and sound effects STEMS, which, when combined and played at equal level through the monitor, represent the finished soundtrack. In a stereo film (or surround-encoded TV), it is most common to record the dialog, music and sound effects stems on three pieces of 4- or 6-track magnetic film, utilizing Dolby SR NOISE REDUCTION. (The choice of which noise reduction system is used at this stage—SR, A-TYPE, or even DBX—has no relation to what PRINT MASTERS might be made.) Final mixes are also frequently recorded on analog or digital MULTITRACK tape or on DIGITAL DUBBERS.

These stems, also known as "dub masters," are then used to create the PRINT MASTERS, the M&E, the mono mix and possibly even an AIRLINE VERSION.

The exact format and track layout of the stems is up to the post-production sound crew; if a multitrack or digital dubber is used, then additional tracks are opened up at no additional cost and little trouble. With these formats it is easier to record an additional set of stems, keeping, for example, the FOLEY, the background sound effects, a laugh or crowd track, or special creature voices separate, to allow for greater flexibility in the final mix, during print mastering and the M&E mix.

If the project is a non-surround-encoded stereo television show, then the stems might be in standard 2-track stereo format, although this is not recommended due to the use of 5.1-channel stereo in Digital Television. And, of course, mono films only require from three to six tracks, usually on the same piece of film or tape.

5.1 Stereo format utilizing three primary channels (left, center, right), two surround channels (left surround, right surround) and a subwoofer channel, which is the ".1" channel because it uses approximately one-tenth of the bandwidth of a full-frequency channel. Pronounced "five point one."

FLAT With respect to film projection, refers to non-ANAMORPHIC lenses. In the U.S. it's considered synonymous with 1.85:1 widescreen.

FM SYNC The 13.5kHz frequency-modulated sync pulse recorded on NAGRA IV-S recorders.

FOLEY Sound effects recorded in synchronization to edited picture in post-production. Named after Jack Foley, who was the head of the sound effects department at Universal Studios for many years. Contrary to popular myth, he did not invent the process. Foley is often expressed as "Foleys" in New York. Likewise, what is called the "cloth" track on the West Coast is referred to as "rustle" back East.

FOREIGN VERSION *See* M&E.

4+2 Four Plus Two. Film sound slang for a 6-track element (usually MAG FILM) that contains a 4-track M&E, one track of material which may or may not be needed in a foreign-language mix, and one track of the original dialog as a reference.

4:2:4 Four Two Four. Film sound slang for the act of monitoring a mix through matrix encoding (4:2) and decoding (2:4). This means that the effect of the matrix encoding will be heard (which it would not be when monitoring DISCRETE), and adjustments can be made accordingly.

FOX HOLES Small perforations on 35mm release prints that allowed for the addition of MAG STRIPE for the CINEMASCOPE process, which was developed by Twentieth Century Fox. Whereas one

had to be careful in the old days to ensure that the sprockets that pulled the film through the projector could accommodate Fox holes (standard sprockets were too big and would tear them), all sprocket mechanisms today can handle Fox-hole prints with no problem. (This is ironic since the process has been used on less than a dozen films since the coming of DOLBY STEREO in 1975.)

FULLCOAT *See* MAG FILM.

GAFFER a) On a film set, the head electrician; since the early 1990s the term "Chief Lighting Technician" has been more common. b) In general film industry usage, the head of a crew, as in "gaffing mixer" to note the re-recording mixer in charge. Thus, "to gaff a mix." An older Hollywood phrase for the gaffing mixer was the "gunner."

GINK Hollywood film sound vernacular for "to screw up."

GNAT'S NUT Distaff mixer equivalent of RCH (*op cit*).

GRAPHIC EQ Multiband equalizer utilizing slide pots for each band, with the resulting boost or cut forming a "graphic" representation of the sound. Generally considered to have been invented by Fred Wilson of the Samuel Goldwyn Studios sound department.

HANG Film sound slang for the act of playing back a given element during a mix, as in, "We won't premix the FOLEY cloth but will hang it at the final mix instead."

HOT HOLE Slang for the projector gate itself, where the picture start mark is threaded up at the beginning of a session.

HX Headroom eXtension. The DOLBY LABORATORIES process used during recording only; it varies the bias current according to program needs. Now superseded by HX-Pro.

IN-BAND GAIN The standard for adjusting subwoofer response, such that the subwoofer sound pressure level, within its operating range, is louder than a full-range screen speaker in the same range. All of today's digital theatrical formats use 10 dB of in-band gain.

INTERNEGATIVE Laboratory film element that is made from an INTERPOSITIVE and is used to make RELEASE PRINTS not only at high speed (because the color is balanced and there are little or no splices to worry about), but more importantly because the EK NEG is protected.

INTERPOSITIVE Laboratory film elements made from the original camera negative in preparation either to make an INTERNEGATIVE or to be used in a TELECINE machine to transfer the film image to tape. (Unless they are the only extant elements of a film, standard RELEASE PRINTS are never used for video transfers.) Also known as an IP, an interpositive contains shot-to-shot color correction so that internegatives can be made with no further color adjustments, although further adjustment is always necessary when doing film-to-tape mastering. If the camera negative was cut in AB ROLLS, then the IP can incorporate first-generation fades and dissolves.

IRON Pejorative term for "equipment" in the context of its effect on sound quality: "He has so much iron in his CHAIN it's a wonder that we can distinguish between men and women on his dialog PREMIX."

ITC Intermittent Traffic Control. Film production term for the presence of traffic control during location shooting; very helpful for quality production sound recording.

KEY NUMBERS Numbers on the side of film stock created during film manufacture that are visible on the developed negative and positive prints made therefrom.

KIRSCH Film sound slang (popularized in Northern California) for when a director has requested a change in the sound and then gives his or her ap-

proval to what in fact was no change at all (either accidentally or deliberately) on the part of the mixers. Variants include "self-inflicted kirsches," when the mixer adjusts a knob without it being in the signal path or listens for a change while the PEC/DIRECT paddles are in playback (as opposed to input).

LAYBACK A transfer of a mix (usually a PRINT MASTER) to a video master.

LCRS Designates a recording in which four tracks are to be assigned, respectively, to the left-center-right-surround speaker channels. Thus, other variants such as LCRC, when the fourth track is to be assigned to the center, or even CCCC, as in a center-channel dialog PREMIX.

LEADER The head leader, at the beginning of each reel of a film, comprises a thread-up section that contains information about the reel's content (such as film title, reel number, etc.). The countdown section begins with the Picture Start frame, which is considered the "start mark," followed by a numbered rundown, totaling 12 feet or 8 seconds. The last number is two seconds (three feet) before the beginning of the active picture ("first frame of picture").

The Academy leader contains one number per foot following the Picture Start, with 11, 10, etc., leader to three. As projected, numbers are upside down. The SMPTE Universal leader is designed primarily for video uses and features a sweep hand counting down from eight seconds.

LFE Low Frequency Effects. The low-frequency track assigned to the subwoofer in theatrical stereo formats. For home video formats, the subwoofer will frequently contain low-frequency information from the main channels in addition to the original LFE track.

LFOP Last Frame of Picture. Film industry acronym for the length of a given reel. In its standard meaning includes the head LEADER up to and including the last frame of the reel. Because it is standard to start counting with the "Picture Start" frame of the leader as 0000+00 (zero feet and zero frames), the actual running time of a reel can be calculated by subtracting 11 feet and 15 frames to account for the 12-foot, 8-second leader. The TWO-POP is at 0009+00. The first frame of picture of a reel is at 0012+00. Sometimes also referred to as LFOA, for "action."

LIGHTWORKS A nonlinear picture editing system.

LITTLE DIPPER Nickname of the popular DIP FILTER previously manufactured by UREI (Model 565).

LITTLE OLD LADIES WITH UMBRELLAS Colloquial expression in the film sound community for how loud a film can be before movie patrons will complain. Therefore, the top end of the dynamic range available to mixers is defined not necessarily with regard to a theater's ability to reproduce a mix. *See also* POPCORN NOISE.

LOOPING The process of post-production dialog replacement using identical-length loops of picture, guide track and record track. The line to be replaced would thus repeat over and over, and the actor would go for a take when they were ready. Also referred to as "virgin looping," when recording onto a blank piece of mag film. When optical sound was used, the recordings were made sequentially on a roll and later manually synched to picture.

Although this process is not used these days (*see* ADR), the act of replacing dialog is still often referred to as "looping."

LO-RO Left only-Right only. Indicates a standard left-right stereo signal that has been DOWNMIXED from a DISCRETE digital signal (such as a DOLBY DIGITAL 5.1). Because the surround information has been incorporated into the signal without matrix encoding, a Lo-Ro cannot be decoded back into the surround format.

SOUNDSCAPE NETWORK

Larson Sound Center, a leading television audio post-production facility (Frasier, Seaquest DSV, MOWs) in Burbank, has purchased six 24-track Soundscape DAWs and put in an NT network for connecting effects suites and dubbing stages. Removable IDE drives provide systemwide storage; FAST AV Master digital video capture boards enable editors to work with full-screen digital video, for simultaneous scrubbing of picture and sound.

LT-RT Left total-Right total, *not* Left track-Right track. Indicates the presence of matrix encoding of four channels on a 2-track stereo master.

MAG FILM Short for "sprocketed magnetic film." Can have either an acetate or polyester base, and from one to six tracks, depending upon the head stack used. Three-track head gaps are 200 mils wide, the same as ½-inch 2-track tape; 35mm 4-track is 150 mils wide, and 6-track is 100 mils wide, the equivalent of 8-track 1-inch or 16-track 2-inch. The oxide coating is very thick, varying from 3 to 5 mils.

There is also "stripe," which has two magnetic stripes on a base of clear film. One stripe is large and contains a single track of audio (in the same size and location as track one of a 3-track), while the other stripe is smaller and exists only to make the film pack evenly when wound together, hence the term "balance stripe." The balance stripe is sometimes used to record timecode from ¼-inch or DAT timecoded production masters.

Fullcoat is mag film that is covered edge-to-edge by magnetic oxide.

MAG STRIPE PRINT A 35mm or 70mm print with magnetic oxide stripes painted lengthwise down both sides of film on either side of the perforations. These formats are now obsolete.

M&E Music and Effects. Standard motion picture practice today entails creating a minus-original-dialog element that can be used to create a foreign-language mix by adding only the newly recorded foreign-language dialog. This requires that all sound effects that are otherwise included in the dialog stem be copied across to this element. If these production effects are not clear of dialog, then they must be replaced either by FOLEY or by CUT EFFECTS. Once the effects are "complete," the track is said to be "filled"; thus, contracts specify "music and filled effects." Also known as the "international" version.

MATRIX *See* DECODING/ENCODING.

MIL Short for one-thousandth of an inch. The width of standard 35mm single-stripe and 3-track head gaps are 200 mils, or ¼-inch. Mils are a good increment to deal with for films since there are 999 of them between the sprockets.

MOS Scene shot silent, i.e., without sound rolling. Derives from "mit out sound," as in "ve vill shoot mit out sound," allegedly spoken by a director of Germanic descent to his Hollywood crew. Pronounced "m-o-s."

MOVIOLA The upright film editing machine that was the standard for picture

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editing until the '70s, when it was replaced (although not entirely) by flatbed editors. Remained the standard for sound editing until the early '90s, when it was gradually replaced by digital audio workstations.

M.P.S.E. Motion Picture Sound Editors. Los Angeles-based honorary organization of film and television sound editors; founded in 1965. Every spring the M.P.S.E. gives out its Golden Reel awards at its annual banquet.

MTS Multichannel Television Sound.

MUFEX *See* M&E.

MULTITRACK A non-sprocketed tape recorder (analog or digital) that records and plays back eight or more tracks. The most common analog format is 24 tracks on 2-inch tape, frequently with some form of NOISE REDUCTION. The digital world is shared between the DASH (Digital Audio Stationary Head) format, with ½-inch tape recording either 24 or 48 tracks, and the PD (ProDigital) format, recording 32 tracks on 1-inch tape. Modular digital multitracks use video cassettes to store 8 to 12 tracks of audio. Locking together multiple transports can provide up to 128 tracks in a standard configuration.

MUSIC CUE SHEET Not a standard CUE SHEET but instead a list of music used in a film, along with its type of usage (source, background instrumental, visual vocal, etc.).

MUT MakeUp Table. The motor-driven BENCH designed to load and rewind film. In the acronym form usually refers to the setup that drives a large reel of MAG FILM during a DOUBLE SYSTEM preview screening.

NAGRA The name of the line of professional ¼-inch tape analog and digital recorders manufactured by Kudelski S.A. of Switzerland. Their battery-operated portable analog recorders, especially the 4.2 mono and IV-S stereo models, have been the standard of the motion picture industry for over 30 years. Nagra means "recorded" in Polish, founder Stefan Kudelski's native tongue. Use of a stereo Nagra on location is almost always to record two separate tracks simultaneously, and does *not* usually mean a stereophonic recording.

NAGRAMASTER Equalization curve developed by Nagra that uses high-frequency boost during recording and de-emphasis during playback to increase the signal-to-noise ratio at 15 ips.

NEOPILOT The sync pulse system used in Nagra mono recorders (such as the 4.2), recording the sync pulse (usually 50 or 60 Hz) twice, out of phase with each other. The sync signal will not be heard when played back on a full-track mono head.

NOISE REDUCTION In audio, recording a signal onto tape or film using a device that will modify the signal before recording it (encoding), and then perform the opposite modification (decoding) during playback, to avoid the noise inherent in the transmission medium.

The best-known noise reduction processes are Dolby Laboratories' A-Type, B-Type, C-Type, S-Type, and SPECTRAL RECORDING; DBX Type I and Type II; and Telecom Cd4.

None of the above processes removes noise already present in a recording.

NORVALIZING Hollywood slang for the act of playing a sound effect at a lower level in a vain attempt to hide the fact that it is not in sync.

N.T. AUDIO Santa Monica, Calif.-based sound facility that is noted for its half-speed mastering of optical soundtracks.

1:1 One to one. In standard usage, a copy of the edited WORKTRACK onto another roll of STRIPE so that sound editors and mixers working on a film will have access to the worktrack. In general, though, it stands for any single-track-to-single-track identical copy, and thus has variants such as 3:3, 4:4, etc.

OPTICAL TRACK The analog sound recording medium on film that uses, in its classic form, an exciter lamp focused through a narrow slit onto a photocell. The track area on a 35mm print takes up a total width of 100 MILS, which, being one-tenth the space between the sprocket holes, displaces the centerline of the image on the film 50 mils. Because the Academy of Motion Picture Arts and Sciences codified this standard back in the late '20s, this has become known as the Academy centerline.

ORC *See* CINEMA DIGITAL SOUND.

PADDLES *See* PEC/DIRECT.

PDL Projectionist Dummy Loader. Union terminology for person in a film re-recording facility who functions both as projectionist and as a machine room operator.

PEC/DIRECT In film re-recording, the act of switching between playback from the recorder (either off the play or record heads) and the console bus. "PEC" stands for photoelectric cell, and originates from when monitoring off optical photoelectric cell was as close as you could get to "playback."

PFX Production effects, i.e., sound effects from the PRODUCTION TRACK, kept separate during dialog editing and PREMIXING for ease of integration into the M&E.

PINK NOISE Full-frequency noise, consisting of equal energy per logarithmic units of bandwidth (such as octave or ⅓-octave), used to align the frequency response of tape recorders and speaker systems. Pink noise can be thought of as (and indeed almost always is) filtered white noise, which contains equal energy per linear unit of bandwidth. The high end on white noise is "tipped up" because there are "more" frequencies between octave and third-octave divisions.

PIRATE SHIP To make a copy of material for one's library. Commonly used to refer to making a copy of good sound effects recorded in production, thus the order to "pull up the pirate ship" and to make sure that those recordings will be available after the film is finished and the masters are sent away.

PLATTER PROJECTION *See* PROJECTION.

"POP A TRACK" The act of aligning a TWO-POP exactly nine feet from the START MARK, either on MAG FILM or a BENCH, or in a digital audio workstation.

POPCORN NOISE Colloquial expression in the film sound community for the factors (such as popcorn chewing, air conditioning noise, and bleed from adjacent theaters) in a motion picture theater that influence the low end of the dynamic range, and how soft a sound will "read" in the real world. *See also* LITTLE OLD LADIES WITH UMBRELLAS.

POST-SYNCHRONIZATION Term used on the Continent and in the UK for ADR, *op cit.*

PRE-LAY Usually stands for the act of editing sound onto a multitrack. This writer, for one, finds this term stupid and meaningless (not to mention demeaning), as it seems to try to make something else out of what is simply "multitrack editing."

PREMIX The act of mixing edited sound elements (either dialog, music or sound effects) so that the FINAL MIX can be accomplished with less work involving level, equalization, effects or panning. With sound effects and music, there will also be a substantial reduction in the number of tracks, as in premixing 24 tracks into a 4-track LCRS premix. Dialog premixing often does not actually reduce the number of tracks that will go to the final mix, but instead just copies a cut track across with careful equalization and fader moves.

PREVIEW CODES EDGECODING of edited WORKPRINT (or dupes made therefrom) and sound elements to create a new reference for a given version of the film. When the film is subsequently re-edited, the process of CONFORMING multiple tracks can be sped up greatly.

PRINT MASTER The final, composite (dia-

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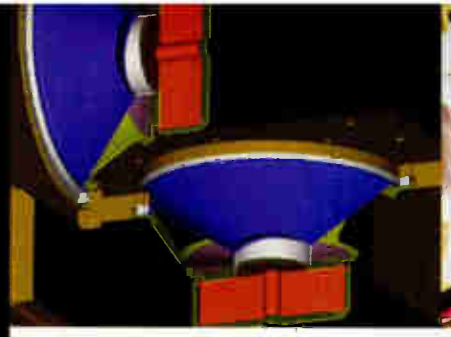

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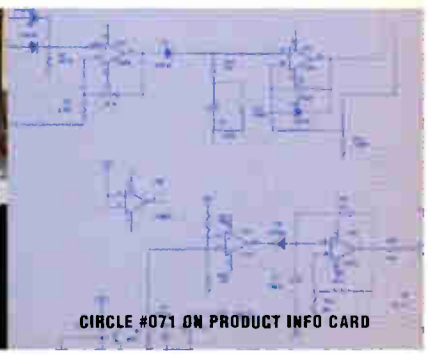

log, music and sound effects recorded together) mix of a film that can be transferred directly to a TRACK NEGATIVE or a MAG STRIPE print with no further changes in level or equalization. If noise reduction is used on a print master, it most often matches that of the final print format, and thus can be transferred STRETCHED to the MAG STRIPE PRINT or TRACK NEGATIVE. In the case of a stereo optical film, the print master contains two tracks, LT and RT, that are transferred directly to an optical sound negative.

The soundtrack of a DISCRETE 35mm 4-track or 70mm 6-track mag print will be recorded from a 4- or 6-track printing master in a real-time transfer.

PRODUCTION TRACK The track recorded synchronously during shooting. In film it's almost always on ¼-inch tape or R-DAT digital cassette. *See also* WILD TRACK.

PROJECTION In most commercial movie theaters, all reels are joined together on a platter to form one continuous strip of film through one projector. In screening rooms equipped with two projectors, each reel is kept separate, and the projectionist will manually start the incoming projector when he sees "change-over" dots in the upper right corner of the screen. This first set of dots is the "motor cue," with a second set of dots (a second before the end of the outgoing reel) indicating to switch over the picture and sound to the next reel.

You can have DOUBLE SYSTEM or composite projection with both platter and changeover techniques. Movie previews are often conducted in commercial theaters, with the 35mm WORKPRINT "built up" on a platter, and the 35mm mag TEMP DUB on a MUT.

PULL Colloquial term for adding another recorder to a system. Also describes the act of deciding which sound effects from a library will be used in a scene. *See also* SPOT.

QUAD TRACK TRACK NEGATIVE, and release print made therefrom, that contains all three digital sound formats (DOLBY DIGITAL, DTS and SDDS) plus a standard SVA analog track.

This epic glossary ends next month. As always, you can find me at P.O. Box 24609, New Orleans, LA 70184; fax 504/488-5139; or via the Internet: swelltone@aol.com. ■

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 "turn it down" is the only film sound phrase that you hear.

—FROM PAGE 35, ADVANTAGE AUDIO

soon to be switched over to Pro Tools.

"We've been doing animation for a long time," says Koepnick. "Originally, Jim and I worked in various areas, like promo and live action. Then we wound up with a cartoon series, got good at doing it, and decided that it was a niche we could stick with. In 1989 we incorporated and started looking for a building. Shortly thereafter, we found this place and pretty much gutted it. We started small, with one mixing stage, a Foley stage and an effects room. It was just the two of us; we shared an office and were a two-man band. We were secretary, janitor, business owner, sound designer, mixer, salesman, collections department—that's what it's like to get a business off the ground; you do whatever it takes. We opened the doors with 13 half-hours that first year. It was nerve-wracking, because after that season was over we were standing there looking at each other, going, 'We've got to go out and find some more work!'"

"That first series was the original *Ghostbusters* for [animation production company] DIC," adds Hodson. "We won a Golden Reel award and an Emmy for it. The following year, we did *Captain Planet*, also for DIC. We'd been soliciting Disney's work for a long time, and in our third year in business, they finally gave us a shot at doing a series. They've been with us ever since, and it's been a wonderful relationship. All around, business has continued to grow incrementally since then."

The staff at Advantage does everything except record the music and dialog. "We do dialog editing, sound effects creation and editing and music editing," explains Koepnick. "We have excellent music editors on staff; frequently, we get a library of cues, and we cut it to picture. Or, often a show is scored, but if it's a large series, they'll do score for only the first five or ten shows, and the balance of the shows will be all editing, taking those first shows and using them as source material. We cut and rearrange it for the rest of the shows. It's quite an art, a lot of surgery. We also do Foley recording, and we put everything together, mix it and lay it back to their master. We can put it right to Digi Beta if the client wants."

The full-time staff at Advantage now numbers 17. "We hire a few extra people during the busiest time of the year, between August and December," notes Hodson, "when we wind up

doing ten half-hours a week. We pride ourselves on the fact that we are pretty much state of the art—we're well-organized and we run very efficiently. We have to because of the volume of work that we'll turn out in a short amount of time. We'll be doing dialog editorial, music editorial, all the Foley sound effects, the mix and the laybacks on ten different shows, in five days."

The task of changing over to being fully digital at the facility is almost complete. "We've worked really hard to get the signal path from start to finish completely digital," says Koepnick, "hence the purchase of the Studer consoles. We want to keep the conversions to a minimum. For the world we're working in it's really quite amazing what that does to the sound. I've been sort of skeptical about digital, as a buzz word, even though we've been doing digital editing since the beginning of Sound Designer. But what we're finding is, the fewer analog-to-digital conversions you make, the more accurate the sound remains. When you do the amount of transfers that this business demands, staying digital really makes a difference."

Koepnick and Hodson are happy with their choice of the Studer D950S, and a second one was slated to be online in Studio A in February. "The Studer D950S is just truly an amazing board," says Koepnick. "We'd been kicking this decision around for a while, then, we were at NAB last April, and we looked at everything—Neve, SSL, Studer, Otari—and we were both struck with the fact that there's a wonderful kind of simplicity to the D950S console. It's simple when you first sit down and look at it, but it's as complex as the space shuttle if you want it to be."

"Bill and I have had a long-standing relationship with John Carey, who is president of Studer North America," adds Hodson. "We walked around the show and saw everything, then we came back to his booth and said, 'Show us what this board will do.' He took us through it, and we left thinking we'd have to go a long way to beat it. We tried to stay open-minded, but when we sat down and figured out our needs, and what we felt would take us down the line, there were three factors: Studer's reputation, this particular piece of equipment, and the relationship we have with John. The board went in before Christmas, and now we're both sitting on the happy side of the fence. very glad we made this selection."

Superdupe Recording's (from left to right) Henri Perotti, Mitch Rayboy, Glenn Navia, Bill Smith and Gary Arnold with their brand-new Fairlight MFX3 plus digital audio workstations and MediaLink Fast Audio Networking Solution.

"The learning curve is kind of steep," admits Koepnick, "but if you know how to work a console to begin with, if you understand signal flow, this follows all the rules. You're not learning a whole new vocabulary, you're not trying to change careers just to learn how to mix on the thing. It has a lot of levels. When the board shows up, it's basically a clean slate and you can do whatever you want to with it. Buying one of these is a little more complicated than buying an analog console, where it's, 'I'm getting this many inputs' and you can see them and you know what they're all going to do. This is a really powerful computer, and all its audio processing capability can be parceled out in a number of different configurations. You can have a stereo console, an LCRS console, you can set it up for 5.1 or 7.1, you can do completely different jobs on it from day to day. You can call a configuration up offline on a laptop computer and just load it in, and the console changes character. You tell it how many inputs you need, how many stereo modules, how many mono modules, how many buses, and basically design it."

Almost the entire Advantage facility—two mix stages, a Foley stage and four editing rooms—are fitted with free-standing PMC monitors powered by Bryston amps. "It's a very hot combination," says Koepnick. "When we made the switch, our editors were really surprised. Suddenly people could hear better, and it translates very well to the real world, without any kind of hype or coloration."

With the kind of workload and turnaround times that Advantage deals with on an everyday basis, every little bit helps—from compatible speaker systems in all the rooms to compatible consoles, and lots of Pro Tools systems. "An animated show's soundtrack can be really intense," concludes Hodson. "There may be 2,000 sound effects in 22 minutes. Our clients, and the producers and directors, have become very sophisticated over the years. They expect sound that compares to the big movies that they go out and see on the weekend. There's a lot of quality and attention to detail in this work—it's definitely not just slap some sound on and throw it on Saturday morning. Our editors don't just edit, they're really sound designers. You have to come up with ideas and sounds constantly for cartoons. Because it's all imaginary to begin with, you are always trying to create a different reality. That's the fun of it, and the challenge of it." ■

Maureen Droney is Mix*'s Los Angeles editor.*

—FROM PAGE 35, POST NOTES

woofer system...Projects: Engineer Bob Lacivita and assistant Adrian Gauslin at **The Complex** (L.A.) recorded the ADR and full cast for the new *Dilbert* TV series...Production sound mixer **William Sarokin** used a combination of Nagra D digital recording and Audio Ltd. RMS2000 and RMS2020 radio systems...**Sound Techniques** of Boston was busy with Frontline and PBS documentaries, including *The 50 Years War*, then later flexed their LCRS muscle on a project for the National Park Service, followed by 5.1 for the Carnegie Science Museum...**Daryl Steurmer**, former lead guitarist for Phil Collins and Genesis, has put out a new CD, but he also scores commercials out of his Milwaukee-based studio, Urban Island Music LLC. He and pianist Kostia recently performed for a Microsoft TV spot, titled "You Know"...Hunter Pipes and Wild Brain of **DubeyTunes**, San Francisco, cooked up the effects and mix for a Kentucky Fried Chicken spot featuring a live action/animated Colonel voiced by Randy Quaid...Moving Up: **AudioBanks**, the award-winning composition/post house, has completed the addition of three new surround rooms with attached tracking spaces. The company also added talent with the hiring of engineer Conner Moore, formerly of Post Logic...Broadcast Video Inc. of Miami Beach has hired Wilfredo "Willie" Elias, a hot bilingual audio mixer from Puerto Rico, to design, edit and mix in the Pro Tools suite...In a long-overdue appointment, **John Mozzi** has been named to the new position of Director, Post Production Division at **Akai**...**East Side Audio**, NYC, has signed Emmy-nominated mixer Todd Miller, formerly of Photomag, to work out of its soon-to-be-opened Lower East Side facility...After several years working solo, composer **Jeff Kinder** has rejoined RKM Studios in Atlanta as director of creative services...**David Litwin Productions** has relocated to Sausalito, CA, and built a new facility, Room 101, around a 24-bit Pro Tools MIX system...NBC vice president **Charles Jablonski** took over as president of SMPTE on January 1...Finally, if you have a Windows-based machine and an extra $1,295 laying around, you can't go wrong with Alan Goble's *Complete Index to World Film Since 1895 on CD-ROM*. Call 908/665-2801 for more information. ■

The Calrec Q2 dual in-line analog console at the Sound Republic in London

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AUDIO PRODUCTS FOR FILM/VIDEO

STRAMP VM1/SRX
The VM1 Virtual Master from Stramp (Quickborn, Germany) is designed for locking disk-based systems (Pro Tools, Radius cards, etc.) with timecode recorders such as the DA-88/98 and works with any video cards that generate PAL or NTSC signals from QuickTime movies. The VM1 features Sony BVW-75 emulation, LTC timecode reader/generator, 9-pin serial control and 32 GPI triggers for track selection and transport commands, to control parallel devices such as DAT decks. Stramp's SRX brings ADR capability to any Pro Tools system, generating a countdown cue sequence while handling red light switching and multitrack control during dialog replacement sessions.
Circle 301 on Product Info Card

DOLBY E
The new Dolby E technology from Dolby Laboratories (San Francisco) allows post facilities and broadcasters to distribute eight channels of discrete audio via an AES/EBU audio pair, enabling the production of multichannel surround audio for digital TV within an existing 2-channel audio infrastructure. The DP571 Dolby E Encoder and the DP572 Dolby E Decoder permit multiple encode/decode cycles without degradation, and the audio frames match video frames, allowing for seamless digital editing and switching.
Circle 302 on Product Info Card

RYCOTE 4-POINT MIC SUSPENSIONS
Rycote Microphone Windshields Ltd. (from Redding Audio, Newtown, CT) offers the Modular range of four-point mic suspensions. The system easily adapts to a wide range of mics, and Rycote provides a library of optimum configurations for various models, from a 45mm Schoeps to a 600mm shotgun.
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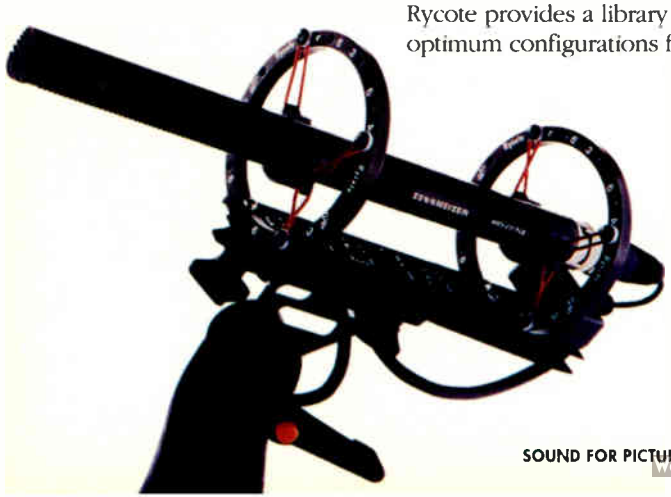

ELECTRO-VOICE CONDENSER LAVALIER
The RE90L condenser lavalier mic from Electro-Voice (Buchanan, MI) is a phantom-powered (9 to 52VDC) back-electret model and features an omnidirectional pattern. Frequency response is 50 to 18k Hz, and the unit features superior EMI/RFI specs. The lightweight and durable mic includes a 6-foot cable with XLR connector, windscreen, tie clip and tie tack mounts; a dual mic clip is optional.
Circle 304 on Product Info Card

NEW M&K MONITORS
Miller & Kreisel (Culver City, CA) offers four new monitoring systems in the MPS Series. Models include the MPS-250, MPS-2510, MPS-1610 and MPS-1510 and range from desktop to large control room systems. Features include push-pull, dual-driver amplified subwoofers, user-selectable directivity control of front speakers, and tripole surround speakers. The MPS systems' Bass Management Electronics meet Dolby and THX mandates for playback and monitoring.
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SONY PLUG-ON WIRELESS
Sony Electronics (Park Ridge, NJ) intros a plug-on wireless transmitter and matching camera-mounted receiver for recording location audio from a remote microphone or line-level source. The WRT-808A transmitter features 94 channels of UHF synthesized tuning and a 10mW/50mW RF output switch. The WRR-805A receiver has a headphone monitor out. Both units run four hours on AA batteries.

GALLERY MPEG FOR PRO TOOLS
Gallery Software's (London, England) mTOOLS software bundle allows Digidesign Pro Tools users to seamlessly work with MPEG files, whether as production elements or complete SFX archives. The bundle includes dCODE, an MPEG-to-SDII converter that automatically splits stereo files and places them into the PT region bin; mCODE, a batch MPEG format encoding app; SampleSearch 2.2 MPEG search/auditioning; CDStudio 2.5 online MPEG SFX library development tool; and "Build SFX Database," for cataloging entire hard disks, listing soundfiles, sample rate, duration, etc., as data fields. Visit www.gallery.co.uk for more info. Price: $849.
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FAIRLIGHT MEDIALINK

NETWORKING FOR MULTIROOM AUDIO POST FACILITIES

One paradox of technological progress is that advances in functionality are soon outstripped by users' expectations and demands. For example, though the ability to recall session data instantly on a digital workstation enables post-production mixers to recall and remix projects in less time than it takes to rewind and edit a tape, the practical reality is that if a client returns to a multiroom post facility for mix revisions, the workstation on which the session was first posted may well be occupied. In such a situation, the client may have to wait for several minutes while the original session data is recovered and remounted on another workstation. Whether the data is digitally copied over an in-house network, or has been stored on an MO disk or Exabyte tape that must be retrieved via "sneakernet," the client will have to wait.

A business reality of post-production audio is that clients are notoriously impatient. Any post house that can speed the recovery and reconstitution of old session data for revision and remixing has a competitive advantage.

This is the opportunity that Fairlight's MediaLink is designed to address. MediaLink is a network solution that allows multiple Fairlight MFX3p™ and FAME workstations to share audio files with each other and with a central server. According to Andrew Brent, Fairlight's International Technical Director, MediaLink allows a Fairlight operator to audition selected files that are actually located elsewhere on the network. Instead of copying files across the network to a local hard drive and then playing them back, the operator can listen to sound files across the network—in real time.

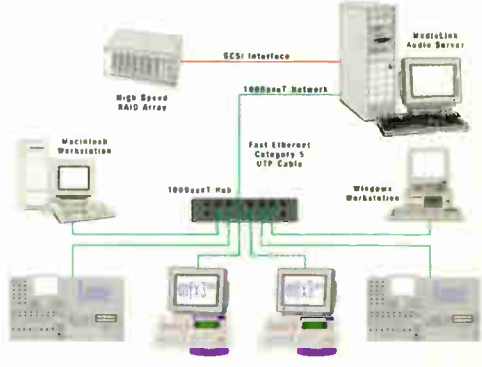
This is an important and useful function. As Brent points out, "if you could discipline the operators to arrange their sessions in advance and copy needed sound files ahead of time, then a simple 'store and forward' network would suffice. But clients demand that things happen immediately. They need to audition sounds right now." However, for real-time auditioning of sound files, the network must be capable of sustained and repeatable high-volume data transfer, uninterrupted by other network functions.

The requirement, then, is for a network solution that supports store and forward *and* real-time operations simultaneously. MediaLink meets this requirement with an innovative and unique complement of advanced technologies.

SECURE DATA STORAGE

At the core of a MediaLink system is a Windows NT-based server, a dual-P2 450MHz machine with 256 MB of memory. The proven 100BaseT network uses TCP/IP protocol, and the system wiring is standard Fast Ethernet Category 5 UTP twisted-pair copper cable. Attached to the server via ultrawide SCSI is a custom high-speed RAID (Redundant Array of Inexpensive Drives) that provides the bandwidth necessary to recover and play up to 80 channels of simultaneous audio.

RAID arrays were originally developed for speedy and secure data storage and delivery. Though RAID is a mature and well-established computer technology, it is not readily applicable to the needs of audio, since most manufacturers optimize their systems for more traditional data manipulation tasks. Playback of multichannel audio is a very specific application, with lots of seeks and relatively small blocks of data being read. "There's no such thing as real 'straight-from-the-hard-disk' streaming audio, except for simple stereo playback," explains Brent. "For multitrack systems buffering is inevitable, and that requires a system capable of frequent seek and read operations to keep the buffers topped off."



MediaLink allows multiple Fairlight workstations to share audio files, speeding throughput in high-volume post environments.

In fact, RAID comes in several flavors, some more appropriate for streaming audio than others. "RAID 0" offers no data redundancy but spreads the data across multiple drives, speeding read/write times. RAID 1, often called "mirroring," writes data to two drives simultaneously and offers complete redundancy, though speed is cut in half, since the system is reading/writing to two drives. RAID 3 offers redundancy by spreading data and recovery information across multiple drives and still offers good read/write performance.

MediaLink takes advantage of the merits of multiple RAID formats. "We found that in some instances RAID 4 is good at solving the problem of high bandwidth and a high number of channels recording to the

BY CHRIS MICHIE

server," explains Brent. "RAID 5 is more appropriate if you have a small number of tracks recording to the server but a big playback bandwidth requirement in the facility."

STANDARD COMPONENTS

As Brent points out, the MediaLink system is based on standard components, and the RAID system is one that has been optimized for audio by Silicon Gear, whose R&D team for the RAID controller is in Australia, within shouting distance of Fairlight; manufacturing is in Silicon Valley, Calif. The disk drives are LVD (Low Voltage Differential) drives from Seagate, and the whole system is designed for ease of maintenance—many components are mounted on slide rails and feature PC-style connectors. "RAID defines reliability, but when you really evaluate these systems for real-world applications, they can present problems for the nontechnical owner," says Brent. "MIS operations typically have a technical staff on hand, whereas in an audio or video facility you have to take into account the level of technical expertise available. For that reason, MediaLink is built on established, robust and tested technologies that are widely available and easy to maintain."

Though Fairlight application software is proprietary, the network software is based on Microware's OS9 operating system, and in recent years the company has added standard PCI hardware to the MFX rack and has written code to allow support for other platforms. The universality of TCP/IP allows a Macintosh or a PC to connect to the MediaLink network and move files to and from a Fairlight workstation's hard drive.

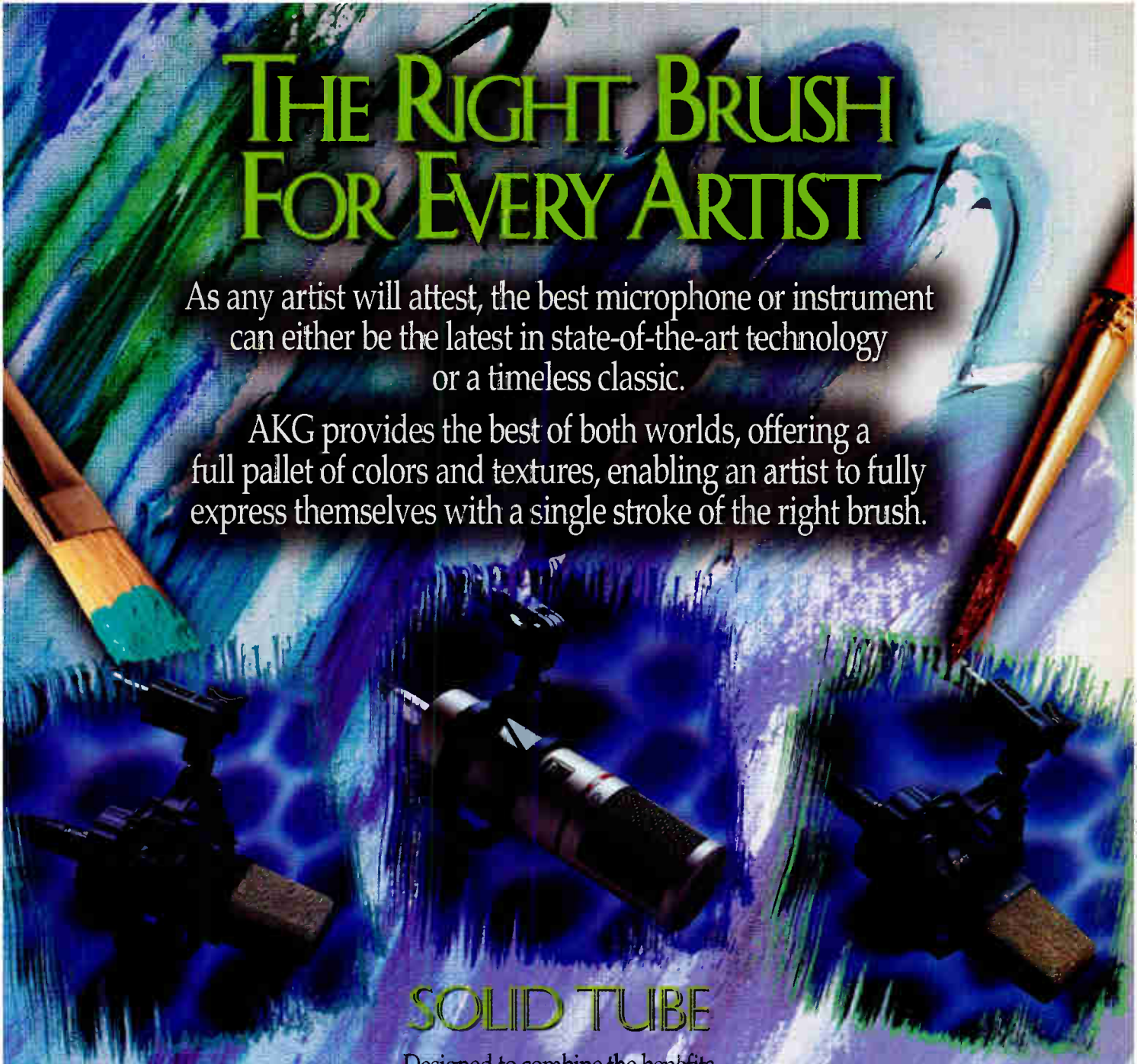
For example, an AVID Media Composer can be added as a node on a MediaLink network. OMF files may be transferred over the network to the server, or MFX workstation, and transfers to and from a PC are also possible using industry standard .WAV files. This interconnectivity allows a Fairlight operator to process sounds with plug-ins from a variety of other manufacturers. The MFX can also function as a Web page server, which allows a client to download needed files over the Internet.

Though MediaLink can be configured with as many as 80 data channels, in the simplest MediaLink implementation, two or more Fairlights operate in a "peer-to-peer" network; there is no independent server, and the two systems may exchange sound files transparently in real time. Typically, the mini-network's bandwidth is around 40 channels, meaning that 32 channels are available for real-time audio playback, with eight channels reserved for store and forward operations.

Even at its most basic level, a MediaLink server can have up to 15 so-called "JBOD" drives (Just a Bunch Of Disks) connected to simulate something like an SSL SoundNet, but without the need for SCSI switching. At the highest level, a MediaLink server controls a RAID array to provide high-bandwidth playback of up to 80 channels. The network architecture is common to all scenarios.

As Brent notes, in a typical MediaLink-equipped facility Fairlight operators can be using audio clips from both their local drives and the central library on the same project. "It's like working on your local drive," says Brent. "You can work like that all day. And if you need to know which sounds are coming off the local drive and which are off the server, the GoTo clipname list will tell you."

Fairlight, 3855 Hughes Ave., 2nd Floor, Culver City, CA 90232; 310/287-1400. Web site: www.fairlightesp.com.au ■



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CIRCLE #079 ON PRODUCT INFO CARD

YAMAHA DSP FACTORY

PC-BASED RECORDING/MIXING/SIGNAL PROCESSING PLATFORM

Everyone needs a typical gear story to maintain historical perspective when products like the Yamaha DSP Factory come along to shatter price and performance expectations. Mine is about an untunable $3,000 guitar synthesizer that I financed; it sank a band in 1983, but that same $3,000 would today fund a 48-track, auto-

mated, computer-based, digital mixing and recording system replete with multiple effects, EQ and dedicated dynamics processing on every channel. Somehow that helps in keeping the whole studio-on-a-chip concept in perspective.

Yamaha's DS2416 PCI audio card, the heart of the company's DSP Factory system, conjures up no early-adopter technology nightmares whatsoever. In fact, it goes a long way to further the state of digital audio and MIDI production on the PC, for the price of a decent mic. This product was announced more than a year ago, and it's finally here thanks to shipable Yamaha hardware and the good efforts of a half-dozen or so software developers. The DSP Factory seems to have been well worth the wait for people who do computer-based recording.

Limbo'ing in at just under a grand ($999), the DSP Factory offers 24-bit performance that will evolve to 32-bit when software exists to support it, 16 channels of playback, up to eight simultaneous record channels, two dedicated REV500 digital stereo effects processors, flexible digital routing options in the 24-channel virtual equivalent of a Yamaha 02R digital mixer, a host of great-sounding dynamics processors and musical 4-band parametric EQs on every channel, and a number of optional I/O and MIDI expansion units to pave the expansion pipeline.

The DS2416 card itself offers four analog stereo RCA I/O jacks and two coaxial digital ports, and there are optional AX44 Audio Expansion Cards ($299 each) that can piggyback with the card to provide analog-to-digital I/O ports that are front-mounted into empty and available 5¼-inch drive bays. The I/O boxes provide four unbalanced analog ins and four outs each, two inputs of which are switchable between line and mic input levels; and there's a stereo headphone jack with its own front panel volume control. The analog inputs go through 20-bit A/D converters with 128x oversampling when capturing audio, the outputs are 20-bit with 8x oversampling going D/A, and the coaxial digital I/O ports will sync to other digital equipment in up to 24-bit wordlengths.

NAKED FOR NOW

Surprisingly, the DSP Factory comes completely *sans* software—not even a basic audio control interface, just a handy little audio utility for testing the ports. Give Yamaha kudos for shaving software development dollars off the list price and assuming that most computer-based recordists are already using and/or happy with a host recording program, but those without recording software to access the DSP Factory's laundry list of dedicated features are in for a very bad tease until some kind of supporting host software is installed. The actual "face" of the DSP Factory is completely dependent on the third-party software developed to take advantage of the DS2416 card, and so far the real estate looks pretty good.

I installed and used three PC packages that currently support and integrate the DSP Factory's features: Steinberg's Cubase VST/24, Minnetonka Sofware's MXTrax for DSP Factory, and C-Console from C-Mexx. Though it's far from the scope of this article to include comprehensive reviews of all DSP Factory-supporting software products and the ever-changing Read Me files, I will include comments on how each of these three host programs interfaces and interacts with the DS2416's onboard tool set, as each program takes a different approach to integrating the card's use. Many other software companies currently are supporting—or are soon to release—DSP Factory-savvy upgrades, including Cakewalk, Canam Computers, Emagic, Innovative Quality Software, Musicator, SEK'D and Sonic Foundry.

PC FRIENDLY?

As is often the case with PCs, it took more than a little time to get the proper updated audio and MIDI hardware drivers correctly installed to support the newest DSP Factory-savvy host applications. The Yamaha-supplied PC I used to test the DSP Factory was a 233MHz Pentium II with 32 MB RAM and separate system and audio IDE drives, 4GB each. Two of the AX44 Audio Expansion Bays ($299) were installed. I un-installed both of

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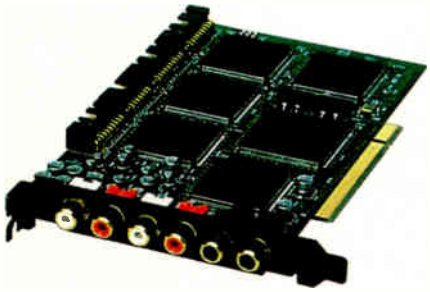
CIRCLE #080 ON PRODUCT INFO CARD

these and the DS2416 card itself, and then re-installed them to check out the configuration process, which worked without a hitch. Thanks to what was apparently a bumpy ride in its flight case, the computer eventually needed both the CD-ROM and floppy drive cables untangled, unplugged and reconnected after sporadic drive failures plagued the driver installation processes. But after some cuffs-up and hands-on with the drive cables and assorted ribbon connectors, all worked, and the installation process sailed on through. The DSP Factory's Windows plug-and-play wizard automatically handles all IRQ and DMA settings upon reinstalling the DS2416 card and AX44 ports; the entire process went surprisingly smoothly compared to some other PC audio and MIDI installation hells.

Two DSP Factory cards can be "cascaded" together along with two more I/O boxes to create 32 tracks of digital audio playback (though there are still eight simultaneous record channels), 16 signal I/Os and four effects engines, all under the automatable onscreen control of the host audio software. The PCI card, I/O boxes and associated connectors do create a rather large tangle of bundled ribbon cables inside the PC. So, the prospect of connecting twice as many cables with an expanded DSP Factory setup becomes daunting to say the least, especially if a connector ever gets bumped or comes loose again. Installing ribbon connectors that are trimmed to exact lengths would free some space, or moving and re-installing other PCI and ISA cards in the system can make more room for additional cabling.



The DS2416 PCI card

Curved-facade PCs, like my Gateway 200MHz Pentium, cannot forward-mount the DSP Factory AX44 units. This means a very inconvenient rear-panel I/O install is required, which kind of defeats the original purpose of getting the connectors up front. The standard square-looking PC boxes with lots of open available drives and 5-volt PCI card slots are the best for an expanding DSP Factory setup, especially if all the unit will be doing is recording, processing, and mixing audio and MIDI. The DS2416 card's five dedicated processing chips greatly unburden the host CPU by taking over the computing chores of all the DSP Factory's real-time effects, mixes and edits. Existing third-party audio plug-ins run better under the host program's environment, which is a nice side effect of installing a DSP Factory system.

Each of these programs has its own way of representing onscreen what the DS2416 card has to offer inside. The degree to which the DSP features are explained in their respective owner's manuals is vital, because that's about all the information there is on using the card, beyond the DS2416's own sparse documentation. In examples described below, I used Cubase VST/24, MXTrax, and C-Console to record and mix acoustic and electric guitars, electric bass and percussion solo instrumental tracks, and to transfer eight channels of ADAT into the PC. There were excessive effects and dynamics processing applied throughout the mixes during these projects in an attempt to tax the Factory and host system fully—far more than an average session would require. This makes the system's hiccup-less playback and responsive touch in all the programs all the more impressive.

ACOUSTIC CUBASE

I first tested the DSP Factory using Steinberg's Cubase VST/24 Version 3.6 running on Windows 95. This new 24-bit version would not install and work with the DS2416 until the latest drivers from Yamaha were installed, but once it was in place, everything worked fine. I miked up my 1960 J-35 Gibson dreadnaught using an AKG C-1000 mic just off the neck, mixed in with some active EMG saddle pickup output. Both were plugged into the first two inputs of the AX44 box and mixed together within Cubase's DSP Mixer window, and then I recorded a track of a familiar finger-picked piece.

Though it did not rival the sound of high-end mic preamps (or mics), the track I got was a faithful, well-defined reproduction that sounded great. I recorded both 20-bit and 24-bit versions of the track, easily detecting the subtle improvements 4 bits have to offer, and I found the DSP Factory's 4-band parametric EQs, various multi-effects and dynamics processors to be warm and detailed. There is a long list of DSP Factory processor algorithms available, including a stable of reverbs, delays, choruses, filters, distortion and amp simulations. Each provides quiet performance and integrates well alongside the many plug-ins already installed in my Cubase audio system.

Within Cubase, the DSP Factory is accessed via a new Yamaha DSP Factory pull-down menu found under Audio or via keyboard shortcuts. Separate windows control the Factory's Input Console, Channel Overview, Bus/Aux Console, FX Editor and Output Patchbay interfaces; each has a similar look and feel, consistent with the Cubase environs. Opening up all the new DSP control windows can fill up a 17-inch monitor at decent resolutions, yet each looks consistent when opened alongside existing Cubase edit windows. In fact, the new DSP Factory Input Console within Cubase sort of mimics an 02R console, using many of the same function buttons and the matte, greyish background to look the part.

Steinberg's Cubase VST/24 for the DSP Factory

The FX Editor window in Cubase provides a simple horizontal slider interface to edit each program's effects parameters, and when surfing for sounds, selecting new effect names via pull-down menus is a breeze—no hiccups in playback between programs. Special effects like a ring modulator, rotating speaker and reverse delay can be found among 38 other effect types, and user settings can be saved and retrieved, as well. Like any other function within Cubase, all the DSP Factory mixer and effects parameters can be automated using the Write and Read command, making this a powerful environment from which to control effects processing and sound design.

All of Cubase's high-resolution 24-bit signals are passed to the DS2416's inputs in 24-bit format. VST itself can be bypassed altogether in order to use just the DSP mixer components, or DSP Factory can be integrated into Cubase

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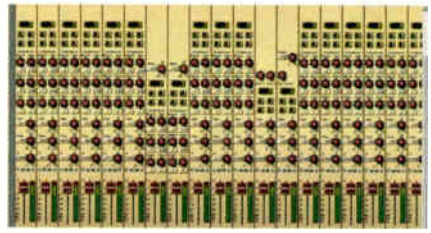
as an external mixer feeding into VST as two serial mixers. Though this doesn't have to do with the DSP card itself, I want to comment on how Cubase incorporates virtual rotary knob controls compared to the other programs tested here. Whereas C-Console and MXTrax both have nadir-point-limited rotation in either direction, like a physical rotary pot, with Cubase it is fairly easy to jump from a completely null position on a rotary knob up to a fully-boosted one with the tiniest counterclockwise mouse movement beyond the nadir point. I found this bothersome when making critical edits to very hot EQ bands, for instance, where the instant boost in gain sends a 0 to +18dB spike to the outputs, or where the sudden leap in a delay's feedback level can begin an endless loop that needs to be reset.

Knob ergonomics aside, Cubase VST offers a fantastic front end to the DSP Factory that makes it addictively easy to effect and route tracks. The new interface integrates with and complements the existing VST environment that is familiar to power users. The dedicated effects and EQs sound clear without being brittle, warm in the midrange and beefy in the bottom. And manipulating the parameters with Cubase's new DSP Factory interface windows adds only more powerful tools to Steinberg's already impressive audio power belt.

THE NAMESAKE'S SOFTWARE

To take a look at how MXTrax for DSP Factory ($499) from Minnetonka Software harnesses the DS2416/DSP Factory, I recorded a live bass track alongside an imported stereo drum kit loop,



Minnetonka MXTrax for the DSP Factory

then added some lead guitar parts to check out the Factory's guitar effects algorithms. I took the bass signal straight into the AX44 input *sans* direct box, effects or amp, and then, using MXTrax's unique channel-building interface, created a fat bass channel by simply dragging compressor, line attenuator and channel delay knobs onto the channel strip.

The program's roll-your-own approach to creating user-defined channel strips allows you to create custom channels that aren't cluttered with unused knobs, buttons and controllers. Need a spot of low EQ? Just drag and peel an EQ icon off the Components Toolbox palette directly onto the channel strip, and *voila*: The appropriate sculpted knobs and frequency select buttons appear. The classy control surface serves up a nice backdrop to the very responsive, 3D-looking knobs and buttons. My only complaint is that a channel with all the available components attached—i.e. one each of 4-band EQ, pan, dynamics, attenuation, phase, and channel delay controls—takes up more than a 17-inch monitor's-worth of vertical display area and, consequently, can require a fair amount of up-down noodling to get from the lower fader to the upper reaches of the channel strips throughout a session.

MXTrax for DSP Factory was ported over from a Digital Audio Labs V8 version. This software displays a novel ¼-inch onscreen phono plug icon when you are dragging virtual 02R "connec-

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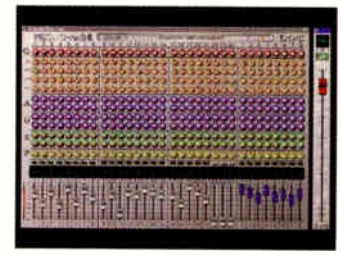
tions" from the track window into the proper mixer channel; the connection is canceled out by a circle with a line through it when an improper connection is attempted. Instead of being an integrated audio/MIDI program, MXTrax focuses just on audio tracking and the 02R-driven digital mixing power found in the DSP Factory. The onscreen controls are tactile and responsive, and rerouting each mixer channel's signal to tape tracks or to different I/O card profiles is a simple right-click away.

As the name implies, MXTrax for DSP Factory is all about the DS2416. Every feature found in the card is supported by the software (also the case with Cubase). Basic tracking, cut, copy and paste features are provided, as well as markers, automation, and effects-routing controls to create basic audio arrangements within complex 02R mixer setups and effects settings. MXTrax's gold-tinged interface is reminiscent of the look of Ensoniq's Paris, and the custom-designed mixer channels show a whole different side of what the DSP Factory can look like to each user. The MXTrax mixer's onscreen faders and channel strips are "actual size" renditions of a board, as well, which is designed to give onscreen fader moves more of a "feel."

I found all the effects to sound great, save the DSP Factory's guitar distortion, which is a bit thin and un-crunchy. The amp simulator did create some interesting spaces when applied to the bass track and drum groove sample loop I recorded, and the reverbs all sound great, especially if you like Yamaha reverbs. One inconvenience is that playback is interrupted whenever an EQ or other component is dragged onto a channel during play in MXTrax. A real-time wish list for future versions of this program would also allow the seamless addition of dynamics to a channel during playback and a scalable control surface display size to avoid excessive view scrolling. But MXTrax more than takes good advantage of the power of the DS2416 card in this current release. It's well worth a look-see, especially if you haven't already invested in one of the major software platforms.

MOVING TRACKS WITH C-MEXX

C-Mexx Software's C-Console takes a very different tack to supporting the DSP Factory. It works in tandem with multitrack digital audio recording software packages and digital multitrack recorder (DMR) machines to provide a



C-Mexx C-Console interface

full digital recording and mixing solution. It comes with an impressive screen full of DSP Factory 02R digital mixer controls, and C-Console also provides a simple record/playback transport interface for controlling any MIDI Time Code-savvy digital audio recorder or software application. It was easier than I thought it would be to interface C-Console with Cubase via MTC in order to record and play back tracks in tandem, and C-Console's own implementation of a virtual 02R board is intuitive, well-designed and powerfully visual to use.

Each channel strip has a gain control and a crafty 4-band parametric EQ knob inner/outer ring arrangement that saves control surface space and is easier to dial into. There are also six aux send level controls; pan; a fader with track meter; toggle on/off switches for EQ, dynamics, channel delay and channel; and solo in place stereo assign and channel alias. Creating a quick, rough mix using C-Console's automation's write and read controls was a snap, with easy and quick ways to punch in mix moves, effects setting changes and routing assignments. I didn't care for the rudimentary recorder transport control buttons that "feel" tiny and lightweight onscreen, but I liked the feel of every other control knob and fader in C-Console, especially the full-screen-sized red master level fader. Here's an idea: How about the ability to display 16 mega-sized faders?

I used C-Console in tandem with Cubase to transfer eight analog ADAT tracks through a Mackie Designs 1604VLZ via the Yamaha AX44 breakout boxes, and after a brief handshake period, I was able to dump them right into Cubase, with great results. An upcoming Lightpipe card (see below) will make this an even smoother, faster and digitally cleaner operation. Switching back and forth between the Cubase recording and DSP Factory mixer interfaces shows just how much onscreen control there is at the PC power user's fingertips these days for under a grand. Power features and subtle touches abound, like the way the last-touched onscreen knob or fader flashes to re-

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trace where you left off in a mixer or edit screen, or the inviting and colorful EQ Editor window; these features show that C-Mexx has been working on this program quite a bit. On the other hand, be advised that the online documentation, though visually effective in the way it explains various processes and signal routing paths, has lost a lot grammarwise in the translation from German to English; it is very confusing and thin when explaining some key functions and interconnectivity issues.

The colorful and intuitive EQ Editor window in C-Console is way good, with a responsive four-curve display that shows the low, low-mid, hi-mid and high-frequency curves in varying colors. A resulting audible curve is drawn over all in black, and creating steep notch filters or complex curves is a breeze either by using the numerical input boxes or by mouse-grabbing the curves directly. A library of EQ settings is easily accessible, allowing users to dial through factory settings and user-defined programs. And there is a host of new features: Each of the 40 onscreen faders can be instantly switched from 0 dB to +10 dB with a right mouse click, there's full support for MTC Sync and any MTC Remote-aware hardware digital recorder, and settings for 24/25/30 and 30 drop-frame sync modes are offered. Amazingly, the 288 onscreen rotary pots in C-Console's main mixer display mode are easy to navigate, thanks to good color coding, an intelligent layout and a single main text readout line atop the interface that displays each selected parameter's name and value instead of clogging up the control surface with the same data displayed under each control. Very clean.

PROMISES, PROMISES

What the software developers have already accomplished in these early versions of DSP Factory-optimized programs is to build intuitive, stable and creative audio environments, and they leave it wide open as far as where the DSP Factory platform could lead from here. It will be interesting to see how Cakewalk, Sound Forge and other major PC software packages further integrate with DSP Factory. Time will also tell what the Macintosh versions will look like, but so far the schizophrenic "faces" of the DS2416 look pretty good.

Before the ink dries on this page, Yamaha is expected to extend the platform by shipping the first of many optional upgrade products for the Factory. The AX16-AT Audio Expansion Card will provide 16 channels of ADAT Lightpipe digital I/O for just $299. The AX88 analog expansion unit (retail $999) is expected by May; it's an 8-channel, 24-bit I/O option that will further enhance inputs and output. The $699 SW-1000XG PCI Audio MIDI Card is already shipping. It combines a MIDI interface, AWM2 tone generator, additional DSP effects, the powerful XGLite MIDI editor software and a 12-track digital audio recorder. Minnetonka, Steinberg and others are also working on drivers that will allow the Yamaha 01V digital mixer to control the 02R digital mixer features directly, and Macintosh DSP Factory drivers are already available for download. At the rate CPU-centric recording and mixing technology is progressing, can 32-bit Palm Pilot versions be that far off?

Yamaha, 6600 Orangethorpe, Buena Park, CA 90620; 714/522-9011; fax 714/522-0103. Web site www.yamaha.com. ■

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ZAXCOM AUDIO DEVA

PORTABLE DIGITAL RECORDER/MIXER

Since the dawn of time, humans have recorded location audio on analog Nagra recorders. Along the way, brave individuals have made forays into other formats, ranging from Sony PCM-F1s to timecode DAT decks to the awesome—yet pricey—Nagra-D. And although all of these formats offer the advantages of digital recording, all are tape-based and subject to the inherent drawbacks of tape, such as lack of random access and the lengthy time required to transfer takes into digi-

tal audio workstations. Meanwhile, a number of companies have offered disk-based field recorders, but these typically lacked timecode capability, were designed more for radio production and employed data compression to keep file sizes manageable.

However, another solution was on the horizon: The Zaxcom Audio Deva (pronounced like "diva"), a compact, 4-channel disk recorder, was first unveiled at AES in 1996. Timecode-capable, DC-powered and lightweight, Deva seemed ideally suited for location audio and offered 20-bit uncompressed recording/playback. Unfortunately, the early Devas weren't exactly ready for prime time (literally), and *Mix* contributor Larry Blake was among those who suffered through the pangs of early software versions, experiencing maddening bugs and system crashes. A few years later, we decided to take another look at Deva and found that time—and several software revisions (it's now at V.5.03)—can make an enormous difference in a product.

Housed in a cigar box-sized (8x3x7-inch, WxHxD) aluminum chassis, Deva features simultaneous 4-channel record/mix capability, timecode and RS-422 control, four track-hours of recording time per disk (removable 2.2GB drive), simultaneous recording to onboard drive and/or external SCSI device (such as a Jaz drive), backup streaming to optional recordable DVD drive, XLR mic inputs, software-selectable highpass filters (30 to 220 Hz in 10Hz steps), onboard mix capability and backlit LCD status/metering readout. The 4-channel version is priced at $9,995—including 2.2GB removable drive, timecode option, battery, charger, 12 VAC supply and all necessary cabling.

Each of the mic preamp inputs has a switch for selecting 48VDC phantom power, as well as recessed trim pots for optimizing inputs to match mic sensitivity. A monitor mode switch selects/routes a number of headphone combinations (track 1-2 stereo, 3-4 stereo, 1-2 left/3-4 right, 1-2-3-4 summed mono, 1-2 mono, 3-4 mono or track 1/2/3/4 individually to mono). Speaking of headphones, the built-in headphone amp is clean and loud. Deva offers three-way powering (100-240 VAC, 12 VDC external or internal battery), with the latter being an NP-1 type providing two hours of operation. With the proliferation of NP-1 batteries in the industry, Zaxcom's choice of this cell is a good one. The unit's external DC input is a 4-pin Lemo type—a rugged quality connector, but not quite as universal as the standard 4-pin XLR connector used on Cine-60 belts and many other 12 VDC-powered film/video devices. To use such supplies, a simple XLR-to-Lemo cable could easily be fabricated, or perhaps Zaxcom could offer this as an option in the future.

Beyond its location features, Deva supports 48kHz and 48.048/47.952kHz pull up/down sampling frequencies (32 or 44.1 kHz is not offered), +4dB balanced analog line inputs/outputs via an XLR-to-DB25 fan-out cable, AES/EBU I/O (also on an XLR fan-out cable), SCSI port for direct to workstation/backup media connections, RS-422 Sony P2 control with BVW-70 emulation, and the ability to read/generate/chase to incoming timecode at 24/25/29.97DF/29.97 NDF/30 DF/30 NDF frame rates.

Deva's user interface is fairly simple to master, but it requires a bit of getting used to. Most functions and settings are via a number of menus. You either press one of the front panel buttons directly or merely press a centrally located Shift key in conjunction with one of the dual-function buttons. Generally, these operations are carried out much faster than it takes to describe them. For example, pushing Shift and the number 9 on the keypad enables Fader Control (we know this because those words are written in white silkscreen above the 9), which allows the user to quickly

BY GEORGE PETERSEN

route any mic input(s) to any record track(s). If you want to feed track 2 from a mix of faders 1/3/4, the entire procedure takes less than five seconds; and other functions—such as sending a 1kHz tone to all tracks, selecting timecode/sampling rates, headphone modes, etc.—are just as fast. Zaxcom touts Deva as a recorder/mixer, which it certainly is, especially when using the four input pots to create mixes. However, the unit's ability to create output mixes from recorded disk tracks using setup screen commands (a useful tool in field production) is better suited for static mixes than for complex on-the-fly mix movements.

In the field, Deva balances nicely on a shoulder strap (not included), and its light 5-pound total weight will be appreciated by those who use other location recorders that are powered by more than Deva's weight in "D" cells alone! The LCD screen is clear and readable even in direct sunlight, and another nice touch is an easily accessible meter mode that uses the full width of the LCD for meter display for greater resolution. The meters are fixed in peak-style ballistics, and there's no provision to switch to VU-style action. Also, no peak-hold feature is provided, and this (and switchable meter ballistics) is something Zaxcom could possibly add to the feature set on the next software revision.

From an ergonomic standpoint, it's clear that some smart thinking went into Deva's control layout. The inputs are on the front side when Deva is slung over one's left shoulder (something appreciated by anyone who's experienced the simple pleasures of a "fishpole-in-right-hand/operate-deck-using-left-hand" gig). I didn't like the feel of the headphone and input pots, which rotate with the slightest touch, to such an extent that barely touching or bumping a pot would surely disturb settings. Here a bit more friction to the feel would be appreciated. Also, though Deva includes four rubber feet on the side opposite the faceplate, there are no rubber feet on the underside. This seems odd, as I imagine that most Deva users would place the unit on a soundcart shelf or lay it down when doing disk transfers to workstations.

Deva is capable of some slick tricks, such as feeding one output to the on-board removable disk and a separate mix to an external SCSI drive. Backups can be made to traditional SCSI devices (tape drives or hard disks) or to DVD.

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which offers the ability to back up two Deva 2.2GB disks onto a single DVD. A new feature, "Jaz drive record capability," allows the internal Deva drive and external Jaz drive (or data tape drive) to be simultaneously recorded. During production, the Jaz disk can then be transferred elsewhere, while the Deva drive stays on location to serve as a backup and eventually to get re-recorded. Files are written in Broadcast .WAV format in either stereo or mono formats, with the latter compatible with SSL, Akai, TimeLine and Tascam hardware; stereo files are readable via PC applications. Deva files can de indirectly converted to WaveFrame, Pro Tools or OMF formats by loading them into a Tascam MMR-8 (running 3.0 software) and then saving the file to the other formats. Zaxcom has recently added Sound Designer 2 (SD2) file support; given the large population of Digidesign systems in the post community, this feature should enormously boost Deva's market.

One of Deva's unique features is Pre-Record, a patent-pending process that, when selected, continually loads four channels of audio into the system's 24-second RAM buffer. Whenever the Record key is pressed, the previous ten seconds of audio in the buffer is automatically written to the head of the record file, which provides ample preroll in post and eliminates the possibility of missing a cue—especially useful when working in documentary-style situations.

Overall, Deva proved to be an impressive tool, offering nonlinear portable recording in a compact package, with sparkling 20-bit audio (and high-quality mic preamps), flexible backup options and a clever bag of production tricks that will appeal to the location recordist. And, as with nearly all software-based systems, there's always more to come. Zaxcom is currently working on a number of software enhancements, including a compressor/limiter and a Deva-to-Avid file conversion utility. But most interesting will be the company's C.A.M.E.O. digital location mixer, which features a large readable-in-sunlight plasma display that shows the Deva status and is slated to be unveiled at this month's NAB show.

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ADGIL DESIGNS THE DIRECTOR

SURROUND MONITORING CONTROL SYSTEM

The demand for surround sound releases—in sound for picture, multimedia and audio-only forms—is on the rise, yet most of us work on consoles designed specifically for stereo applications. With some clever patching and bus assignments, just about any console can create surround mixes. And an increasing number of new mixers—particularly lower-cost digital boards—incorporate surround panning capability. Unfortunately, while many consoles can create surround mixes, these same boards often cannot adequately monitor in surround. Typically, these mixers are unable to handle such basic functions as simultaneously changing the playback level of all channels, soloing/dimming/muting any output bus, or easily switching between monitor formats (L/R, LCRS, 5.1, etc.).

One solution is Adgil Designs' The Director, a programmable, microprocessor-controlled system designed specifically for monitor control in multichannel environments. The Director can handle one main monitoring system with up to eight output channels (2, 4, 6 or 8) and two auxiliary stereo systems. Functions include Mute, Dim, Mono and Solo (all available from an external remote control), individual Cut on speakers, preset monitoring levels, variable levels and more.

The Director is based around a central unit called the 9800, a three-rackspace "brain" that contains all the audio and control circuitry. All audio connections are made via DB25 connectors that adhere to standard Tascam DA-88 pinouts, and modular, rear-panel plug-in cards allow for system expansion or customization, providing choices in input routing, matrix routing and bus amps/insert sends. Another card—the communications module—provides interfacing between the brain and the remote control, carrying power and RS-422 control data over a standard DB9 connector, allowing easy fabrication of cables for custom installations. The module also provides GPI capability for specialized functions, such as triggering Record and On-Air lights, or automatically switching an SDU4 into surround or stereo mode when selecting system A, B or C.

BY GEORGE PETERSEN

Three remote controls are available. The 9822 remote handles LCRS or stereo playback from up to 12 sources, while the top-of-the-line 9840 controller features switching for up to 30 sources, with 7.1 capability. However, the mid-line 9824 remote, with 12-source selection and 5.1 capability, is best suited for most film/music applications.

Once the system is configured, operation of The Director is essentially set-and-forget. A simple interface—consisting of a two-line, 16-character LED screen, data wheel and up/down and left/right cursor keys—allows one to set presets and "program" the 9800 rack. The process is similar to tweaking presets on an SPX90 reverb—it gets the job done, but it ain't exactly elegant. And as the small screen only displays one parameter/routing at a time, I recommend sketching out your routings on a sheet of paper first and simply entering the new data one step at a time, checking off each change as it's entered. However, The Director's programmability offers a lot of flexibility. For example, the mono switch on the remote can be set to route a summed mono to either the center

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channel speaker only, or to all front speakers simultaneously.

The variable level control is via an endless rotary encoder, which provides 0.375dB-per-step attenuation. This provides a good balance of sensitivity and feel, though going from one volume extreme to another requires turning the knob several times—a volume knob with no stops takes some getting used to. The remote also provides for two playback SPL presets, which can be set to any user-defined SPL, such as 85 dB (film) or 82 dB (for TV work). Another nice touch offered by the remote is a separate volume pot for setting the playback level when the mono switch is active. Additionally, an "insert" switch lets the user insert an encode/decode system (such as Dolby's SEU4/SDU4 or DP562/DP569) into the chain and instantly make A/B comparisons between discrete and matrixed tracks.

Perhaps the system's coolest feature is its ability to monitor several sources simultaneously. Simply select several source buttons on the top of the remote and the unit will play all of these tracks simultaneously with their panning/routing intact. In this mode, The Director becomes a fixed 1:1 line-level mixer for stems or submixes. The implementation here is simple, but this feature adds enormous power to the system.

The Director's audio performance is top notch. Specs include a bandwidth that's only -0.2 dB at 10 Hz and -3 dB down at 70 kHz, and THD+N is 0.004% (10 to 30k Hz). High-quality DCAs are used for level control throughout the system, and outputs feature relays for power up/down transient protection. All switching is absolutely silent and glitchless in operation, and every switch on the remote has an LED for fast checking of system status.

Adgil's The Director provides fingertip control for any console requiring flexible surround monitoring. And priced from less than $5,000 to over $10,000 (exact cost depends on system configuration), this is a solution that's versatile, expandable and priced a lot less than buying a new console.

Adgil Designs, distributed by Sascom, 34 Nelson Street, Oakville, Ont., Canada L6L 3H6; 905/469-8080; fax 905/469-1129. Web site: www.sascom.com. ■

The author would like to thank Malcolm Fife and Tyrell Studios of Sausalito, Calif., for providing assistance with this review.

AUDIO ENGINEERING ASSOC. R44C

RCA RIBBON MICROPHONE RE-CREATION

For those of us engaged in professional recording on a daily basis, the availability of "classic" microphones is often more a necessity than a luxury. Even with the development of ultra-quiet and linear microphones, engineers often look to the tried-and-true for the character of sound that is most appropriate to the task. We have seen a resurgence of tube microphone designs in recent years; there have been re-creations of classic designs such as the AKG C-12 (C-12 VR) and D-12 (D-112), along with the Neumann U67 and M49 (M149). I'll leave it to the reader to judge the success of each of these designs.

Now, Audio Engineering Associates (AEA) offers the R44C, a re-creation of the RCA 44BX classic ribbon design from the 1930s. This microphone was originally released in 1936 as the 44B and revised to its current basic design as the 44BX in 1938. In the ensuing years, RCA became an industry leader in the design and manufacture of ribbon microphones, including the 77C/77DC/BK-5/KU3A, among others.

From the outset, the 44BX was used for music and dialog recording. The bidirectional pattern was useful for recording ensembles using both sides of the microphone for balance while preserving visual contact between musicians. The 44BX soon became a standard for voice reproduction in the broadcast industry. With its generous proximity response (effective within two meters), it gave most voices a warm and appealing presence without accentuating sibilance. Various modifications to the basic 44BX design over the years provided for a response dip in the 9kHz range, as well as physical modification to the connectors, casing and mounts.

The RCA ribbon mic line was—and remains—well-known to the film industry. Most scoring stages acquired large stocks of ribbons directly from RCA during the 1930s and '40s. Although many of these microphones are now in the hands of collectors, there are still a number in use to this day on scoring stages and by scoring mixers in the film industry. While at Disney Studios in the 1980s, I was pleased and surprised to see more than 30 RCA KU3A microphones in the locker, with 18 in perfect working order. The Todd-AO scoring stage (with which I am now associated) possesses several KI-3A microphones. Though the Coles 4038 and Beyer M160/M130 have somewhat supplanted the older RCA units as current workhorses, most engineers would gladly use a good 44BS/77DX/KU3A for the appropriate recording task.

AEA has been a supporter and supplier of ribbon microphones to the audio/film industries for a number of years. The company imports the classic and still-produced Coles 4038 and provides mounts/connector modifications and service support. Now, AEA has undertaken the daunting task of re-creating the RCA 44BX exactly, as the AEA R44C ($2,000). Unlike some re-creations that sound alike, but do not look alike—or vice versa—this microphone looks, feels and sounds like the original. I had the opportunity to try this unit and compare it with two of my original 44s.

My first project was re-recording the classic Bernard Herrmann score for *Psycho*; the score was produced by Danny Elfman. The intent was to create a sound picture that was at once modern and classic through the use of high-quality overall treatment, along with spot microphones that would give the score a more "traditional" feel. We decided to use a normal M50 Decca Tree plus outriggers for the main pickup, but

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then we'd use only ribbons for close of spot pickup and to balance these elements roughly 50/50. We chose the Coles 4038 for violins, Beyer M130 for violas, Beyer M160 for cellos and RCA 44BX for basses. I was able to compare the AEA R44C directly to my two older 44s and found the sonic character to be identical. The level match was very close: Less than 2 dB separated the three units. We also did some quick listening tests with the 44BX on violins, which were very favorable. (We would have needed at least one more to actually record the score using these microphones in this position.)

My next project was recording John Williams' score for *Stepmom*. We used the R44C on trumpet, a standard microphone choice for many scoring mixers. In this application, the microphone performed flawlessly. Its smooth ribbon character and overall warm sound were perfect for this application. In fact, I would unhesitatingly use these microphones for most brass applications.

I should note that microphone preamps lend a great deal of character to the sound of ribbon microphones. The classic Neve 1073 and 1081 have always performed well, along with the more contemporary Boulder/Hensen 990 and Grace units. All of the above preamps have been designed with ribbon microphones in mind and with the high gain settings vs. noise and stability as important criteria. Note that it is always best to disable the phantom power well before connecting a ribbon microphone to a preamp input.

The availability of a new/old 44BX is most appealing. Even though the Coles 4038 has served well as a substitute, there is a sweetness and beautiful authority to the 44 sound that has not been re-created until now. As so many of the original units are in disrepair or out of service, the availability of a new microphone with these characteristics is very welcome. In all, the AES R44C is a very successful re-creation, one of the best in current memory.

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to show the presence of signal at audio, word clock or timecode inputs, not to mention clipping or any other error condition. I generally find indicators on the interface important in troubleshooting and in giving me the warm, fuzzy feeling that I can, at a glance, receive some assurance all is right in that corner of the digital domain. The Lexicon Studio leaves you wholly dependent on software configuration dialogs.

When first released, the only software that ran with the Lexicon Studio was Steinberg's Cubase VST, which is what I used for my review. However, Lexicon has released Wave drivers for the PC, so that any software that can gain access to a standard sound card can now use the Lexicon Studio. On the Mac side, Opcode Studio Vision Pro is the only program besides Cubase that specifically touts compatibility with Lexicon Studio. However, in theory, any ASIO-compatible software should work. Before taking the plunge, though, I suggest keeping in mind the dictum that the difference between theory and practice is that, in theory, there is no difference. Try before you buy.

After proper installation, the LDI-12T's inputs will show up in Cubase's Inputs window and ASIOLexiconStudio will be selected as the ASIO driver in the Audio System setup dialog. In this dialog, the audio clock source for the Studio is selected. ADAT data, ADAT sync, S/PDIF, word clock (from the LDI-12T's BNC input) or the LDI-12T internal clock can be chosen.

The ASIO Control Panel button opens the Core-32 control panel when using the Studio with other software. An independent LexStudio control panel can be accessed directly from the desktop, accessing the LDI-12T's functions as well as input/output routing for the PC-90. The rest of the PC-90 features are accessed through Cubase's Effects window, as described below.

The Core-32 Control Panel has "tabs" for four pages: Ctrl I/O, Reverb, Punch and Timecode.

The Control I/O page is where A/D and D/A levels are set and inputs selected. You can record any or all of the inputs simultaneously, but with only one clock source. Thus, recording from ADAT optical and RCA S/PDIF at the same time can only be successfully achieved if all of the components in the system are locked to the same word clock source. This would be true of any digital system that does not have real-time sample rate conversion on its inputs, and is the best way to go if you have a lot of digital components in your studio.

The labeling for input and output selection is rather confusing. For a start, nowhere was ADAT optical input mentioned in the dialog, nor was this clearly explained in the manual other than to say that it is possible to use the optical connector for either format. (The answer is that, when "S/PDIF RCA" is selected as the input, the optical input accepts ADAT data.) The settings in this dialog didn't seem to affect what appeared in Cubase's Inputs window, or which inputs could be activated there.

On the output side, the choices offered are S/PDIF RCA/ADAT optical, or S/PDIF opto. In fact, the S/PDIF RCA output is always active (as are the analog outputs), so the choice only affects the functioning of the optical output. Neither the dialog nor the manual mentions that the analog outputs are always active. Actually, the labeling in the output section would be the appropriate way to label the digital inputs. A little confusing at first, but now you know the secret.

The Reverb page maps the available physical and virtual inputs and outputs to the dual virtual "machines" in the PC-90. There is a lot of flexibility here: Inputs and outputs can be routed to/from any

of the LDI-12T's connections or a variety of VST sources and destinations. Selecting the LDI-12T Analog Inputs to feed a PC-90 machine and routing its outputs to the LDI-12T Analog Outputs turns it into a stand-alone reverb. The two PC-90 machines can be cascaded as well.

The Punch Record page is Lexicon's method of working around the latency problems that crop up with overdubbing in DAWs. Inputs chosen from the list in the Punch Record page will switch to direct input monitoring through the LDI-12T (instead of through VST) when they are selected as record inputs in Cubase. Punch Record substitutes for VST's monitoring, so you have to enable it and disable monitoring (Global Disable) in Cubase.

The Timecode page selects the timecode source and gives a few status indicators such as a Valid code LED, timecode type, a timecode display and a sample count.

From an I/O standpoint, that's all there is to the Lexicon Studio; everything else functions normally within Cubase's environment.

The PC-90 is accessed, logically, through Cubase's effects system. The PC-90's machines appear in Cubase's list of effects. Unlike many effects plug-ins, however, this plug-in uses real "iron" to do the job, instead of running on the host CPU.

Once instantiated in Cubase's Effects window, you must load a bank of PC-90 effects; no default bank is loaded. Arrow buttons allow you to step through the presets in the bank. Clicking on the Edit button brings up a mock-up of a PCM 90's front panel, where arrow buttons step you through the parameters one at a time or by pages. A "wheel" can also be used to change values. There are "LED" indicators next to the Page and Parameter arrow buttons. When the Page indicator is lit, the wheel changes pages; when the Param indicator is lit, the wheel changes parameter values. Note that the Inc/Dec arrows only affect parameter values, i.e. the wheel and the Inc/Dec arrows do not work the same way.

I would like to have a more facile front end for the PC-90—a default bank of effects loaded, a pop-up menu of all the effects in the currently loaded bank, text or drag editing of parameter values, and so forth—but I am given to understand that VST presents some limitations to these types of things. Perhaps it is Steinberg, not Lexicon that deserves this criticism. In any event, the interface constraints are unfortunate. I find wheels to be very useful physical controllers but awkward virtual controllers—circular mouse movements are not easy to control accurately.

With input and output routing and selection distributed between so many different windows and dialogs, it's useful to create Cubase key equivalents to bring all these setup areas up from keystrokes.

Interface issues aside, the PC-90 blows away host-based reverb plug-ins in terms of quality. Five algorithms are included: Ambience, Chamber, Concert Hall, Inverse and Room. These are not "lite" implementations either; there are better than a dozen parameters for each algorithm. Lexicon has been at the digital reverb game a long time now and has clearly got both the hardware and software nailed. Those of us who know and love Lexicon reverb will be thrilled because the PC-90 has Lexicon's hallmark: a lush, clean sound, free of ugly resonances and graininess.

I compared the LDI-12T's A/D and D/A converters to the excellent converters in my Panasonic DA7 digital mixer. I miked a doumbek with an Earthworks ZX30 feeding an Earthworks Lab102 mic pre. From there, I first fed it into the LDI-12T analog inputs and recorded it into Cubase. Then I patched the output of the

mic pre into the DA7 and ran an S/PDIF output, dithered to 20 bits by the DA7, into the LDI-12T S/PDIF In. Listening back (first through the LDI-12T analog outputs, then feeding the LDI-12T S/PDIF output to the DA7), I heard no significant difference between the converters on either side. The Lexicon converters are clearly state-of-the-art, very high-quality stuff. Just for grins, I tried the same test using the A/D converters of a PCM 80, ADAT XT20 and a 16-bit Pro Tools 2 system, none of which bested the LDI-12T. Not surprisingly, the old Pro Tools converters were clearly inferior to the LDI's.

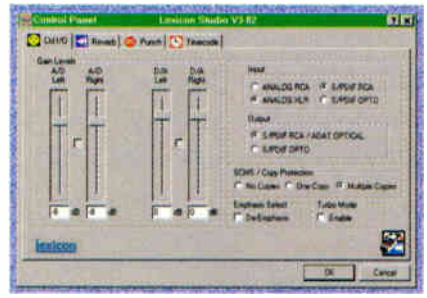
Although I was easily able to achieve data transfer to and from my XT20, I was unable, in my first several trials, to get the LDI-12T to read timecode from the ADAT Sync, although my JLCooper dataSync2 did so happily. I was never able to explain why I couldn't get the Studio to read ADAT Sync on my original system (hey, we're talking about computers here: voodoo happens), but a later attempt with a Compaq system provided by Lexicon proved successful and I was able to transfer audio in both directions.

In the course of that investigation, several other interesting problems surfaced. I tried feeding ADAT Sync to the dataSync, and SMPTE Out from the dataSync to the LDI-12T and found that the LDI-12T wouldn't read the dataSync's time code, but my Opcode Studio 3 interface would. I guessed this might be due to the dataSync's SMPTE output being unbalanced, because the LDI-12T had no difficulty reading SMPTE generated by an Alesis AI-2, which has a balanced timecode output. Lexicon suggested that the dataSync's SMPTE output level might not have been sufficient for the Studio. Frankly, I hope I was right, because it's a pain to have to boost SMPTE levels between devices.

I also discovered that attaining proper recording was a matter of correctly setting numerous parameters in Cubase, mostly tweaky ASIO things. For example, I was unable to record more than eight tracks at a time until I adjusted a buffer setting. Lexicon's technical support was impressively knowledgeable on the intricacies of ASIO, Cubase and ADATs. Many of these idiosyncracies are documented as app notes on Lexicon's Web site.

The current version of Steinberg's ASIO does not allow the Lexicon Studio to provide any ADAT transport or synchronization features (other than reading timecode from ADAT Sync), so all transfers between ADATs and the Studio require the ADAT to be the master. ASIO 2, which should be available by the time you read this, adds the capability for sample-accurate sync in such transfers. In fact, the current Mac drivers do not even implement the ability to read timecode from ADAT sync. Furthermore, the lack of any MIDI connectors on the LDI-12T dictates the use of a separate MIDI interface for any MIDI Time Code or MIDI Machine Control functions. The lack of ADAT machine control via ADAT sync is disappointing at best, and irksome in more frustrated moments. Perhaps ASIO 2 will solve all of that.

Also revealed during this review were some of the trade-offs of the newest DAW paradigm. When DAWs first became available, they were pretty much all integrated hardware/software systems. This meant they were expensive, and you were forced to accept the strengths and weaknesses of both the hardware and software. In recent years, there has been a growing trend toward systems that use



The Control I/O page lets you set A/D and D/A levels, and select inputs and outputs.

drivers to integrate hardware and software from different manufacturers. As it turns out, this approach has its own problems.

In the case of the Lexicon Studio, for example, many hardware options are included, but their availability for use depends on their implementation in the front-end software. For instance, Cubase currently makes no use of the LDI-12T's ADAT Sync Out, which is why there is currently no ADAT machine control. Nor is there any software that currently makes use of the LDI-12T's RS-422 connector to provide Sony 9-pin machine control. Similarly, as the PC-90 is a plug-in (albeit one that runs on dedicated hardware), its user interface is constrained, in part, by the limitations of the host's plug-in architecture. Finally, even when features are implemented in both hardware and software, a high level of coordination is required between the engineers of the hardware and software vendors.

Assembling a system that uses hardware and software from two different manufacturers requires the buyer to investigate in detail to determine what the resulting integrated system's real capabilities will be. Once you find the magic settings, I would think things will work smoothly, but plan for some ramp-up time while you look for them.

At $2,999, the Lexicon Studio with the LDI-12T interface is hardly the cheapest I/O hardware you can buy right now. Nor does it offer as many inputs and outputs, analog or digital, as some other options. If you look at the Lexicon Studio as simply an I/O front end for a DAW, it does not appear to be such a great buy, in spite of the superb audio quality.

However, looking at it that way completely discounts the PC-90, a very bad mistake, indeed. Looking at the Lexicon Studio as a PCM 90 with an excellent I/O interface for up to eight channels casts things in a wholly different light, one that makes much more economic sense. With the ability to use the PC-90 as a standalone reverb or tightly integrated into Cubase (or whatever front end software you choose), the Lexicon Studio appears a much more attractive package. Add to that the new interfaces Lexicon is bringing out, and the Lexicon Studio could be a solid contender in the hot, hot DAW war.

The Lexicon Studio has a number of niggling little bits of awkwardness in its user interface and mechanical design, and the documentation, though clearly written, still left me puzzled on some points. But all of that diminishes in importance next to the pristine sonics of both the LDI-12T and the PC-90. Information about the Studio on Lexicon's Web site is a mixed bag. The site is stocked with a number of useful applications notes, but I was unable to locate the Studio's minimum platform specifications (although they are in the manual online, as well as the one included with the product).

Many readers only look at the first and last paragraphs of a review: the first to get a basic description, the last to see the reviewer's final thoughts and recommendation. If you're one of those readers, let me make it easy for you: I have a few issues with the user interface, and you'll need to add hardware options to get 16 or 24 channels of digital I/O, but if you're looking for a system with flexible I/O, great converters, and knockout reverb, the Lexicon Studio is something you should investigate.

Lexicon, 3 Oak Park, Bedford, MA 01730; 781/280-0300; fax 781/280-0490. Web site: www.lexicon.com. ■

Larry the O has been a regular contributor to Mix *since 1984. He performs and provides music and technical services under the aegis of Toys In the Attic.*

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ROYER LABS R-121

RIBBON-VELOCITY STUDIO MICROPHONE

Ribbon mics, by nature, exhibit a warm and friendly tone with a natural figure-8 pattern that's useful in a variety of studio applications. However, ribbon microphone fans—and many respected engineers swear by these mics for particular applications—have few choices. There are the vintage models, which include very old and fragile mics like the RCA 77, 44 and BK11 models, and Bang & Olufsen ribbons, none of which are manufactured anymore. And there are a few currently produced ribbons, including the Coles 4038 and 4104B models, the Beyer M500 handheld mic and AEA's R44c, a replica of the RCA 44.

It is therefore a cause for celebration that another manufacturer has stepped forward with a ribbon design—this one taking advantage of recent developments in magnet design, materials and mechanical construction. The new Royer R-121 Ribbon-Velocity studio microphone uses a pure aluminum ribbon measuring 3/16-inches wide by 1.75 inches long and just 2.5 microns thick. This ribbon element is suspended between two powerful neodymium magnets in a specially designed flux-frame assembly. The magnets protrude like a pair of "ears" through machined slots on either side of the mic's body. (Be careful about placing the microphone near ferrous metal particles and dust as they will stick to these magnet ears.)

The microphone body, a burnished nickel-finished steel tube (black matte chrome also available) measuring 6.13 inches long by 1 inch in diameter, is an integral design feature and is said to reduce the audible effect of cavity resonance. A built-in, two-stage, stainless steel screen arrangement provides acoustical damping for the ribbon as well as wind blast protection. The screen also prevents the internal magnet assembly from collecting metal particles.

I have found that older ribbon mics are sometimes big, heavy and obtrusive, which can make them difficult to position and work with in the studio. By contrast, the Royer's small size and weight (only 8.6 oz.) make it as easy to use as any dynamic or condenser mic. The Royer is a "side address" mic, with a fixed figure-8 polar pattern. I found that the mic sounded the same and was equally sensitive on either side. Maximum SPL is rated at 130 dB, and I tested this specification often. Frequency range is rated at 30 to 15k Hz with sensitivity at -53 dBv Ref. 1 volt ±1dB—that's more output than a Shure SM57 dynamic or the old RCA 44 ribbon. Self-noise (not printed on the spec sheet) is very low, as expected; there are no internal preamp electronics, and phantom powering is not required. (In fact, phantom power should be turned off, as a faulty cable could damage the ribbon). Rated load impedance is 1,500 ohms.

I had the opportunity to use two Royers during tracking sessions for a rock album. I would classify the microphone as a musical instrument mic since it may not be the first choice as a general-purpose vocal mic. I used the mic on electric guitars with great success—it gave me a warmer and fatter sound than my favorite dynamic. I like to mix microphones when recording guitars, and the Royer's sound is unmistakable whether mixed with another microphone or on its own.

The mic's sound didn't seem to change during many hours of abuse from two Marshall cabinets. I used one of the R-121s close to the speaker and another placed farther away as an overall cabinet mic. Due to the proximity effect, a dynamic or condenser mic on the cabinet would sound thinner than the same mic up close, but this was not the case with the Royer. The figure-8 pattern is noticeable with either mic placement, and there is room for some interesting experimentation here. I try putting the "null" (the side of the mic) of the pattern toward the amp cabinet. If you "null out" the close mic, you'll get a close sound with extra room ambience...a little hard to describe. If you null out the far-

BY BARRY RUDOLPH

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ther-away cabinet mic, the effect is similar to an even farther-away room mic (or the illusion of a bigger recording space). I also put one Royer equidistant between two Marshall cabinets facing each other. I flipped the phase of one cabinet (speaker cable) so the two cabinets were "pushing and pulling." I got a very fat guitar sound that pumped a lot of air and I lived to tell about it!

Next, I tried both Royers on grand piano. Since I wanted a close, pop piano sound, I put the mics over the hammers, one at the low end and one at the high end. I didn't have any phase problems as I thought I might have with two figure-8 mics. Mono compatibility (does anyone care these days?) was about as good as any wide-spaced pair of cardioid mics. I did get extra ambience and a little bounce off the piano's fully opened lid. All of these features led to a good, full piano sound that was not too bright, the right size to fit within the track—all without any furious EQ twiddling.

Using two Royers as drum overheads provided a warmer sound than I am used to but worked fine for the softer ballad I was recording. However, for that popular overbright *sound du jour* drum overhead sound, I would probably go with my Milabs. (A condenser mic is probably an unfair comparison.)

Royer also makes the Royer/Speiden SF-12 stereo coincident ribbon microphone. The Speiden design consists of a dual capsule, stereo-crossed figure-8 with two ribbons, one on top of the other, positioned at 90 degrees to one another—the center axis is at the 45-degree point between the two ribbons' center axes. With a 2-micron ribbon weighing about 0.3 milligrams, this mic is said to exhibit excellent transient response. This is the only Blumlein pair of ribbon mics currently made and is designed for orchestral, choir recording or any other distance-miking application. The Royer R-121 sells for $995 retail while the SF-12 Royer/Speiden microphone sells for $1,995.

Royer Labs, 821 North Ford Street, Burbank, CA 91505. Phone: 818/760-8472. Web site: www.royerlabs.com. ■

Barry Rudolph is an L.A.-based recording engineer. E-mail him at: BRudolph@worldnet.att.net; visit his Web site at: http://home.att.net/~brudolph.

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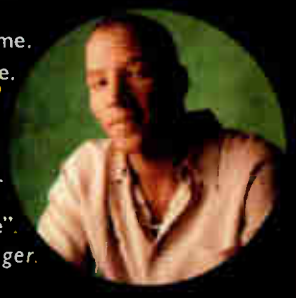

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FIELD TEST

SPIRIT 328

DIGITAL 8-BUS MIXING CONSOLE

There are more than a dozen entries in the "low cost" (i.e., less than $10,000) category of digital consoles, but in terms of pricing, performance and fast, logical interface, the Digital 328 from Spirit by Soundcraft clearly sets itself apart from the pack. For example, the 328 ships complete, ready to go right out of the box: So whether you need analog or digital I/O, the board is equipped to handle either, and it includes 16 channels of ADAT Lightpipe *and*

Tascam TDIF interfacing as standard, along with 16 analog line/mic inputs. And unlike some of its competition, the 328's list price of $4,995 is for a functional mixer, rather than the old "Here's your new car—but by the way, did you want tires with that?" routine.

That said, the 328 does offer some useful options, including a cascade cable for linking two mixers; 8-channel mic-preamp-to-TDIF module (add two to give the 328 32 mic inputs, say for live sound/ theater use); TDIF to eight-channels of AES/EBU sends/returns; and an analog tape interface providing eight additional tape sends/returns.

Physically, the mixer takes up a small 21x28-inch footprint and weighs in at just over 31 pounds. But under the hood, the 328 packs a substantial punch, with 100mm moving faders; 42 inputs on mixdown; dynamic (SMPTE/MIDI driven) or 100-scene snapshot recall of nearly every console control; two onboard Lexicon multi-effects; Orban-designed dynamics; digital and analog effects sends to external processing; RS-422 port for loading software upgrades via a PC or Sony 9-pin control; word clock I/O; MIDI in/out/thru; MMC controls with both transport keys and the ability to arm up to 16 tracks; and main outs in both digital (S/PDIF and AES/EBU) and analog (balanced XLR and unbalanced RCA) formats. An additional Lightpipe output is assignable to the aux bus, FX bus, mix output or group buses. This is useful for connecting Lightpipe-equipped digital effects, such as the Alesis Q20, directly to the 328's sends, staying completely in the digital domain.

Careful attention was paid to the 328's audio pathways throughout. The 328 uses Soundcraft's UltraMic+™ padless preamps, 24-bit ADCs and DACs and 56-bit internal processing, and here the 328 really shines: These low-noise mic preamps are clear and transparent with tons of headroom.

The two onboard Lexicon units feature reverb, delay, chorus, flange, etc. and multi-patches, such as chorus plus delay. The 328's two mono or stereo dynamic processors offer compression, limiting or gating, and are assignable to any input, output or I/O group.

Also on the input side, each of the analog 16 channels uses standard balanced XLRs for mics and TRS ¼-inch balanced line connections—there's none of that "six XLRs for mics followed by ten TRS mic input jacks" approach here. A global switch supplies 48 VDC phantom power to the mic inputs.

USER INTERFACE

The master section is based around a parameter/data wheel, four cursor arrow keys, enter/undo/redo/exit buttons, 2-line by 16-character backlit LED screen and switches for entering the snapshot, dynamics/effects or main setup menus. Data entry is fast, and it's nice to have a large lighted Undo or Exit key in those rare moments when you're starting out on the board and momentarily get lost. Speaking of lighted keys, every switch on the 328 (except for the high-pass input filters) is either lighted or has an LED next to it to indicate status. A snapshot section offers quick access to 100 snapshots for storage/recall/editing, with the ability to name each snapshot. Every desk parameter except channel gain and HPF filter settings can be stored, and snapshots can be triggered/recalled manually, or via MIDI clock, MTC or SMPTE. Dynamic automation allows for MIDI control of console parameters/settings such as level, pan, EQ, reverb and aux level from a MIDI sequencer.

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monitor output levels and dynamics activity, while 16 meters (10-segment LEDs) in the channel section can be instantly switched in banks to display levels of mic/line inputs, tape return signals, and group and master levels. With this kind of flexibility, there's no need for an external meter bridge—another "option" you won't need to buy.

IN USE

The manual is straightforward and generally complete, but as with most digital devices, the documentation bypasses essential touches such as schematics, flow charts or block diagrams, although operations are explained in detail, including hookup illustrations. However, due to the 328's logical user interface, you probably won't really need the manual, except for some advanced functions. Spirit has thoughtfully provided a useful QuickStart Guide for smooth interconnecting with various Tascam or ADAT MDMs, where minor quirks in different operating software versions of these MDMs (even with the same model number) have caused clocking problems with digital consoles.

In operation, the 328 is fast and intuitive, thanks in large part to its E-Strip interface. Laid out horizontally across the top of the fader section, the E-Strip is a row of rotary encoders and backlit buttons that simply contains all the controls found on a traditional analog console (EQ, aux and panpots), but turned sideways. So if you want to tweak the EQ on channel 13, merely push the select key above channel 13's fader and start tweaking the EQ knobs immediately. A bank switch determines whether the E-Strip (and moving faders) correspond to channels 1 to 16 or 17 to 32; touch one button and all the controls instantly revert to either bank. There are no subroutines or hidden pages; the E-Strip concept is extraordinarily simple. And to ease status monitoring, a ring of LEDs around each rotary encoder indicates position at a glance. Anyone familiar with an analog console can sit down at a 328 and be working in a matter of minutes.

Each channel has 3-band fully parametric EQ, with continuously variable Q (bandwidth) and ±15 dB of gain control. The EQ is smooth and musical and is designed to emulate analog EQ in operation; so rather than having three full-spectrum EQ bands, the low band operates from 40 to 800 Hz; mids are 200 to 8k Hz; and the high band goes from 1 to 20 kHz. Ample overlap is provided for most applications, and in situations requiring a different EQ—say a -40dB notch filter or tube limiter—the outboard device could be patched through each analog channel's TRS (send/return) insert point, which connects after the line/mic stage but before the A/D converter. Here again, the E-Strip makes EQ'ing easy by presenting nine rotary knobs right in front of the user—in fact, in this case, the E-Strip is faster to use than the controls on an analog board. However, adjustments would be easier if the frequency ranges of each band were marked on the E-Strip.

The two onboard Lexicon effects processors use algorithms adapted from the MPX100 and PCM 90 units and are high-quality overall, with up to ten editable parameter settings per program; each processor provides 128 factory and 128 user presets. The Lexicon effects are normaled to sends 5 and 6, but with a touch of a button, the internal effects can be bypassed, with sends routed to outboard devices via the digital aux out bus.

Also in the master section are pots for control room and headphone levels with mute/dim/mono switching and switches for monitoring the 2-track A, B or the stereo mix bus. I wasn't wild about the placement of these controls (just below the jackfield near the top of the mixer), as these knobs are often the most-used controls on a board, and sometimes you really need to get to these in a hurry. But speaking of listening, any input may be soloed using AFL, PFL or solo-in-place.

Overall, I like this board. It has a logical interface and enough knobs for fast operation (as such it could be ideal in a live performance or broadcast situation) while its audio performance is clean enough for any recording application. The small LED display does tax one's patience when entering effects parameters and naming presets/snapshots/etc. (which requires the old "spin knob, press enter when the letter you need appears" routine), but, fortunately, this is not something I do a lot of in the heat of cutting a hot mix. Besides, with the flexibility of the E-Strip interface, few console operations require use of the screen anyway. But in any case, a retail of $4,995 for a console that comes with the tires makes the Spirit Digital 328 a contender on any track.

Spirit by Soundcraft. 4130 Citrus Ave., Suite 9, Rocklin, CA 95677; 916/630-3960; fax 916/630-3950. Web site: www.spiritbysoundcraft.com. ■

Relive the Magic.

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- 30' Mogami cable
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- Magic

"For sheer tube magic, a realistic vintage vibe, and superb craftsmanship, the L47MP takes top honors."
Electronic Musician
Brian Knave, Feb. 98

". . . this is the microphone of choice for the project studio owner who wants to buy only one microphone. And at the given asking price, it is the biggest bargain in microphones today."
Pro Audio Review
Dr. Fred Bashour, Feb. 97

"When you tuck vocals recorded with an L47MP into a mix, something magical happens. . . I cannot praise this microphone enough. Don't wait--buy it."
Mix
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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CIRCLE #109 ON PRODUCT INFO CARD

STUDIOPRO '99 TO EXPLORE NEW TECHNOLOGIES

Emerging Technologies and the Future of Audio Production will be the theme of StudioPro99, to be presented by *Mix* June 14-15 at the Universal City Hilton in Los Angeles. The magazine's second annual educational conference will feature more than 50 noted audio professionals tackling some of the hottest issues facing the industry today. It will be moderated by *Mix* editors and contributors.

StudioPro99 will feature ten panels, covering a wide range of critical topics. A highlight of each day will be a luncheon forum where attendees will have a chance to mingle before the panel discussions: Music Producers (June 14) and Surround Mixing for Music, Film and DTV (June 15). In addition, consulting editor Stephen St.Croix—who can be counted on to add spice to any proceeding—will host Salon St.Croix, a reception for conference attendees on Monday evening, June 14.

StudioPro99 is sponsored by Dolby Laboratories, Quantegy, Alesis, Audio-Technica and Mackie Designs, in cooperation with the Recording Academy, SPARS and the Music Producers Guild of the Americas.

Here's the complete schedule of StudioPro99:

MONDAY, JUNE 14

1. 9:00 to 10:30 a.m. WHAT ARE YOU MIXING TO...AND WHY? MIX FORMATS AND CONVERSION ISSUES

Moderator: George Petersen (Editor, *Mix*)

When it comes to capturing that final mix, today's engineers and producers face a growing array of options in both mixdown formats and analog-to-digital conversion. Top recording and mastering engineers will discuss the pros and cons of the available formats from both technical and aesthetic perspectives.

2. 10:45 a.m. to 12:15 p.m. STUDIO AND CONTROL ROOM ACOUSTICS: PRACTICAL SOLUTIONS TO COMMON PROBLEMS

Moderator: Bob Hodas (Acoustical expert and *Mix* contributing editor)

Whether we're miking instruments or listening back to mixes, acoustics play a crucial role in shaping the sounds we record and the mixing decisions we make. Focusing on common acoustic problems, this panel of noted studio designers and operators will explore a range of solutions for existing facilities.

3. 12:30 to 2:15 p.m. LUNCHEON FORUM. MUSIC PRODUCERS: BALANCING CREATIVITY, COMMERCE AND TECHNOLOGY

Moderator: Maureen Droney (Recording engineer and *Mix* Los Angeles editor)

A major role of the producer is balancing the creative, technical and commercial aspects of making a successful record. Leading producers from a variety of musical genres will share their thoughts on how the job varies from artist to artist and project to project.

4. 2:30 to 4:00 p.m. INDEPENDENT ENGINEERS/PRODUCERS: TAKING CARE OF BUSINESS

Moderator: Dan Daley (*Mix* East Coast editor)

Spending 16 hours a day at the studio might be a great way to make a living, but for the independent engineer or producer it leaves precious little time to keep business and personal affairs under control. This panel of seasoned veterans will explore a broad range of topics related to the business aspects of their careers.

5. 4:15 to 5:45 p.m. THE HYBRID WORKSPACE: INTEGRATING CONSOLES AND WORKSTATIONS

Moderator: Larry Blake (Film sound editor/mixer and *Mix* film sound editor)

This panel will examine the numerous permutations available on the console-to-workstation continuum—including the use of hybrid control surfaces—and discuss strategies for fusing the two technologies into a seamless working environment.

6:00 to 8:00 p.m. SALON ST.CROIX: SPECIAL EVENING RECEPTION

Join *Mix* columnist ("The Fast Lane") and industry gadfly Stephen St.Croix and moderators and panelists of StudioPro99 for food, drinks and talk at the Universal City Hilton.

TUESDAY, JUNE 15

6. 9:00 to 10:30 a.m. AUDIO PRODUCTION FOR THE WEB

Moderator: Paul Lehrman (Composer, educator and *Mix* columnist)

In the past five years, the Internet has transformed global communications and, in the process, become a significant medium of content delivery. This panel will present practical tips and techniques for Web audio production, as well as examine issues posed by the Web for the audio industry.

7. 10:45 a.m. to 12:15 p.m. SOUND DESIGN FOR INTERACTIVE ENTERTAINMENT

Moderator: Larry the O (Sound designer and contributing editor to *Electronic Musician*)

In the burgeoning field of interactive multimedia, audio production involves a host of aesthetic, technical and project management issues that differ from those of traditional linear media such as TV or film. This panel of sound designers and audio engineers for game companies will look at the art and craft of creating a responsive, immersive environment for end-users.

8. 12:30 to 2:15 p.m. LUNCHEON FORUM. SURROUND MIXING FOR MUSIC, FILM AND DTV

Moderator: Larry Blake (Film sound editor/mixer and *Mix* film sound editor)

Surround sound, employed for years in the worlds of film and home video, may soon revolutionize the music and television industries. Leading mixers for records, film and TV will be on hand to look at how surround sound has historically been used in film, and to consider how various techniques and approaches may be adapted to the requirements of the record industry, DTV and home video.

9. 2:30 to 4:00 p.m. CREATING THE SURROUND MONITORING ENVIRONMENT

Moderator: Bob Hodas (Acoustical expert and *Mix* contributing editor)

Picking up from the Surround Mixing Forum, this panel of leading designers, engineers and studio operators will outline the critical issues involved in creating an optimal monitoring environment for surround sound/5.1-channel audio production. We'll look at the relevant concerns in both designing new rooms and converting existing spaces.

10. 4:15 to 5:45 p.m. NEW AUDIO FORMATS: DVD-AUDIO AND SUPER AUDIO CD

Moderator: Philip De Lancie (*Mix* new technologies editor)

More than 15 years after the CD was introduced, consumer electronics manufacturers and major labels have two new optical-disc music formats at the starting gate: DVD-Audio and Super Audio CD. This panel will cover the technical attributes of the two formats, as well as the differences between them, and explore the implications of their successful introduction. ■

MIX Presents

Studio Pro99™

Emerging Technologies & The Future of Audio Production

June 14-15, 1999
Universal City Hilton, Los Angeles

- Join the editors of *Mix* for two information-packed days of panels and forums with the leaders and innovators of professional audio.
- Learn about the technologies, formats and new applications that are shaping recording and sound production in the 21st century.
- Talk face-to-face with more than 60 of the world's foremost technologists and production pros about these and other crucial topics:
  - What Are You Mixing to—and Why? Formats and Conversion Issues
  - The Hybrid Workspace: Integrating Consoles and Workstations
  - Creating the Surround Monitoring Environment
  - New Audio Formats: DVD-Audio and Super Audio CD
  - Sound Design for Interactive Entertainment
  - Audio Production for the Web
  - Studio and Control Room Acoustics: Practical Solutions to Common Problems
  - Independent Engineers/Producers: Taking Care of Business

PLUS—Two very special Luncheon Forums with some of the leading engineers, producers and film sound editors in the industry:

- June 14: Music Producers: Balancing Creativity, Commerce and Technology
- June 15: Surround Mixing for Music, Film and DTV

To receive additional information and registration materials, fax Daniela Barone at (510) 653-5142. Email: daniela_barone @intertec.com. (Please include your name, address and phone number.)

Moderators

Larry Blake
Dan Daley
Phil De Lancie
Maureen Droney
Bob Hodas
Paul Lehrman
Larry the O
George Petersen
Stephen St.Croix

StudioPro99 Panelists

Murray Allen • George Augspurger • Clint Bajakian Michael Bishop • Rob Cavallo Ed Cherney • Joe Chiccarelli Harry Cohen • Dave Collins Peter D'Antonio • Richard Dodd John Eargle • Denzil Foster Don Gehman• Scott Gershin Peter Grueneisen • Steve Hall Ted Hall • Bill Johnston • David Kawakami • Tim Larkin • Robert Margouleff • Sylvia Massy • Paul Massey • Gary Myerberg • Shawn Murphy • Ron Nevison • Shevaun O'Brien • Ed Outwater • Thom Panunzio • Chris Pelonis • John Potoker • Dave Reitzas • Jeff Rona • John Ross • Bob Safir Hank Sanicola • Todd Sawicki Al Schmitt • Tony Shepperd Ron Simpson • Andrew Spanswick • Ed Thacker • Dann Thompson • Thom Trumbo Leanne Ungar • Vincent Van Haaff • Mike Verdick • Matt Ward • Mark Waldrep

As of February 15, 1999. Panelists subject to change.

CIRCLE #110 ON PRODUCT INFO CARD

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PREVIEW

EV M2 STEREO MIXER

Electro-Voice (Buchanan, MI) intros the M2 High-Performance Stereo Mixing Console, a full-featured, 4-bus mixer available in 12- and 16-channel models. Inputs are 3-pin balanced XLR-type with phantom power and balanced TRS line inputs. Each input channel features a mic/line input switch, trim control and peak LED. The EQ is 3-band with a sweep mid, and shelving LF/HF. The four aux sends have two pre- and two post-fader; two stereo aux returns are standard, and inputs feature PFL, mute and a 60mm fader. Frequency response measures 20-20k Hz +1/-2 dB. THD is <0.1%.

Circle 327 on Product Info Card

PENDULUM AUDIO TUBE MIC PRE/DI

Note: This product was inadvertently omitted from the mic preamp report in our February issue. Here's what you missed:

The MDP-1 from Pendulum Audio (Gillette, NJ), a 2-channel mic preamp/direct box, features a Class A, all-tube signal path with transformerless output stage. The MDP-1 can be ordered with a choice of input transformers: a Jensen 13K7 for a full, open sound with high-end sparkle and deep lows; or a custom-wound transformer for extra presence and more midrange clarity. Other features include phantom power switching, phase reverse, -20dB input pad, a ten-position low-cut filter and large, illuminated VU meters. Price is $2,495.

Circle 328 on Product Info Card

KLARK-TEKNIK 2-CHANNEL EQ/MIC PRE

Klark-Teknik (distributed by the Klark Teknik Group, Buchanan, MI) intros the DN422M, a one-rackspace, dual-channel equalizer with integrated mic preamps. Each channel features a Midas XL4 preamp with balanced I/Os, pad, phase reverse and phantom power switches. A front panel insert switch (with line trim control) allows external processors to be inserted between the mic pre and EQ stages. Each channel has a 4-band parametric EQ with bell/shelf switches for high- and low-frequency bands, plus a separate variable highpass filter.

Circle 329 on Product Info Card

SENNHEISER DIGITAL WIRELESS

Sennheiser's (Old Lyme, CT) D1000 Digital Wireless Microphone System is a user-selectable 4-channel unit operating at 900 MHz ISM bandwidth. Incorporating X-Wire technology, the D1000 is available in handheld, bodypack and instrument versions. Internally mounted antennae in the half-rackspace receiver deliver signal to two independent diversity audio sections. Optional external antennae are available for extended-range applications. The small, lightweight transmitter operates on a single 9-volt battery. Price: $895.

Circle 330 on Product Info Card

TRAVIS SHOWPRO MIDI SOFTWARE

Jim Travis Software (Absecon, NJ) announces ShowPro MIDI Version 3.1, a Windows program designed for live production/recording applications. ShowPro MIDI lets the user create up to 2,000 cues, each of which can trigger audio from the PC's internal drive, CD-ROM drive or SCSI-equipped device. ShowPro MIDI specifies volume settings and fade rates and can cue MIDI Machine Control and MIDI Show Control operations. Playback control can be altered on-the-fly, and wait time, links to another cue, and "autofollow" may be modified. A real-time control panel is always available for audio playback devices. ShowPro MIDI runs on a Pentium PC with Windows 95/98. Retail: $329. A 30-day free trial version is available at www.showpromidi.com.

Circle 331 on Product Info Card

NEUTRIK CONNECTORS

Neutrik (Lakewood, NJ) debuts two new connectors incorporating the two-pole Speakon® standard. The NL2FC and NL2MP provide stable and safe cable connections for amplifier/speaker coupling. Both accept a wide range of cable diameters and have CE (European safety regulation) compliance. Neutrik also offers a new series of BNC connectors in three versions: a non-locking

PREVIEW

"budget" connector set, a bayonet with accessible locking connector set, and a push-pull connector set. All three feature a new cable clamp that virtually guarantees an absolute constant wave propagation resistance of 75 or 50 ohms.

Circle 332 on Product Info Card

TC ELECTRONIC FINALIZER 96K

TC Electronic (Westlake Village, CA) replaces the Finalizer Plus with the Finalizer 96k Studio Mastering Processor. Features include 24-bit/96kHz resolution ADCs/DACs, uncorrelated stereo dithering, correlated mono dithering and inverse dithering for interfacing with digital audio equipment. The Finalizer 96k offers enhanced dynamic range and includes a 3-band stereo width control, sample rate conversion at rates from 32-48kHz, word clock input, internal digital clock for jitter-free digital I/O, ADAT port for direct analog-to-Lightpipe stereo conversion and S/PDIF optical I/O. Price is $2,995, and an upgrade path is offered for owners of previous Finalizers.

Circle 333 on Product Info Card

DRAWMER MX-60 FRONT END ONE

Drawmer (distributed by Transamerica Audio Group, Thousand Oaks, CA) offers the MX-60 Front End One, which includes a studio-grade mic preamp, gate, de-esser, compressor/limiter and 3-band EQ with sweepable midrange and a "tube modeling" stage for creating subtle warming or more obvious high-frequency effects and treatments. The input stage accepts mic, line or instrument-level signals, and a front panel DI is provided. Price: $629.

Circle 334 on Product Info Card

HOT OFF THE SHELF

AKG Acoustics has cut prices on its large-diaphragm microphones and now ships them with the H 100 universal spider suspension. At your dealer now, or call 615/360-0499; visit www.akgacoustics.com...**TC Electronic's ADA 24/96 is a new 24-bit 96kHz ADA I/O card** for the M5000. The 24/96 converters run at double sample rate (64/88.2/96), and a powerful 100MHz DSP processor allows for selection among filter types. Call 805/373-1828 or visit www.tcelectronic.com... **Neumann/USA will distribute the True Audio Precision 8 mic preamp** in the U.S. Designed by Sunrise Engineering, the Precision 8 provides eight channels of transformerless mic preamplification (two inputs can be used as DIs). The Precision 8 is $2,495. Call 860/434-5220 or visit www.neumannusa.com...**New upgrades for the Weiss Engineering EQ1** make it 96kHz-capable and add EQ parameters. Windows software allows for automated control of the EQ1 or the EQ1-MK2. Read more at www.weiss.ch/gambit/eq1 ...**Gold Line's TEF Division now distributes Acoustic-X's** acoustical modeling software in the States. Developed by Pilchner & Schoustal, the Windows-based Acoustic-X software provides powerful analysis functions. Call 203/938-2588 or visit www.gold-line.com...**PMI Audio Group announces price cuts on** the JOEMEEK SC2.2 stereo compressor and the VC1 Studio Channel. Both are now priced at $999.99. Call 877/563-6335 or visit www.pmiaudio.com... **Music 2 Hues has released three new collections** of production music. The four-CD "Broadcast Series" includes over 250 tracks and three hours of music. The two-CD "MultiMedia Series" has 200-plus tracks of production music in .WAV format. New additions to the Royalty Free Music Collection are Swing Big Band and Power Corporate CDs. Visit www.music2hues.com...**ARX North America debuts the Phantom Plus™** 4-channel phantom power supply for mics and DIs. I/Os are balanced XLR. Call 818/225-1809 or visit www.arx.com.au...**VideoHelper's "Noise Generator"** is a four-CD set of sound design elements. More than 2,000 edgier, new sounds are listed in a 24-page booklet. Titles of the four discs are Hits, Whoosh/Transitional Elements, Noises and Drones/Beds. The set is $795. Call 212/633-7009 or visit www.videohelper.com...**Switchcraft's AAA Series of QuikTwist Q-G®** connectors features only two pieces and simple twist-on strain relief. Available in black or nickel finish and with gold contacts, the connectors can be ordered with three (XLR) to seven contact pins. Call 773/792-2700 or check out www.switchcraft.com...**The two-CD Themescapes royalty-free music collection from Loud Neighbors Music** is divided into 12 "construction kits," each with a primary theme and several alternate versions. The 48-track/95-minute set can be auditioned at www.loudneighbors.com, or call 888/400-2149 for a free demo CD...**Sweetwater Sound's new 1999 Equipment Directory** is available. Call 800/222-4700 for your free copy. ■

New Software/Hardware for Audio Production

GLYPH RACKMOUNT SCSI

Glyph Technologies (www.glyphtech.com) introduced a variety of rackmount storage systems. Trip is a three-rackspace SCSI storage enclosure for up to six different storage devices; the enclosure works in SCSI, Ultra SCSI, Ultra-Wide SCSI and LVD environments. The QuadraBurn Trip is designed to be an affordable solution for CD duplication with a PC; it is configured with four 4x-write/8x-read CD recorders, an Adaptec PCI SCSI card and Padus DiscJuggler software in one rackmount unit. A variety of other Trip configurations are available.

Circle 335 on Product Info Card

TELEX CDP 2001 CD DUPLICATOR

The CDP 2001 from Telex (www.telex.com) is a standalone desktop CD duplicator designed for multimedia and audio applications. The self-contained system supports all writing modes and is expandable to support DVD-R and CD-R. It is compatible with Telex's EDAT digital Master Duplication Workstation. Features include a Direct SCSI interface, a CD format detection function and simple one-touch operation. An optional Versatile Media Interface (VMI) card connects several slave enclosures for high-volume duplication, up to 280 CDs at once. Systems start at $5,695.

Circle 336 on Product Info Card

EMAGIC AMT8 ACTIVE MIDI INTERFACE

The AMT8 from Emagic (www.emagic.de) is an active 8x8 MIDI interface for Mac and Windows 95/98 platforms that features Emagic's AMT (Active MIDI Transmission) technology and USB support. The AMT8 is based on Emagic's Unitor8 8x8 MIDI interface/synchronizer, but without synchronization. The AMT8 can be integrated into a Unitor8 setup or used as a standalone interface. Drivers for Windows NT/2000 are currently under development. List price is $499.

Circle 337 on Product Info Card

OPCODE USB HARDWARE

New from Opcode (www.opcode.com) are seven USB hardware products for audio and MIDI, including the DATport and MIDIport series, and the audio and MIDI hybrid STUDIOport. The DATport USB audio interface for Mac and Windows (Windows 98 drivers are available now; Apple drivers available this spring) has two channels of coaxial S/PDIF and supports 16- and 24-bit audio at 44.1 and 48 kHz; retail is $249. Also in the DATport line, the DATport+Analog ($299) offers the same specs as the DATport, plus 2 mini-phone analog I/Os with 20-bit converters; the OPTICALport+Analog ($299) offers two channels of optical S/PDIF and mini-phone analog I/O. Opcode's first USB MIDI interface, the MIDIport 32 works with OMS-compatible Mac software or Windows 98 PC MIDI software. It has two MIDI ins and outs, for 32 channels. Look for MIDIport 64 and MIDIport 128, cross-platform rackmount interfaces offering 64 and 128 channels respectively, coming soon. And the new STUDIOport AMX, combining audio and MIDI capabilities in one rackmount unit, will also soon be available.

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STEINBERG/PROPELLERHEADS OPEN REWIRE

Steinberg (www.steinberg.net) and Propellerheads (www.propellerheads.se) recently announced the opening of the ReWire Protocol for use by other developers of digital audio products. ReWire is proprietary technology for transferring audio data between software applications in real time; it provides up to 64 channels of real-time audio, at high resolution and at most bandwidths. Both MacOS and Windows 98/NT-compatible, ReWire is also designed to ensure accurate synchronization between clients and server, and it provides common transport functionality (play, stop, locate etc.) for the entire system. Those interested in creating a ReWire program may apply, license-free.

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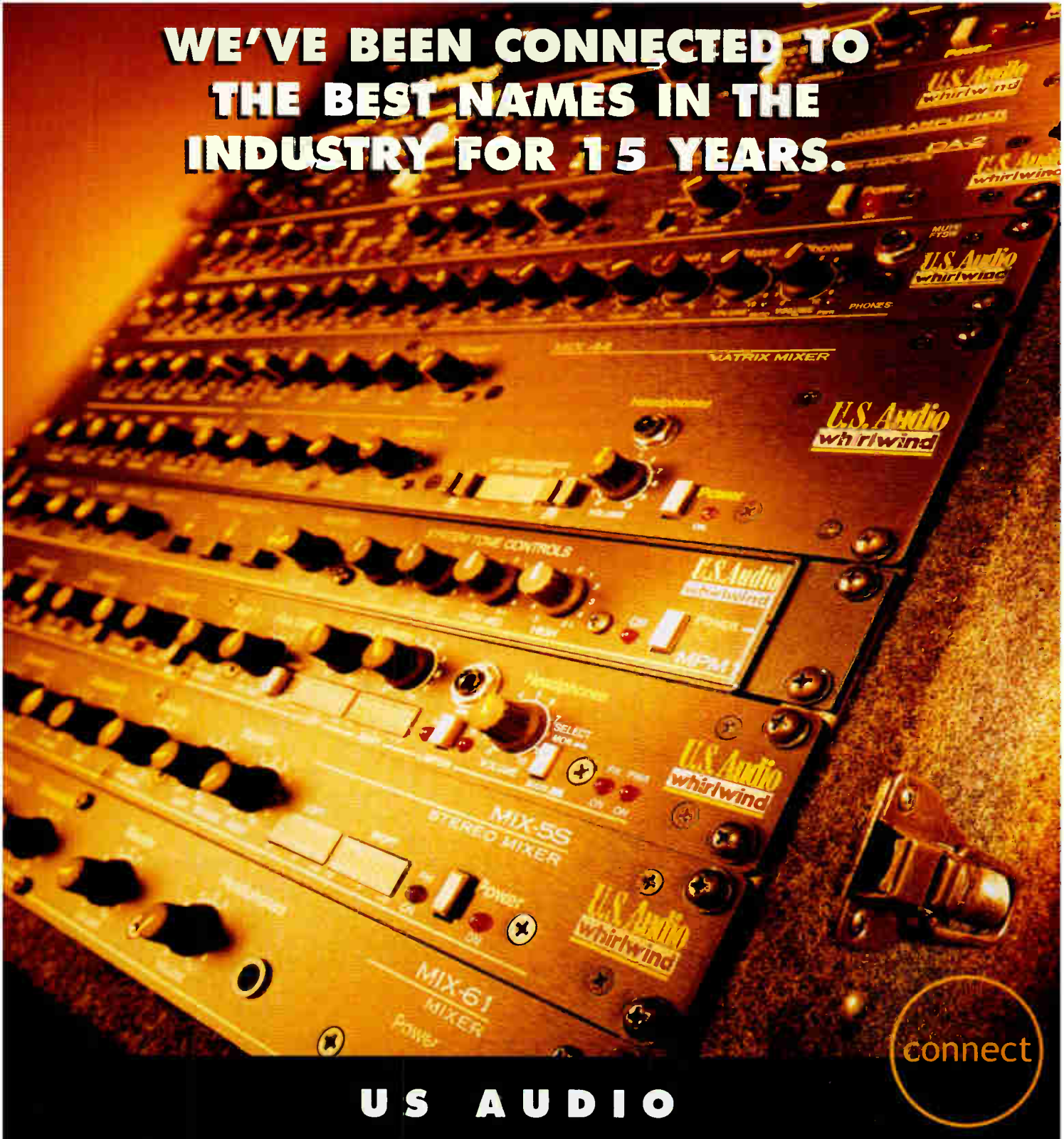
ARBORETUM NOISE REDUCTION SOFTWARE

Arboretum Systems (www.arboretum.com) debuts Restoration-NR, a hiss-removal application featuring 32-bit floating-point processing to generate up to 4,000 bands of gated EQ. In addition, Restoration-NR performs broadband noise reduction and combines automatic noise recognition with artifact control. The software is 24-bit/96kHz-compatible and has controls for threshold, attenuation, cutoff and boost, plus Learn and Search modes.

Circle 340 on Product Info Card

WAVE MECHANICS ULTRATOOLS

New from Wave Mechanics (www.wavemechanics.com) is the UltraTools plug-in bundle for Pro Tools TDM systems. The package consists of three DSP-intensive plug-ins, including the PurePitch formant-preserving pitch effects processor, the PitchDoctor formant-preserving pitch corrector, and the new SoundBlender effects processor. SoundBlender combines synth-like filtering and mod-



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CIRCLE #111 ON PRODUCT INFO CARD

New Software/Hardware for Audio Production

ulation with pitch shifters, intelligent arpeggiation and digital delays to create unique effects. The bundle retails for $895; a free upgrade to UltraTools for registered users of the PurePitch/PitchDoctor bundle is available for a limited time.

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NEW RELEASE OF SAWPRO

Innovative Quality Software (www.iqsoft.com) introduces SAWPro, the fourth-generation Windows-based workstation system software, now with 24-bit/96kHz record and playback capabilities. Other new features include multiple dither options, high-resolution 3D graphics, multitrack soft-clipping, pop-up shortcut menus and up to 99 levels of undo. In addition, DirectX and VST plug-ins are now supported. SAWPro features nonlinear, nondestructive editing and direct hard disk multichannel recording, plus 32 real-time mono/stereo tracks, support of 12 stereo devices and automated mixing.

Circle 342 on Product Info Card

PROGRAM SOLUTIONS CD AUTHORING STATION

Program Solutions Group (www.programgroup.com) announces the Black Rack, a rackmountable CD-authoring station. Included in the system are a 2GB hard drive, 4x CD-R burner and 24x reader. Built-in speakers allow users to listen to each track, either directly off the hard drive or from the reader; balanced stereo analog TRS inputs are also included. Other features include an A.F.D. (Automatic CD Format Detection) system that detects CD type, and facility for direct authoring from a Mac or PC.

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WAVEWARP EFFECTS PROCESSING SOFTWARE

WaveWarp from Sounds Logical (www.soundslogical.com) is object-oriented audio effects processing software for Windows that allows the building of effects by connecting basic components from a built-in library. Any variety of standard effects can be built, and an unlimited range of custom algorithms can be created. Effects can be networked in configurations such as series, parallel, feedforward and feedback connections. All effects run in real time on a Windows NT/95/98 Pentium, with any Windows-compatible soundcard. WaveWarp has mono, stereo and multichannel capability, multirate functionality, waveform editors and spectrum analyzers.

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UPGRADES AND UPDATES

CreamWare (www.creamware.com) releases **Version 1.1 of its Pulsar production environment**; features include three new synthesizers, reverb, reduced (by 30%) RAM consumption and interleaved Wave drivers... New from **Opcode** (www.opcode.com): **Studio Vision Pro V.4.2**, including Opcode's new Acadia Audio Engine, which adds mixing functionality by allowing integration with a variety of hardware. Also new is VST support, plus new parametric EQs...**Event Electronics** has made available a DSP•FX Virtual Pack demo including a **free, fully functional multi-element delay plug-in**, in addition to demo versions of ten additional Virtual Pack plug-ins. In other Event news, a new driver Version 2.10 provides **ASIO and Sound Manager support for Gina, Darla and Layla**, plus OMS support for Layla's onboard MIDI interface. Visit www.event1.com for more information... **Waves announces support for Digidesign's new Pro Tools|24 MIX**; get your update at www.waves.com. Waves also announces the TDM II, **a second volume of DSP plug-ins for Digidesign TDM systems**. The bundle includes the Renaissance EQ and Compressor, DeEsser, Maxx-Bass, the PS22 Stereomaker and MultiRack. Retail is $1,000...**Antares Audio Technologies** (www.antarestech.com) has **new versions of its Auto-Tune plug-in**: Auto-Tune TDM Version 2.0 ($599/$99 upgrade) features Pro Tools MIX compatibility and other enhancements; Auto-Tune MAS ($399) is designed to integrate with Mark of the Unicorn MAS-compatible applications, including Digital Performer, AudioDesk/2408 and Performer 6; and Auto-Tune VST LE is a new low-cost version designed to work with VST-compatible applications... Style Enhancer Micro 1.2 (SEM1.2) and Style Enhancer Micro 1.28 (SEM1.28) are the newest **plug-ins for Cakewalk Pro Audio by NTONYX**. Demo and full versions of these MIDI plug-ins, plus information on NTONYX's Performance Modeling Technology, are available on the NTONYX Web site: www.ntonyx.com...**TC Works** (www.tcelectronic.com) announces **TC Tools 3.0** for Pro Tools; enhancements include the MegaReverb replacement for the original TC Reverb, plus updated displays for the EQSat and TC Chorus/Delay, and Pro Tools|24 MIX compatibility. An upgrade for current users is $199...**Syntrillium Software** announces **OEM partnerships** to bundle Cool Edit Pro SE with **Guillemot's** Maxi Studio ISIS, **Frontier's** Dakota and **Gadget Labs'** WAVE 8•24 cards. Visit www.syntrillium.com... **Steinberg** (www.steinberg.net) **will distribute the EnVoice and DI-MOD 24/48** audio hardware from **Mindprint** (www.mindprint.com) ...**Sonorus** (www.sonorus.com) offers expanded **Mac support for the STUDI/O card**, including Cubase VST, Logic Audio Platinum/Gold 3.6, Studio Vision 4.1 Digital Performer 2.5, AS-1 and DS-1 and Spectrafoo; visit www.sonorus.com for details. ■

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- -REALTIME 4-band parametric EQ on 24 input channels*
- -REALTIME DYNAMICS on 24 input channels*, including compressors, expanders, companders, gates, and ducking
- -REALTIME DELAY on 24 input channels*
- -REALTIME FADERS on 24 input channels*
- -REALTIME PANNERS on 24 input channels*
- -REALTIME ATTENUATORS on 24 input channels*
- -REALTIME DSP FX - 2 stereo FX (4 with 2 cards), *your choice of these 40 effects.*

Reverb Hall, Reverb Room, Reverb Stage, Reverb Plate, Early Ref, Gate Reverb, Reverse Gate, Mono Delay, Stereo Delay, Mod. Delay, Delay LCR, Echo, Chorus, Flange, Symphonic, Phaser, Auto Pan, Tremolo, HQ Pitch, Dual Pitch, Rotary, Ring Mod, Mod. Filter, Distortion, Amp Simulate, Dyna.Filter, Dyna.Flange, Dyna.Phaser, Rev+Chorus, Rev->Chorus, Rev+Flange, Rev->Flange, Rev+Sympho, Rev->Sympho, Rev+Pan, Delay+ER, Delay->ER, Delay+Rev, Delay->Rev, Dist->Delay

*(*48 input channels with 2 cards)*

Plus these great MxTrax features:

Create your own mixers with MxTrax's famous drag-and-drop mixer architecture! No kidding, build your own mixer. Create from 1 to 24 input channels. Drop on EQ's, Compressors, Panners, Aux Sends, Solo/Mute/Automate buttons, Expanders, Attenuators, Phase Inverters, Delay. It's as easy as drag-and-drop. Save your mixer to use later in other projects.

AUTOMATION All mixer controls can be automated! Record movements in Faders, Panners, Compressor and Gate settings, EQ parameters, and much more. And updating automation is as easy as grabbing a control during playback and moving it.

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EDITING Cut-and-Paste edits are lightning fast. Instantaneous Fades and Gain Change. Unlimited undos!

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- Cut
- Copy
- Paste
- Replace
- Delete
- Cut Time
- Copy Time
- Delete Time
- Insert Time
- Fade
- Crossfade
- Trim
- Snap
- Nudge
- Group/Ungroup
- Split
- Move to Back
- Gain Change
- Normalize
- Select
- Move in Time
- Markers
- Zoom In/Out
- Independent Vertical Sizing of Each Track
- Scroll Left/Right
- Add/Insert/Delete Tracks
- Group Cut
- Group Copy
- Group Paste
- Group Delete
- Group Fade
- Group Crossfade
- Group Trim
- Group Split
- Group Gain Change
- Group Normalize
- Group Move in Time
- Play from Beginning
- Play Selection
- Play from Cursor
- Play to In Point
- Play to Out Point
- Loop
- Jump to Splice Point
- Jump to In Point
- Jump to Out Point
- Jump to Marker
- Zoom In by 2
- Zoom Out by 2
- Zoom to Sample Level
- Zoom to Full Recording
- Rescale waveform
- Scale in Real Time
- Scale in Beats per Minute
- Scrub Automation
- Autorewind on Stop

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CIRCLE #112 ON PRODUCT INFO CARD

M E M O R A N D U M

THINKING OUTSIDE THE BOX

WHERE THERE'S PRESSURE, THERE'S ALSO OPPORTUNITY

The mega-mergers that have characterized the business world in the past year—Exxon-Mobil, Daimler-Benz-Chrysler, seemingly ad infinitum—may seem removed from the studio industry. But even our business has seen its share, including Emerald Recording's acquisition of Masterfonics in Nashville, the purchase of Sterling Mastering in New York by London's Metropolis, Atlanta's Bosstown Studios bought out by Ocean Way/Nashville's partners and, most recently, New York's The Hit Factory taking over Criteria in Miami.

All of this dramatically underscores the fact that our industry is in transition and is not immune to the larger forces acting on the general business world. Competition has become global, even in the music recording industry sector, as it certainly has in film and television post-production. (For example, many U.S. television series are scored overseas, taking advantage of less expensive orchestras and facilities in places like Eastern Europe.)

If you were one of the 22,000 people told by Boeing late last year that your job would be "downsized" in a few months, you might look at all of this with a jaundiced eye, much the same way that those in the studio business viewed the home-studio interlopers a few years back. The bottom line, though, is that these *are* larger forces; they cannot be controlled by organized resistance, and all the analysis and wailing and gnashing of teeth changes their effects not one whit. In the end, people survive because people adapt. If you don't adapt, you die.

A look around the scene as the smoke starts to clear presents a landscape laden with new business opportunities. Just a few years ago, the number of significant mastering facilities in the United States would have filled less than a page in this magazine using Reader's Digest large-print type; today there are several hundred, and their number is growing, driven by an independent record boom and new technologies. The Internet barely existed a decade ago; today, there are facilities deriving large parts of their revenues from creating audio for the Web, and thanks to the Net's influence on retail, they are also selling records that might not have seen the light of day otherwise. With the growing acceptance of DVD, authoring is now a regular audio service that's coming into demand, providing boosts to recording studios and mastering facilities. As sound gets cheaper and easier to make, and after an entire generation has grown up on digital-quality sound, corporate markets have awakened to the realization that sound is as important as picture for their sales and marketing presentations and corporate training. For every new element of competition that strains the boards of the business, there are pillars of new opportunities as a counterbalance.

Thinking outside the box is now the name of the game for all kinds of businesses. One of the foundations of that mindset is taking what you have, turning it sideways and looking for new potential. A good example: Check out the Musician's Friend catalog, where you'll find two pages of products from Fender—caps, shirts, jackets, cigarette lighters, ashtrays, briefcases, watches and an $8,000 jukebox. You want a guitar? Sure, they do that, too.

Send me new and innovative ways to make money in the studio business (danwriter@aol.com), and I'll run the best of them in each Business Quarterly. Go ahead, take a walk outside your own box. ■

QUARTERLY

BY DAN DALEY

LATE SHIFT AT THE LABELS

STUDIOS EXPRESS CASH FLOW CONCERNS AS PAYMENTS TRICKLE IN

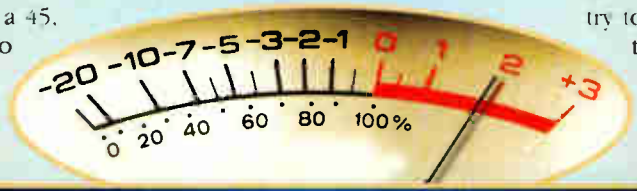
Jimi Hendrix mused that, "If a six was a nine, well, I don't mind." But recording studio owners nationally are watching the numbers, especially as 30—as in days of the month—turns into a 45, then a 60, then a 90. And they do mind. A lot.

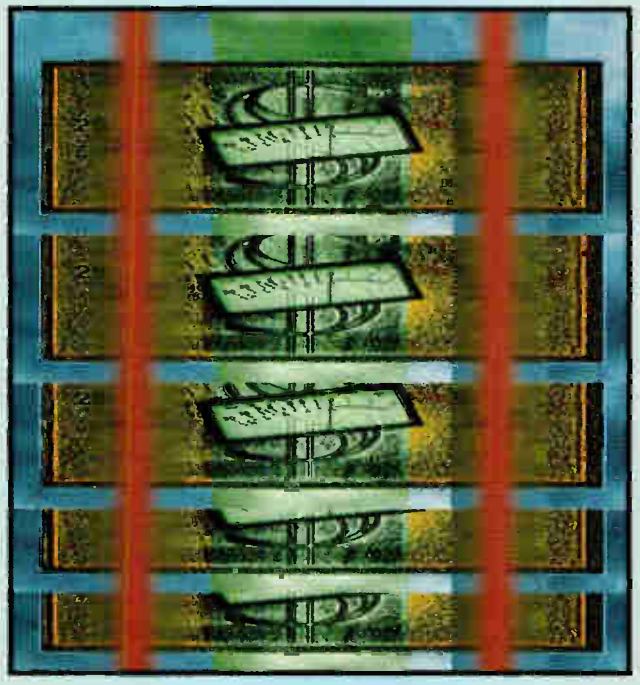
Major record labels, which, in the age of the independent, still account in one way or another (direct signing, custom label, distribution, etc.) for over three-quarters of the estimated 25,000-plus new recording releases annually in the U.S., have been extending their payments to recording studios out longer and longer, at times reaching three months after a project has been completed. In addition, they are using the glut in some studio markets to continue hammering rates both before and after services have been rendered, and in at a least a few instances, it's been reported that record companies have encouraged some recording artists to use their advances to purchase recording equipment, with an eye to further reducing costs.

The situation is becoming intolerable for many commercial recording facilities, and in one case, the trend was largely responsible for the decision by a major Manhattan studio to throw in the towel last year. Studios, continually under pressure to upgrade technology, are finding it ever harder to cover the monthly nut with the trickling cash flow, which can be a direct result of major labels taking longer to pay—and often argue—their bills.

"This is getting ridiculous," says an exasperated Reid Hyams, co-owner of Chicago Trax Recording, where major-label projects account for upward of 75% of the facility's revenues. "They take longer and longer to pay, and they try to push the rates down further in the process. It's been going on for several years now, and it's been getting worse and worse."

Mark Springer, studio manager for the five studios at Quad Recording in New York City, says, "We're spending more and more time and people hours trying to stay on top of past due accounts. It's become almost the sole job of one of our employees. It wasn't this way five years ago."





NEW WORLD ORDER

Neither was anything else, and that's part of the problem. Record labels, even majors, are now simply component parts of much larger organizations. Warner Bros. Records and its affiliated labels remain a large force in the music business but have become a fraction of the massive Time-Warner conglomerate, which includes such media giants as Warner Bros. Studios and HBO. Accounting procedures within these conglomerates have changed to reflect their global status, and studio billings from Seattle and Miami pass through the same procedures—and sometimes the same offices—as invoices for orchestral scores in Warsaw and for Panaflex cameras in

—CONTINUED ON PAGE 182

Biograph: DAVE Malekpour

MAKING A NEW MODEL

The irony that he is constructing a new model for pro audio service from within a 150-year-old shoe factory in the Boston suburb of Rockland isn't lost on Dave Malekpour. "I like old things," he says, referring to houses and other structures, as well as the array of vintage outboard gear that is strewn neatly around the 5,000 square feet of what had been, since the middle of the 19th century, the E.T. Wright Co., one of New England's largest footwear makers. For the last six years the space has been Professional Audio Design, of which Malekpour (who lives in downtown Boston

PHOTO: STEVEN P. JOHNSON

Dave Malekpour, Vice President of Professional Audio Design Inc.

with his wife, Eileen, an artist) is co-owner, vice president and chief visionary. As we walk around the building, the 35-year-old Malekpour—who, with a full but neat Vandyke on his round face looks more than a bit like Raul Malo of the Mavericks—notices a set of Wright account books lying on an ancient mechanical last near the front door. He is quickly fascinated by the payroll ledger pages from 1919, when the weekly wage was around $20. A few pages into the year, he notices that the amounts seem to drop a bit. "Kind of like today, isn't it?" he laughs.

Professional Audio Design is in the process of reinventing the upper end of the studio equipment sales and service business at a time when much of pro audio gear has become a commodity, picking up where companies like the late Martin Audio in New York left off. (Such companies have been overwhelmed first by MI outlets like Manny's and Sam Ash expanding into pro niches and later by discount emporia such as Guitar Center and MARS.) PAD got its start from the ashes of Malekpour's first retail venture, Anything Audio, which he started in 1989 after working as an assistant engineer at Michael Jonzun's Boston studio Mission Control and later selling acoustical products and services for area studio designer Rob Rosati. "Anything Audio was undercapitalized and tried to do too many things," concedes Malekpour, who was forced to liquidate the business.

But, as with most successful entrepreneurs, the experience was more enlightening than discouraging. "One thing I learned, besides persistence, was that the business was increasingly being driven by expensive vintage equipment, and that people couldn't go down to the corner and buy an LA-2A," he observes. It also introduced him to John Sutherland, who, like Malekpour, has a musical background (Malekpour played in local bands as a guitarist and still gigs occasionally; Sutherland is a singer who taught music in area schools till education cutbacks steered him toward a new career in corporate finance). Sutherland met Malekpour when he was helping him pick up the pieces of Anything Audio and is now Malekpour's partner and president of the company. "I liked Dave as a person and the fact that we shared music," says the avuncular Sutherland. "But I liked his ideas about selling service just as much."

It's these ideas that mark PAD as a model for a changing retail environment. In addition to the usual exclusive relationships that retailers like PAD pursue—in this case including Dynaudio nationally and API, GML and Otari regionally—PAD has some less usual relationships. It has exclusive U.S. representation of globe-trotting designer Andy Munro's design and consultation services, an outgrowth of selling the Dynaudio main monitors that Munro also uses in his own monitor designs. The first by-product of that is a new studio at Chung King in New York City, followed by a revamp of Lobo Studios on Long Island. The relationship also buttresses PAD's own smaller-scale design service with consultations and marquee value from Munro, as well as directly feeding equipment sales.

But more dramatic is the deal Malekpour concluded with Solid State Logic in mid-1997 in which PAD became SSL's exclusive reseller of pre-owned consoles in North America. Under the arrangement's terms—mod-

—CONTINUED ON PAGE 183

CROWN MICROPHONES

One of the best-kept secrets in microphones.

For the last several years, recording and live sound pros have been quietly adding a highly-regarded and versatile tool to their arsenal of mics: the Crown CM-700.

Used in applications from drum overheads to acoustic instruments to studio vocals, its cardioid pattern and extremely low self-noise makes the CM-700 perfect for clean, noise-free recording. With a smooth, wide-range frequency response, the CM-700 preserves the delicate timbre of an acoustic guitar or symphonic string section, while its 151 dB SPL capability handles all the power of a thundering drumset or guitar cabinet.

And though it features audiophile touches such as an ultralight diaphragm and gold-plated connectors, the CM-700 is modestly priced and built for years of rugged use.

CM-700 shown with accessory shock mount.

For more information and a copy of our "Crown Microphone Application Guide for Studio Recording", visit your Crown dealer or call us toll-free at 800-342-6939 ext. 8093.

crown

www.crownaudio.com

—FROM PAGE 109, STUDIO CASH FLOW

New Delhi or Istanbul. Complicating matters is the fact that in the process of conglomeration, these same media giants have sought to cut costs by consolidating internal departments, including accounting.

This by no means lets the labels off the hook, however. The proliferation of studios in certain markets such as New York and Nashville has not gone unnoticed by A&R departments (supply driving the price down), nor has the ability of their artists to do more of their recording work on their own equipment (demand driving the price down). While the majors deny that studios have been moved closer to the bottom of the accounts-payable hierarchy, the fact that so many studios have been experiencing ever-lengthening payment times indicates that record companies view them as less-squeaky wheels in the music machine.

"One of the problems that results from this consolidation of media companies is that you lose the personal relationships that used to make getting paid a lot easier," says Springer. "The same person that you've been dealing with for years is suddenly gone and you're dealing with an entirely new person, someone who doesn't remember all the favors you've done for the label and their artists and producers and A&R people in the past. And often you find that producers are moving into A&R who may make great records but don't have the business savvy to hold to budgets. As a result, they're calling you when it's time to mix and asking for breaks because they've gone over budget."

"It occurs to me that music, with the possible exception of riding a bull, is the most uncertain way to make a living I know. In either case, you can get bucked off, thrown, stepped on, trampled—if you get on at all. At best, it is a short and bumpy ride. It isn't easy to explain why you keep coming back. But you do."

— Gene Autry, recording artist, businessman, 1907 -1998
***Back in the Saddle Again* (1978 autobiography)**

Changes in the nature of the media companies and a new emphasis on the bottom line have also resulted in more scrutiny of recording budgets. While this puts pressure on rates before a project ever gets to the first downbeat, it also slows the payment process after the fact, as A&R accounting departments vet invoices for items that used to be taken for granted, like food catering. "I had a recent session that was in for several weeks where I was laying out $500 per day—per *day*—for food," recalls Brett Blanden, studio manager at Ocean Way/Nashville. "You can't ask the record label to advance you the money for that, and you let that run out over 60 days...you do the numbers and you see what it costs."

Then there is the fact that a lot of people simply don't like to pay bills, a

—FROM PAGE 180, BIOGRAPH: DAVE MALEKPOUR

eled after a similar one in Europe headed by Peter Duncan—PAD takes in all console trade-ins from new SSL sales (most of which are other SSLs, so far), then refurbishes, resells and reinstalls them, with optional extended warranties. With an ever-increasing pool of larger consoles on the market, an independent third-party like PAD acts as a bridge between the upper tier of the studio market and the burgeoning middle layer of studios—public and private—that are aiming to enter that echelon. It also helps upper-end studios upgrade and expand by providing a centralized hub for consoles, support and financing.

"As the lower ends of the market continue to expand, the upper end simply doesn't get served as well because that's not where the bulk of the [industry's] resources get aimed," Malekpour says. "The upper end is an increasingly smaller part of the overall market, but at the same time, maybe 80 percent of the hits get made in maybe 20 percent of the studios. That end of the market needs a higher level of service than it's been getting, and that's what we're doing."

A broader range of services and savvy are the keys to that. Malekpour stresses—several employees are former recording and maintenance engineers. But his approach also takes into account the leaner nature of the business today, with tech support helped by freelancers whom he has on call, and by an acknowledgment that mass-produced components are often as important as custom ones in an off-the-rack world. "I'll sell someone an [Alesis] ADAT as quickly as I'll sell a [Sony] 3348," he says. "The difference is that the ADAT will most likely be part of a larger package of services and products, not a one-off sale. Even high-end studios use ADATs and Mackies these days. The key is helping studios choose the right combination of boxes and custom products, as well as providing them a similar level of high-end service." ■

characteristic of human nature, perhaps, but one that has a critical impact on recording studios. "They're just holding on to the paperwork longer," says Donna Kloepfer, assistant studio manager at Right Track Recording in New York City. "It's either because of new accounting steps or because they're new to the department or whatever, and you have to reissue [purchase orders] and invoices and other documentation. It's taking more time and resources to track the money down."

The extreme case became evident at what once was Room With a View, a one-room, SSL 9000J-equipped studio in Manhattan. Owner Alessandro Cecconi cited several reasons for closing the studio and leaving the recording business altogether last October, including the spiraling costs of technology and a static rate environment. But he puts payment issues on par with all of those reasons.

"It got to the point where we were sending invoices by Federal Express, just to get a signature on file," he says. "They were getting cute, saying the paperwork never arrived. That got you to the point of 30 to 45 days. Then, once you had a signature, they said the paperwork got lost, please send it again. Now you were at 60 days. It was 90 days before you got the check. You can't have a cash flow like that and still make your monthly lease payments."

Record labels, even majors, are now simply component parts of much larger organizations. Studio billings from Seattle and Miami pass through the same procedures—and sometimes the same offices—as invoices for orchestral scores in Warsaw and for Panaflex cameras in New Delhi or Istanbul.

Cecconi implemented a number of procedures to ensure payments, including requesting a letter of confirmation in addition to a purchase order, which he says he still got only about half the time. "[The record labels] would get a snotty attitude and say, 'We're a big company; isn't a P.O. good enough?'"

Other problems were more specific but reflect what studios encounter daily. Cecconi notes the time when an artist came to work on a Saturday with an approved P.O. for one day in the studio. He finished sometime early the following Monday morning. There was no one at the record label to call over the weekend to approve the additional time. Like most studio owners, Cecconi weighed the risk of the label's reaction vs. the artist's need to continue, figuring that two days of studio time would net more revenue than one. Upon invoicing the record label for the additional time,

he was rebuffed. "The label said, 'We didn't authorize the extra studio time,'" Cecconi recalls. "You tell them it was a Saturday, there was no one to call. To them it doesn't matter. You tell them you allowed their artist to accomplish their mission and hopefully as a result sell more records. They say it doesn't matter. But if you pull the plug and don't let him continue, the label gets mad, the artist gets mad. It's a no-win situation, and it goes on all the time." Cecconi then implemented a practice of requesting 24-hour phone numbers from A&R staffers for weekend sessions and overtime approvals. "And I called a few at 3 a.m., too," he adds.

Furthermore, adds Cecconi, "The record labels are always on the side of the artist. That's how it should be, of course. But even if you gave the artist every amenity, even if every bit of gear works perfectly every minute, if for whatever reason the artist doesn't like what he did in your studio, the studio often gets blamed, and that becomes an excuse not to pay the entire bill. I've been in that situation and I hold the tapes back, and they scream at you at the top of their lungs about what a lowlife you are. Even if the artist loves everything, [the labels] still slow down payments. I've heard all the excuses—our computers are down, the paperwork got lost, the check's in the mail...Believe it or not, they still use that one."

Nashville's intimacy had kept it protected for a long time from some of these problems, thanks to the proximity of studios and labels along Music Row, not to mention the fact that studio owners and A&R staffers sit at adjacent tables at lunch nearly twice a week. However, in the wake of corporate acquisitions, Nashville is losing its intimacy, and receivables have begun slipping there, as well. Nashville also adds another element to the payment process—the project coordinator. A niche virtually unique to Nashville, coordinators—most of whom work freelance, though several work on label staffs or solely for one producer—serve as the interface between studios and labels, as well as between producer and every other component of the production.

Coordinators more often than not negotiate rates with studios, and they are just as aware as the labels of how many options they have these days. Mike Janis, manager at The Castle Studios, says coordinators' powers include the ability to hold up entire payments if several line items don't pass scrutiny, regardless of their relative importance to the production. "In the heat of battle, a producer might order something—food or outboard gear—and later the coordinator disputes the legitimacy of the expense," he explains. "There's a lot of after-the-fact negotiation that goes on, and it hurts." Janis also says that assertive pre-project negotiations by coordinators, whose fealty is to their employer—a producer who, as often as not, is also employed by a record label—have contributed to an estimated 30% to 50% drop in rates in Nashville in recent years.

Though project coordinators are not the norm everywhere, on a national level more studio owners also report having to negotiate with producers' managers, as producers increasingly handle entire budgets for projects. The manager's commission is based on the producer's fee, and increasingly, the producer's fee is whatever isn't spent in the studio.

THE LABELS

Each studio's experience with record labels is unique, its outcome dependent upon variables like personal relationships and proximity. (Paul Diaz, owner of Tree Sound Studios in Atlanta, says

90% of his major-label invoices must go to New York, which adds considerably to his payment time.) But a consensus of those interviewed for this article puts BMG and its family of labels, including RCA and Arista, at the top of the "fast-payers" list. At the bottom are a number of independent or major-distributed labels, such as Priority Records, Relativity Records and Interscope, as well as Warner Records, which Cecconi characterized as "a black hole for money."

A call to the Warner A&R accounting department in Los Angeles went unreturned. Roberto Fantauzzi, A&R administrator at Elektra Records in New York City, maintains that his company does try to pay bills within a 30-day window, an assertion supported by several area studios. He adds that the company will on occasion agree to C.O.D. payments, depending upon the circumstances. He also acknowledges that there have been instances of payments going out as long as 60 days, which he attributes to lost paperwork, either in the mail or in his office. Sometimes, he adds, payments are delayed because an invoice item is questioned. But, he stresses, the majority of invoices are clear and are paid in a timely fashion.

SOLUTIONS

The bad news is, there isn't a clear solution to the issue. Competition is too great to realistically allow studios to

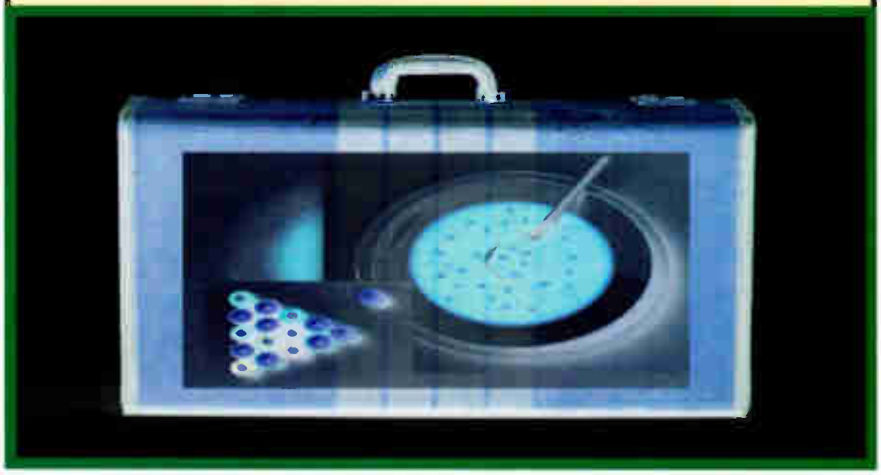
TravelWise
ARTISTS IN RESIDENCE

Residential studios are often regarded as the resort locations of pro audio. The attraction for many is the very remoteness of the facilities, where they can focus on nothing but the project at hand. Residential studio managers, on the other hand, have to balance that seclusion with avoidance of cabin fever, which has been known to set in, particularly in winter, with the potential to turn *Spinal Tap* into *The Shining*. As a result, residential managers are concierges in the most comprehensive sense. And going to residential recording facilities is a travel issue unto itself. Here are a few issues to consider.

• Amenities. Choose the facility with more than just technology and acoustics in mind, and don't feel guilty about considering recreation along with other criteria. That's part of the point of using a residential facility. You're going to be there for a while, so consider what distractions you would like: snow skiing at Massachusetts' Long View Farms vs. jet skiing at Compass Point in the Bahamas, and so on. Also, think seasonally—check with the studio or on the Net for average weather conditions during the time you plan to spend there so you can bring appropriate clothing and personal gear. Why buy another pair of ski goggles when you get there when you have a pair in the closet at home?

• Flight arrangements. Residentials' remote locations often mean

—CONTINUED ON PAGE 188



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CIRCLE #119 ON PRODUCT INFO CARD

band together on this matter. Local SPARS studio-only meetings have been a forum, but serve mainly to vent frustration. SPARS executive director Shirley Kaye told me that no one has ever brought the matter up on a national level and she says that the organization has no official stand on the matter. "If they do, we will address it," she says.

There are measures, though, that can be taken to help mitigate the problem. Radical responses, such as withholding the release of tapes, are best reserved as a last resort, since that draws the most fire from record companies—without the tapes, they can't release a record. However, it also has strategic faults because it penalizes the artist as much, if not more, than the record company. It's hard to forecast which clients will not pay within 30 days, and besides, the reference CD that's taken home from the session is far more capable of becoming a surrogate master than the old analog cassette was, so it's often a moot point. This solution works best with chronic problem clients, who should be on a C.O.D. basis anyway.

Studios may have to accept the fact that they will now have to dedicate a certain amount of time and effort to

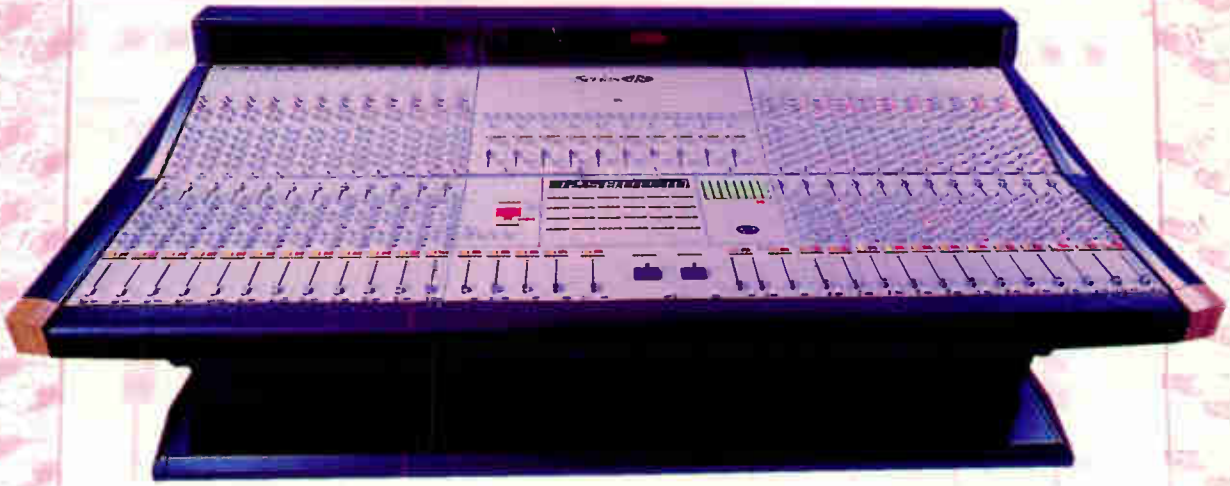
—FROM PAGE 186, TRAVELWISE

commuter flights for the last leg of a journey, which restricts the amount and weight of equipment you can bring. Discuss your equipment needs with the studio manager so rentals can be arranged or specific items can be shipped ahead of time by land carriers. Says Bonnie Milner of Long View, "Residential studios are always dealing with equipment rentals because of their remoteness, and as a result we get a lot of great deals, so check with us first before renting something and/or shipping it." Also, flying into certain smaller airports is often considerably less expensive than going to the main hubs. For instance, Long View is equidistant from Boston, Hartford and Providence, but those last two airports often have lower-cost service, particularly Providence via Southwest Airlines.

• Diet and Exercise. You'll be eating at the studio more often than not, so make sure the kitchen staff knows if there are religious or medical dietary restrictions for anyone in your party. Keeping fit is also a consideration, so ask the staff about organizing an integrated diet and exercise regimen. Likewise, alert the staff to any medical conditions anyone may have. If you take prescription medications, bring extra and/or have your doctor phone a refill to a local pharmacy, whose name and number you can get from the studio manager.

• Phone home. Make sure you have a calling card for long distance calls. Just as in a hotel, if you use the facility's carrier, you could wind up with long-distance sticker shock at the end of your stay. Five or six people away from significant others can do a lot of tele-damage over the course of a month. Also, ask the staff if you can program any personal code numbers into your room's phone so you don't have to enter a 12-digit number 20 times a day. (Don't forget to erase that number upon leaving.) Some studios also sell prepaid calling cards at no markup to clients, which helps keep incidental expenses down. ■

The Concept - The Console



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chasing money. There are several computer programs that will help schedule invoices, but the bottom line is, you're going to have to get on the phone and stay on top of record labels. Developing personal relationships with accounts payable personnel is always a good idea (a card on significant holidays and birthdays is a nice touch), but that can be blunted for reasons mentioned earlier.

One very important point is to make sure invoices are accompanied by clear supporting documentation. Think of your position as that of an attorney in court, ready with evidence to support each point. It stinks to have to approach a situation as an adversary, but that's what the new economic order often requires. You can also do what Mark Springer of Quad does: read the *Billboard* charts and see how clients' records have performed. "If they came in on a lower rate for the first record and it sold 3 million copies, knowing that gives you some ammunition to counter the label asking for a rate cut when they want to come back and do the next record," he explains. Springer also has a good cop/bad cop routine ready. His wife, Carla, handles the day-to-day money chasing. When things get to a certain point, Springer steps in on the phone as the heavy. This approach allows Carla to avoid the wrath and maintain friendly relations for future transactions.

Watch for changes in payables policies at major labels. In addition to basic bean-counting procedures, labels sometimes make fundamental shifts in how they view the business. For instance, in Nashville, several labels have shifted to per-song budgeting, even for album projects. "Now, if the studio laid out for a background singer for one song, I have to make sure that that singer is listed with the right song on the invoice instead of just for the project," says Blanden of Ocean Way/Nashville. Blanden also went out of his way to change his invoicing procedures to reflect changes at one label's accounting department, only to have the label come back and say the equivalent of "never mind." "Unfortunately, I don't have an 'undo' command on my accounting program," he sighs.

That's the way it is out there at the end of the century. But if studios implement their own rigorous economic policies and stick to them, perhaps the mega-corporate record labels will start taking them as seriously as they do their other vendors. ■

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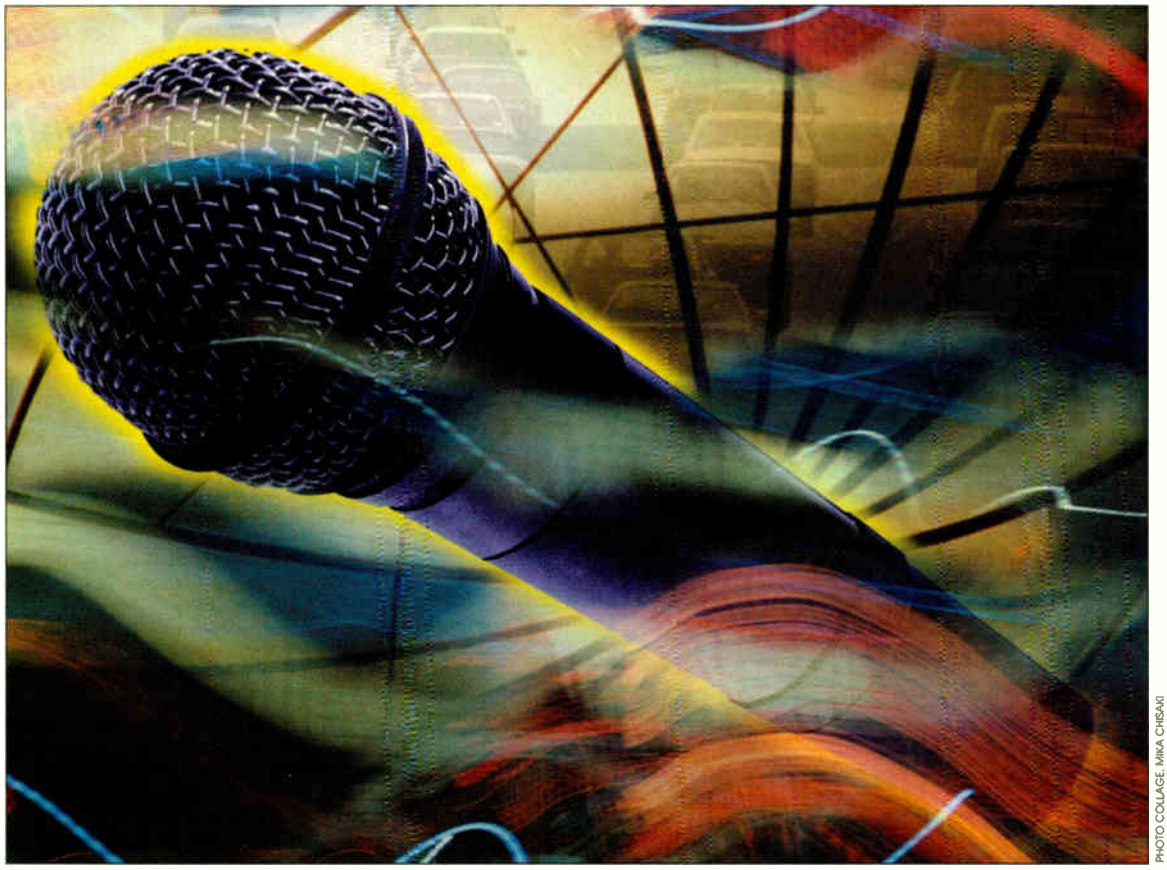

PHOTO COLLAGE: MIKA CHISAKI

There has been much talk about the sky falling down on wireless microphones. So far the RF environment, like the air quality in major metropolitan environments, has been slowly deteriorating with increasing traffic. This year users of wireless mics in America's largest cities are likely to encounter interference on many frequencies that were previously trouble-free because there will be twice as many vehicles clogging the airwaves.

The FCC has set an aggressive seven-year schedule for the transition to digital television (DTV). While continuing to broadcast analog (NTSC) signals on current frequencies, each of the nearly 1,600 U.S. television stations has been assigned a second broadcast frequency for DTV.

Wireless users in several cities have already been affected by the two dozen stations that volunteered to complete their transitions early. Affiliates of the four leading networks in the top ten markets will broadcast DTV by May, with the next 20 markets due by November. Other commercial TV stations have three years to get started, and public stations have four, but stations may move even more quickly than the schedule indicates because there are financial advantages to encourage broadcasters to get DTV on the air quickly.

In addition, because other data can be broadcast simultaneously, stations can add revenue by also transmitting a variety of ancillary and supplemental subscription, data or Internet-based services, or even a second broadcast signal. Examples might include paging services, programming schedules, computer software, electronic newspapers and pay-per-view programming.

Transmitting a Standard Digital TV signal (SDTV) instead of HDTV leaves even more broadcast bandwidth for other uses. PBS stations already need fund-raising telethons and are hoping that the supplemental services broadcast along with DTV will give them an additional revenue stream. All of these factors will further clog the airwaves available to wireless users.

BY MARK FRINK

—CONTINUED ON PAGE 202

MATCHBOX 20

Notes From an Endless Tour

(L to R) Recording engineer Greg Archilla, FOH engineer Robert Scovill, recording assistant Michael Perfitt

Monitor engineer Rik McSorley

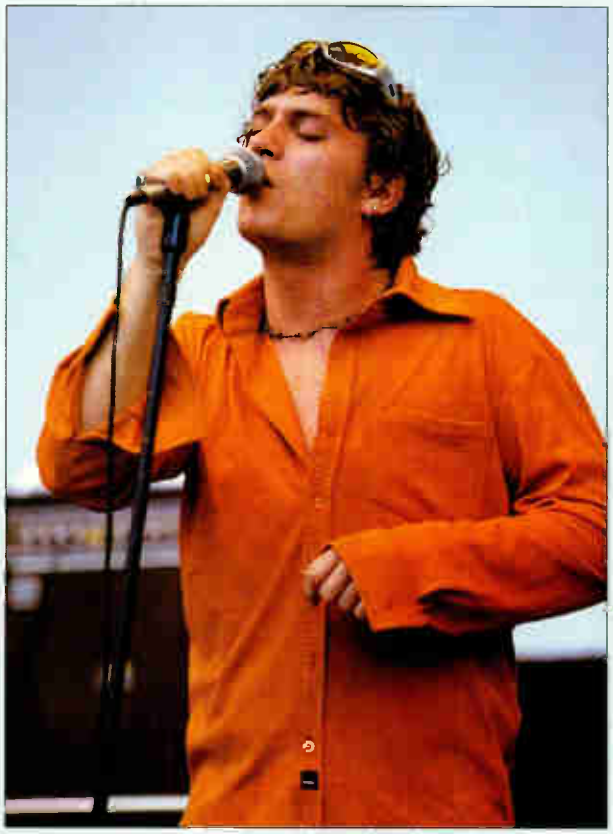

PHOTO: STEVE JENNINGS

Rob Thomas

Matchbox 20 has experienced a phenomenal run with their debut CD, *You or Someone Like You*, which has sold millions of records worldwide and spawned five popular singles. The band's success has built slowly over the course of nearly two-and-a-half solid years on the road, during which they moved from clubs to sold-out arenas. These interviews with some of the key audio personnel took place while the band and crew were putting the wraps on their endless tour last November at the Sydney Entertainment Center in Sydney, Australia. There, the group was also completing work on a documentary about the band. Thanks to FOH engineer Robert Scovill for assembling this dialog about the tour.

Dean Serletic (tour manager): The band and everyone surrounding them have always believed that the more you put into the tour, the more you get out of it. It's important for the band to give their fans a tremendous show. Matchbox 20 has been on the road for a long two-and-a-half years. They spent the first ten months in a van pulling a trailer. Then, on the success of the song "Push," the band was able to move to a bus. From there the tour has grown to a total of four buses and five trucks. Besides going all over the U.S., the band has toured all of Canada twice, Europe three times, Japan twice and Australia three times. The strongest overseas market for this band is Australia. The band spent many weeks at the number one position on the *Billboard* chart in Australia this year.

SYSTEMS

Robert Scovill (FOH engineer): I've been with Matchbox 20 since July 1998, which was the beginning of The Big Rock Show tour. At that time, they were right in the midst of changing mixers, as well as sound companies, and they contacted me on the recommendation of M.L. Procise at Showco. M.L. and I had been conversing for quite some time—months really—

BY ROBERT SCOVILL

—CONTINUED ON PAGE 196

ALL ACCESS

everclear & SOUL COUGHING

Everclear (L to R): Craig Montoya, Art Alexakis and Greg Eklund

Beginning at San Francisco's Warfield Theatre, Levi's Sno-Core Tour featured Portland rockers Everclear and funky New York eccentrics Soul Coughing. On the first night I met with the crews, who were still getting to know each other as the seven-week tour got off to a rollicking start.

L to R: System tech Chris Beyer, Everclear FOH engineer Andy Banton and Soul Coughing FOH engineer Larry Smith

"It's actually not too loud in the wedges," says Soul Coughing monitor engineer Manu Goodwin. "The stage volume is pretty well balanced; just the drum fill is the beefiest part of the whole stage. We use all Shure microphones, just because we like them; 58s on vocals, lots of 57s on drums.

"Both of us monitor engineers share the rack here; since it's electronic, we can preset our own levels and recall it when we need to. We have six KT digital graphic equalizers and a KT analyzer, an SPX990 effects unit and BSS gates and compressors—about 20 channels of compression and eight channels of gates."

On the road, Everclear, a three-piece, brings along an additional guitarist, a keyboard player and a percussionist. "My rack consists of an SPX990, a TC 2290 and 2000, PCM80 and an Eventide H3000," says Everclear FOH engineer Banton. "I put a natural reverb on the drums and put a voice doubler [the 990] on some of the songs for a chorus. We have a Shure endorsement, so Art Alexakis [on vocals and guitars] uses a Shure Beta 87—the grille is flat, and he stays on the mic. Also on a Beta 87 mic is Craig Montoya [bass and vocals]. Everyone else uses a Shure 58, and the drummer, Greg Eklund, uses a 57-A to try to keep the noise of the wash out of it. We have one new thing out with us, the Antares ATR-1 Auto-Tune, a pitch-correcting device that is inserted on a couple of vocals; it's fantastic."

Soul Coughing's M. Doughty

TEXT AND PHOTOS BY STEVE JENNINGS

"I work with about seven guitars for Art," says Everclear guitar tech Joe Beebe, "including a Gibson Les Paul, Flying Vs and a double neck; for Craig on bass I've got some G&L Kelleys. I use a Peterson tuner and a Sabine tuner in conjunction; the Sabine hones in on tones quickly, and the Peterson fine-tunes them accurately. So I can hear what I'm doing, I'm running that into a little Fender Twin mini with a headset. I built my workstation out of a keyboard case; most techs build their own station so they can customize it to their own specs."

"It works out pretty well with the two groups," says Everclear monitor engineer Dave Stevens. "We split the Yamaha PM4000 board in half, basically; we have a programmable EQ for that. The band like it loud onstage—loud guitars, big drums. On Greg's kit we've got Shure 98s on the toms, SM91 and Beta 52 in the kick, Beta 56 and a regular 57 on the snare, and 57s on the percussion. For guitars we have the regular 57s. Everything's pretty straight-ahead."

"Our P.A. is a Turbosound rig from Eighth Day Sound out of Cleveland, Ohio," says Soul Coughing FOH engineer Smith. "Depending on room size, we usually stack the Turbosound Floodlights 12 high, 12 low, along with a row of Flashlights—long-throw stuff to hit the back of the balcony. That's it. In addition to the PM4000 that both bands share at FOH, we have another Yamaha desk just off to the side for returns and for the DJ opening act. The bands share aux processing but not channels; dynamics are all separate. We use all 52 inputs coming in on the Yamaha.

"We have the Omnidrive in our rack—Eighth Day Sound sent that out. We've got it broken up, one Omni per zone, plus a Klark Teknik per zone, so everyone can play with it as you want to. The good thing about the Floodlight system is it goes up in the air and comes out pretty much flat; it's a great-sounding box from the get-go, so really all you're doing is working on something in the room—is there a bass trap, or slapping around a lot of 100? You can go to the Omnidrive and you can just spike that and pull that right out. The band are into the low end. I've been with them for about five years; they're always evolving when they play live. I don't think I've ever heard them play the same set twice."

Soul Coughing drummer Yuval Gabay has triggers that he listens to through a guitar amp that's miked up. "It makes a lot of weird sounds, and he likes to make it feed back more or less during the show," says Goodwin. "Then we have an interesting drum set here: We have two kick drum channels. The second one is actually a rack tom mounted as a kick drum, which gives it more of a high-end sound. We have three snares on this kit—no actual rack toms—two hi-hats and two Syn-drums; not your usual set."

—FROM PAGE 193, MATCHBOX 20

looking for an avenue to get me mixing on their system for a given tour. After speaking at length with Matt [Serletic, the band's producer] and Dean Serletic, I felt pretty confident that I was going to fit into their camp pretty well. Especially because Matt and I seemed to share a lot of the same approaches to getting sounds, etc. Once we started rehearsals and Matt got a sense of how I was going to approach mixing the band, as well as my approach to sound reinforcement in general, it was apparent that we were not only on the same page but definitely reading from the same book, so to speak. He is a very sharp guy, and I have developed a lot of respect for him.

For these shows in Australia, we were mixing on S-4s as opposed to the Prism System we used in the U.S. Given that the S-4 and the Prism systems really could not be much further apart in design philosophy and application, as well as sound, it has been a surprisingly smooth transition. There are a great number of really fine P.A. systems available around the world these days—much more so than even just a few years ago. They all seem to have their little quirks and idiosyncrasies that you have to learn to deal with on a day-to-day basis, but my feeling is that if you are really on top of your game, you will be able to get the most out of any system that you mix on. There is generally a period of time needed to get acclimated to any sound system. My take on

MATCHBOX 20 SOUND REINFORCEMENT GEAR

FOH: Midas XL-4 console, two Brooke Siren Varicurves w/remote and wireless option, one Brooke-Siren TCS-804 multitap delay.

Dynamics Processing: one Manley Variable Mu, one SSL G384, three Brooke-Siren DPR402s, four UREI 1176s, one Tube-Tech CL1-B, one Summit DCL200A, four dbx 160s, five Aphex 622 gates, two Behringer multiband de-noisers, one Meyer CP-10 EQ, one Valley People PR-2A de-esser.

Effects Processing: one Lexicon 300, two Lexicon PCM 80s, one Lexicon PCM 90, two Yamaha SPX990s, one Eventide H3000, two TC Electronic 2290s.

Monitor Equipment: Harrison SM-5 console (U.S. leg), Soundcraft SM-2A console (Australian leg), one Connex AS101 Matrix Switcher (for ear monitors), five Shure PSM600 in-ear monitor systems.

Monitor Dynamics Processing: two Aphex Dominators, two BSS DPR 901 dynamic EQs, four BSS DPR 402 compressor/limiters, four dbx 160XTs, four Drawmer DS201 dual gates, two Klark Teknik DN360 EQs, two UREI 546 dual parametric EQs.

Monitor Effects Processing: two SPX 990s, one SPX 1000, one REV5.

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CRP3

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it has always been that the driver makes the race, not the car—you put Michael Andretti behind the wheel of a stock car or Jeff Gordon behind the wheel of an Indy car and in a short time he's going to be competitive and may even win the race.

Probably the newest thing that I used on the tour is the JBL Smaart Pro software running on a new Dell laptop. This is the first tour where I've used it exclusively for assistance in de-equalizing a listening environment. I have since grown to have a great deal of trust in the data that it is providing. In addition, I really love the concept of running real-time FFTs during a performance, as opposed to RTA. It's a great tool to have on the road. My feeling is that it has really contributed to the consistency in the sound of the show on a day-to-day basis. On the audio gear side of things, I am not using anything that I would consider new. I have made use of some Manley compression that is pretty incredible in sound reinforcement applications. It's kind of funny in retrospect—some time ago, a sound vendor, who shall remain nameless, contacted Manley on my behalf to purchase some of their equipment because I had specified it for an upcoming tour. Manley, believe it or not, refused to sell it to them: "No, no, our stuff is not made for sound reinforcement. We can't sell it to you. Good bye." I remember thinking, "Wait a minute, I need some dynamics control and you make a compressor. Don't make me come down there!" I have used the Manley equipment in the past for recording and mastering sessions with great success so, in my opinion, it stood to reason that it would work out here. I am happy to report it did the job beautifully.

MONITORS

Dean Serletic: At first the band was really hesitant to switch to in-ears. It took a lot of persuading just to get the guys to take the time to get molds made. Initially, Paul Doucette the drummer and Rob Thomas were the only two really interested in the system. However, I was able to get enough generic molds for everyone to try. Soon, the whole band had fallen in love with the ears, and stage volume went down about 300 dB. That helped clean up the mix and lessened the effects on the band's hearing.

Rik McSorley (monitor mixer): I've been mixing the band's ear monitors since they began the American leg of "The Big Rock Show" in July 1998. When we started, everyone but the percussionist was on ears. Before it was said and done, I had him on ears, too. More often than not it's a combination of ears and wedges, which can be particularly challenging. Most of my experience has been with only one or two people on ears, however.

Mixing an entire band on ears can definitely be challenging at times. Everyone's ears are a little different and they hear things differently, both sonically and dynamically. I think one of the most difficult things is tone shaping in general, especially the drums. It's not easy getting a kick drum to sound like a kick drum through a 5mm driver! And just when you get it happening for the drummer, odds are someone else isn't digging it. So, you have to be flexible and willing to try different things in order to make everyone comfortable with what's going on in their heads

We have a lot going on here in monitor world with this band. We have three different click tracks, including a click for the video footage. When we started out, it was pretty hairy. Certain guys wanted click on particular tracks, then they only wanted it for eight bars, or some didn't want it at all. We finally got it all worked out in rehearsals. So,

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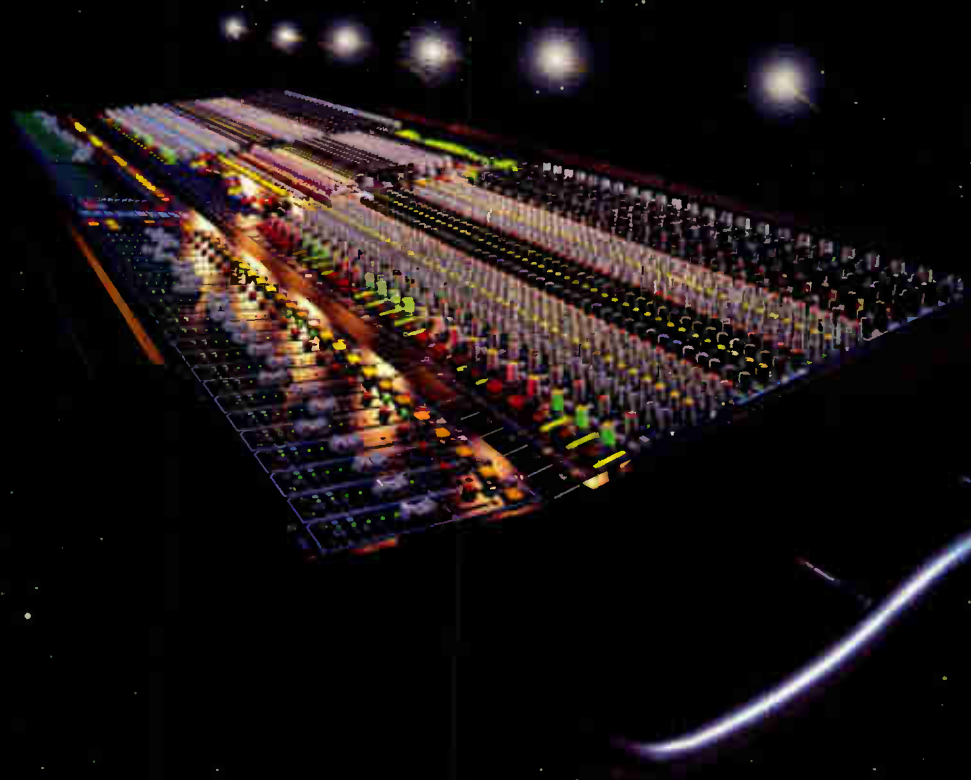

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as a result, I have four or five cues for each song. Those cues were probably the most difficult thing to get down.

I'm often asked if mixing ear monitors is more difficult than mixing floor wedges. I can't say that it is more difficult exactly, just different. Granted, you don't have the feedback problems or the stage volume to contend with, but it definitely presents a whole different set of problems—not the least of which is operating in such a limited dynamic range.

Ear monitors are very unforgiving. There are things that you just can't get away with like you can with wedges. Signal processing for instance—you have to be very careful how you apply these devices. For example, with a gate on a kick drum, if your attack time is too fast and it produces a clicking sound it may be okay for the drummer; he's not going to hear it because his mix is kicking with drums. However, for someone else with a softer, more delicate mix, these extraneous sounds are going to drive them nuts!

Another difference is what goes into the mixes. With wedges, you usually can get by with just what you need to hear to get comfortable and do your job. But being on ears is alien to most performers. They are separated not only from the audience but their instruments as well. So, more often than not you end up doing five or six little house mixes for the band. Everybody wants to hear everything. The challenge is trying to find a place for everything to sit in their heads. I accomplish this with a combination of equalization and panning.

Robert Scovill: The ear monitors give you as the mixer a fighting chance at not having to mix the show at a blistering level. The show runs at a comfortable 102 to 105 dBa and consequently can be very dynamic if needed because of the absence of the stage volume. This also makes for a high degree of coherence in the P.A. system because it is not fighting time smear and frequency masking from the stage volume. In addition, the player's "error correction," if you will, is very swift, especially in a vocalist searching for a pitch center or a guitar player's fretting of their instrument. All of this contributes to a great-sounding show. From my perspective one of the bigger challenges with having every bandmember on ear monitors is the attention to details it requires on everyone's part. But in the end it's great because it benefits the listener, player and mixers. ■

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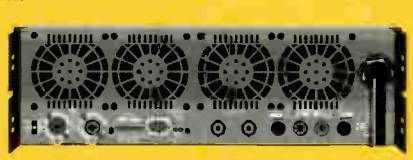

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—FROM PAGE 192, DTV AND WIRELESS MICS

SPECTRUM COMPLICATIONS

Television channels are spaced out on frequencies that are 6 MHz apart. VHF channels 2 to 6 operate from 54 to 88 MHz, and channels 7 to 13 are from 174 to 216 MHz, with FM radio in between. UHF channels 14 to 69 operate from 470 to 806 MHz.

The FCC has designated channels 2 though 51 as "core" channels, planning to eventually end up with all DTV broadcasts below 700 MHz after the transition is complete. As analog transmissions end and those frequencies are once again available, stations with DTV assignments above channel 51 will move a second time, back into the core spectrum.

The FCC has also reallocated TV channels 63 to 64 and 68 to 69 for public safety transmissions, including both mobile units and more powerful base stations. As the transition ends, the remaining "Sixties" channels will be auctioned off for new wireless services. The

NEWSFLASHES

Stage Accompany (Hoorn, The Netherlands) and Johan van der Werff from the acoustical consultancy Puetz collaborated on a sound system that was debuted at the **Amsterdam Arena**. Every speaker in the Newton System is individually controlled with a new algorithm for filtering of time/phase and frequency response by a 48-channel DSP processor/interface to get an accurate controlled dispersion to prevent unwanted reflections...Midas XL4 consoles were installed in three live venues in Canada: the **Thunder Bay Community Symphony Auditorium**, the **River Run Centre** and the **Place des Arts**. Canadian touring company **Cabaret Productions** took delivery of two Midas XL250s, an XL200 and XL4, plus Klark Teknik EQ and delay units...**db Sound L.P.** announced an upgrade to the sound system for "Riverdance: The Show." **The Lee Company**, one of Riverdance's two North American touring companies, replaced its monitor console with a Soundcraft Series Five. Other Soundcraft Series Five acquisitions: London-based **JHE Audio**, and Scotland's **EFX**. Additionally, Series Five consoles were used on several high-profile tours, including **Natalie Imbruglia**, **The Corrs**, **Celine Dion**, **Shania Twain** and **Santana**...**LiveWire Remote Recorders Ltd.** news: The company provided the live broadcast mix for **CITY-TV**'s 14th Annual New Year's Eve Party at Nathan Philips Square in Toronto. LiveWire also provided the live-to-air mix for **Alanis Morissette**'s "Intimate and Interactive" performance at MuchMusic. The company recently added two vintage UREI LA-4 compressor/limiters to its list of '70s classic outboard gear...***Life on the Road: The Incredible Rock 'n Roll Adventures of Dinky Dawson*** is now available at bookstores everywhere, or at www.dinkysworld.com. The book chronicles Dawson's travels with Fleetwood Mac, Steely Dan, the Byrds, Lou Reed and others...**Cirque du Soleil** productions continue to expand. Two permanent shows are now using Cadac F-Type Live production mixing consoles. The show "O" in the Bellagio Showroom in Las Vegas is mixed by Mark Dennis on a 64-input Cadac F-Type. In Orlando, FL, a 72-input Cadac F-type was installed for the production "La Nouba," which takes place at the new Cirque du Soleil Theatre in Walt Disney World's West Side District...**Third Ear Sound Company** (Richmond, CA) announced that 1999 marks its 25th year in business. The company recently supplied sound systems for **Bill Cosby**, **Martina McBride** and the **San Jose Jazz Festival**. Upcoming events include the **Russian River Jazz Festival** and the **Monterey Blues Festival**...Elvis Lives! At least as a European arena tour featuring a seven-piece band whose members all played live with the King. The P.A. contract is with **Eighth Day Sound**, which enlisted the support of **Wigwam** (London, UK) for the tour. The FOH console, a 56-channel Amek Recall RN, was chosen because it can run to timecode and the show involves many synchronized video inputs...**Blue Heaven Studios**, a performing arts venue and recording studio in Salina, KS, installed 15 **New Frontier Electronics** SX-20-NE Surge-X surge suppressors. ■

U.S. government has been auctioning off the airwaves to help balance the budget, reaping billions of dollars from the sale of spectrum first to cell phones and now to broadcasters. These windfalls are likely to whet politicians' appetites for more, and it's only a matter of time before they auction off more spectrum.

Although all these frequencies may be clear for a long time in rural areas, in the major markets that see the preponderance of entertainment wireless use, interference should not come as a surprise. In several U.S. cities, one or two unoccupied UHF channels of the first seven are already used by land mobile radios, which is one reason why few manufacturers make UHF systems below 512 MHz.

TV channels 52 to 59 (698 to 746 MHz) are above the core TV allotment and below the new public safety spectrum. It would seem a good bandwidth for short-term strategies in the transition period, but there are exceptions. For example, in Alabama there are ten DTV allotments in the Fifties channels, and current analog broadcasts, though there are fewer, will continue for at least the next half-dozen years.

QUICKTIP

BREAD PANS REDUCE WIRELESS INTERMOD NOISE

What happens when two or more wireless mics are separated by a few inches, like when they're sitting in a row on the monitor console just before they get handed out? Because of the inverse square law, the intermodulation product of spurious emissions increases at twice the rate of the signal strength. Transmitters that behave perfectly fine by themselves, and even several turned on at once when they're placed across the stage on mic stands, will cause each other to act up and get noisy when right next to each other, especially near the receiver. This does not reflect how they sound once they're in the performers' hands, but it can drive engineers crazy who are trying to check them right before they're being used for a big show. One solution we've heard of is to get several $2 metal bread loaf pans. Putting each mic in a metal pan isolates it from the others enough to cut down the spurs when they're in close proximity. —*Mark Frink*

Analog TV signals have separate picture and audio components that don't take up the entire band, with the sound offset from the picture by 4.5 MHz, allowing transmission in the "slot" frequency between the picture and sound in some cases. In the new DTV format, much of the 6MHz band is full of digital transmission.

Wireless microphones operate over the airwaves as secondary users, and they must accept interference from TV stations. Interference symptoms range from mild to extreme noise and complete failure, depending on the relative signal strengths and type of wireless. When you see a DTV signal on an RF spectrum analyzer, it looks like background noise that has been raised in level over most of the 6MHz bandwidth, with a higher peak in the sideband carrier in the lower portion.

Wireless microphones operate over the airwaves as secondary users, and they must accept interference from TV stations.

In the early stages, many stations may not broadcast a DTV signal all the time. After intermittent testing at various power levels, some may initially only broadcast prime-time or special events. For sound reinforcement professionals, this means the spectrum could be clear at soundcheck, and then broadcasting might start during your show.

SOLUTIONS AND STRATEGIES

Wireless users need to plan for all interference possibilities so that they won't be affected when DTV broadcasts suddenly start. The new DTV frequencies are well-

known to wireless manufacturers and can be found on the FCC's Web site. A list of the latest DTV allotments is available on the Net at www.fcc.gov/oet/dtv/.

Up till now, casual users simply turned on the wireless needed for their show and hoped for the best. Frequency-agile equipment that can be tuned across the span of several UHF TV stations to shop for clean channels provides a sense of security. With the coming decrease in the number of clear channels, careful planning becomes the best protection for shows that rely on

WIRELESS MANUFACTURERS

Manufacturers are developing their own white papers and cheat sheets for wireless use in North America and around the world. *Mix* suggests that if you want to head off potential problems, contact your wireless manufacturer directly.

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wireless equipment. The problem of finding enough clear frequencies is already being faced in places like Orlando and on Broadway by heavy users of wireless who are only able to get enough channels to work after intense frequency coordination.

With frequency-agile wireless, the ability to move to a new spot on the dial is limited to the range that the user is able to tune. And with crystal-based fixed-frequency systems, if it doesn't work, you need to go to another unit. Re-crystaling fixed systems and moving the splits on synthesized systems is becoming a major activity at manufacturer and third-party service centers.

Even if your production is only using a few channels of wireless, you'll want to start by preparing a three-part frequency list. First, list the frequencies that your current inventory runs on. Then list the known conflicts with current TV and other radio services. Add to this the proposed future conflicts with local DTV stations and other radio services. These frequencies can all be compiled in a single spreadsheet with columns for current conflicts, future conflicts and your inventory. This is only the beginning, though. Full frequency coordination includes calculation of the intermodulation of all signals, which is beyond the scope of most wireless users but can be done with special software by some wireless vendors and manufacturers.

This information can be printed out and included each time wireless is used on a show. Even if you're not sending out your wireless equipment, it can be helpful at one-offs and festivals so that visiting acts can be warned about conflicts. Those using local production will appreciate a heads-up about the local RF environment if they haven't already taken the trouble to coordinate the frequencies they're carrying.

ROAD WARRIORS RUN THE RF GAUNTLET

In touring applications, shows with multiple wireless products face another problem: they must carry inventory that will provide enough channels to fulfill the show's requirements in each new location. Even with frequency-agile equipment, certain combinations of major-market itinerary and wireless requirements could make it cost-effective to subcontract equipment from a vendor that can also offer frequency coordination, technical training and the

"WHEEL" ON THE ROAD

BY BILL DALY

Wheel of Fortune, one of the most successful productions ever launched, went to Hawaii earlier in the year for a week's worth of shows on the beach at the Hilton Hawaiian Village in Oahu. A massive stage was built smack dab on the famous white sands of Waikiki beach, only 50 feet from the shoreline. Sound was provided by the recently formed Pro Mix West, a melding of Pro Mix Inc. out of New York and the former Burns Audio of Burbank. The setup featured an all-Apogee loudspeaker system, as it has for all Wheel remotes since 1996.

The sound system included AE-5s, AE-5 NCs (Narrow Conical version), SSMs, AE-3s and AE-3Ms for stage monitors. Speaker locations were critical because of the heavy reliance on wireless lavalier mics. Six AE-5s were placed on the "A" truss, a few feet downstage from the Wheel. Four more AE-5s were located on the forward-most (downstage) truss over the front lip of the stage, focused to cover the bulk of the front seating section and the first four or five rows in the bleachers. Both rows of AE-5s were flown with yoke-style rigging hardware, designed to allow easy positioning for optimal coverage.

Two arrays of three AE-5 NCs each were flown from the stage's roof beams, which extend out from the front of the stage about ten feet beyond the front truss. Each of the two arrays were assembled in a "tight pack" configuration; i.e., no gap between adjacent units. The AE-5 NCs were flown with Apogee's MARS frames. The frames themselves are the truss, and each frame is the footprint of the speaker it's attached to, joined to its neighboring frame by a steel coupler and aircraft-grade pins.

I placed six Apogee SSMs along the apron of the stage to provide additional coverage to the front rows. Rounding off the system was a pair of AE-3s on tripod stands, filling in the areas to the side of the stage. At stage-right, the AE-3 was focused directly into the mixing hut, ensuring that the operator's position was well-covered. AE-3s were also used for foldback onstage so that Pat, Vanna and the contestants were able to hear each other, as well as the program feeds from the broadcast truck. Finally, two more AE-5s were flown at the outer sides of the stage, covering the audience overflow areas.

To make sure these speakers function properly together as a system, both in terms of delay times and equalization, I use Apogee's CORREQT (Computer Optimized Room Resonant EQualisation Technique) system to read both phase response and frequency response. After placing the measurement mics (B&K 4007s) around the audience areas, I can accurately and quickly read the deviations in frequency and phase from the desired flat response. I then use parametric EQs—in this case the XTA digital system—to adapt the frequency response, and digital delays to adapt the phase response. Only an hour-and-a-half was spent on aligning this system.

The console for the show has been a Yamaha 02R for about two years now. The recall function ensures that the operator can always get back to the starting point when experimenting with changes in level or EQ. Its small size means that only a minimal number of seats have to be given up for audio control.

Contestants were miked with wireless Trams on Shure body-packs. Shure also sent their yet-to-be-released lavalier mic to beta-test on this show, and both the P.A. mixer and the air mixer agreed it was excellent. Amplification was by Crest, which seems to complement the Apogee speakers very well. But now that Pro Mix and Burns Audio are one-and-the-same, I'm anxious to try out Apogee's digitally controlled amplifiers, of which Pro Mix has a substantial inventory. The ability to read impedance values from the front panel of each amp will make daily testing and troubleshooting much easier.

The P.A. mixer, Cole Coonce, said it was the finest P.A. system he's ever used: "This was the first time I've been able to match Vanna's live microphone with her recorded voice coming back from the prerecorded prize promotions, done a week prior." ■

Bill Daly, active in the field of sound reinforcement for more than 20 years, has been the Wheel of Fortune audio technician for all remote tapings since 1996, when Wheel last visited the Hawaiian Islands. He recently joined Pro Mix West.

ability to drop-ship equipment into known trouble-spots.

In many large cities, when you add the new DTV channel allotments to existing assignments, there are not a lot of open airwaves left for the use of entertainment wireless systems. Depending on where you are in Los Angeles, for example, there will be as few as a dozen unassigned TV channels. After you take away the highest ten channels, only about eight are open. Frequency-agile systems allow dozens of wireless channels to operate simultaneously but can only be tuned by the user over a bandwidth that spans a half-dozen TV channels. One perception is that fixed-frequency systems are inferior and old-fashioned, but remember that the advantage of an agile system is wasted if most of its frequencies are being stepped on by DTV. There is a limited range of solutions to problems that crop up during soundcheck.

Although inexpensive handheld scanners can help identify analog broadcasts, spectrum analyzers are needed to monitor DTV and other digital transmissions accurately. Manufacturers have begun including spectrum scanning in their systems, but they can only tell you what is happening at the moment. A 24-hour scan offers information that can better predict what may happen over time. Some types of interference are intermittent or occasional. I won't bother to tell the whole story of the church next to the National Guard Armory, which never had problems on weekdays when their vendor came to check the wireless that had been acting up over the weekend.

So you can see that, because touring acts will find themselves in a wildly dynamic RF environment in the next few years, more advance planning and frequency coordination will be required than ever before. It may make more sense to rent wireless equipment from a vendor with deep technical resources and heavy inventory that can cover every eventuality and offer solutions that begin with pre-tour coordination for a proposed itinerary. It may also make more sense to manage inventory that is being carried than to have a package that tries to cover all the bases. There might be special packages for places like Radio City and Shaky Town that could be drop-shipped or obtained locally instead of carrying them for the entire tour.

Familiarity with RF technology is becoming a requirement for at least one member of any audio crew whose show relies on wireless. Instead of providing technicians along with sub-hired wireless packages, many vendors spend time training one of the show's audio techs. A large enough rental might also include a portable spectrum analyzer.

Since we're in the early part of the transition phase, we've only seen the tip of the iceberg. If you're using wireless microphones in the 30 largest American cities, it is likely that one day this year you will suddenly find interference that wasn't there before. Planning for that day will allow you to avoid RF conflicts and focus on more important audio issues. And having good alliances with specialists, whether they're manufacturers or vendors that sell and rent systems, will help you prepare. For occasional use or special projects, try renting from vendors that specialize in wireless equipment. Everyone purchasing wireless this year should consider their choices carefully. ■

Mark Frink is Mix*'s Sound Reinforcement editor.*

New Sound Reinforcement Products

YAMAHA GF SERIES CONSOLES

Yamaha (Buena Park, CA) offers the GF Series of 12-bus live sound consoles in 12/16/24-channel models. Each mixer has two stereo input channels, six aux sends, four group outs and a main stereo bus. An additional mono output may be derived from the stereo bus, either pre- or post-fader. Three-band EQ with sweepable mids is available on all input channels, and there are insert points on all mono channels and the main stereo bus. The GF12/12 is $999.95; the GF16/12 is $1,199.95; and the GF24/12 is $1,599.95.

Circle 314 on Product Info Card

AZDEN WIRELESS RECEIVERS

Azden (Franklin Square, NY) intros the 411DRH UHF and 311DRH VHF wireless receivers, both designed for rackmount or tabletop applications. The under-$500 411DRH offers 63 user-selectable UHF channels and features twin removable antennae. Outputs are XLR and unbalanced ¼-inch. Controls include squelch, volume adjust, RF and audio level displays and Group and Channel selectors. The 311DRH ($300) is similar. Both are powered via the BC-26U 12 VDC adapter.

Circle 315 on Product Info Card

STEDMAN TRANSONIC DYNAMIC MIC

The Transonic dynamic microphone from Stedman (Richland, MI) features a recessed switch that changes the mic's response. Normally flat from 33-19k Hz, the Transonic exhibits a subtle bass boost and a presence peak when the switch is engaged, optimizing the mic for on-stage vocal performances. Additional features include a heavy die-cast zinc body, low handling noise and a rubber iso clip. Price: $159.

Circle 316 on Product Info Card

SHURE WIRELESS PERSONAL MONITOR SYSTEM

Shure Brothers (Evanston, IL) debuts the PSM700 Wireless Personal Monitor system. Comprising the Shure P7T Transmitter and the P7R bodypack, the frequency-agile PSM700 system operates over two groups of 16 selectable UHF frequencies, and up to 16 PSM700 systems can operate simultaneously on the same stage. The half-rackspace P7T features LED input meters, level control, channel select and mono/stereo switch. Inputs are combo XLR/TRS, and outputs are balanced ¼-inch. The P7R body-pack receiver allows users to monitor in stereo, mono or Mix-Mode™, in which two mono mixes may be mixed. The PSM700 system is $1,800.

Circle 317 on Product Info Card

MACKIE CFX MIXERS

Mackie Designs Inc. (Woodinville, WA) announces the Compact CFX Series of pro mixers, including the CFX 12, CFX 16 and the CFX 20, all featuring a combination of mic, line and stereo line inputs, four subgroups, and onboard 32-bit multi-effects with 16 presets. The Compact CFX Series mixers include low-noise mic preamps, 4-band active channel EQ, direct outs and left/right assign switches on the four subgroups, and low-noise/low-distortion 9-band EQs on the outputs. Additional features include two pre/post switchable aux sends, PFL/solo functions on each channel and dual headphone outs.

Circle 318 on Product Info Card

AUDIO-TECHNICA VHF WIRELESS SYSTEMS

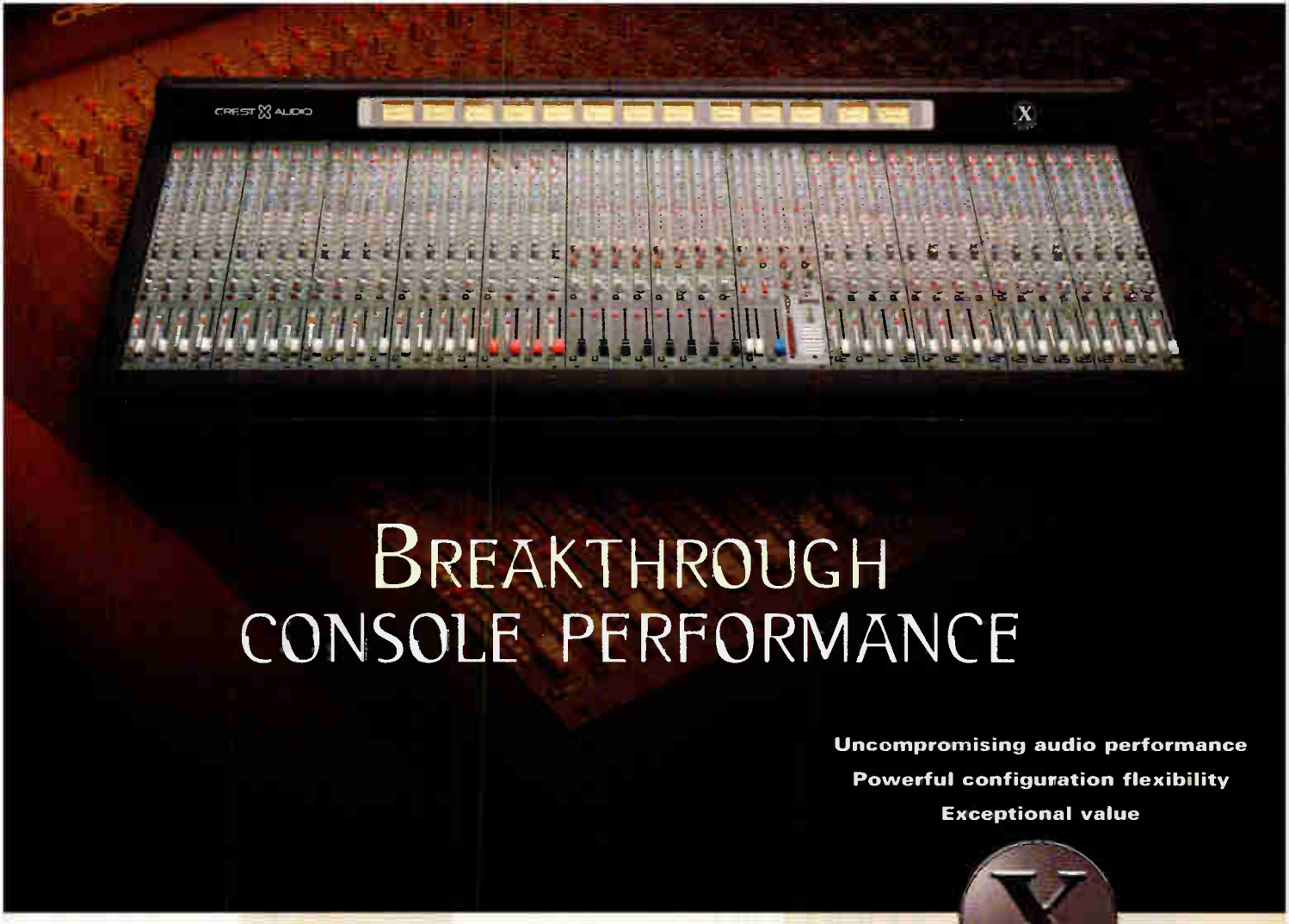
Audio-Technica's (Stow, OH) cost-effective PRO 100 VHF wireless systems include several transmitters—all with the PRO-R1 receiver, which features an advanced dipole antenna, adjustable squelch and ¼-inch output. A power-save switch on the transmitters extends battery life up to 20 hours. The PRO 128 system ($278) with ATW-T28 handheld transmitter features an A-T Hi-Energy® dynamic element. The $278 PRO 127L system has a AT829cW condenser lavalier, and the $332 PRO 127H has a PRO 8HEcW hypercardioid head mic.

Circle 319 on Product Info Card

EV R200 UHF WIRELESS

Available in handheld, lavalier, headset and guitar versions, the R200 from Electro-Voice (Buchanan, MI) is a true diversity UHF wireless system designed for optimum performance in crowded frequency bands. The R200 operates between 710.100 and 721.350 MHz (TV channels 54-55) on single frequencies. The R200 receiver has XLR balanced mic level and ¼-inch unbalanced line-level outputs, and a rack kit is optional. The HTU handheld transmitter includes EV's BK-1 cardioid condenser or N/D157 cardioid N/DYM mic elements. The BPU bodypack transmitter has a TA4F connector; condenser mic choices include the EV ULM20 lavalier and the HM2 headset mic. The XTU plug-in transmitter also works with the R200 receiver. R200 systems are priced from $340 for the R200/XTU to $650 for the R200/UE.

Circle 320 on Product Info Card



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CLASSIC TRACKS

THE O'JAYS' "FOR THE LOVE OF MONEY"

by Blair Jackson

Though today Philadelphia is considered a secondary recording market, there was a time when the City of Brotherly Love was a major player in the music business. Philly's first golden era came in the late '50s, after Dick Clark's phenomenally successful *American Bandstand* program, which began on the local WFIL-TV in 1952, went national on ABC in August 1957. Suddenly, Philadelphia was at the epicenter of the pop earthquake, and a web of music industry-related businesses sprang up in the city to cash in on the phenomenon. Teen sensations such as Danny & The Juniors, Fabian, Frankie Avalon, Bobby Rydell and Chubby Checker all came out of Philly in the late '50s/early '60s, as did DeeDee Sharp ("Mashed Potato Time"), The Orlons ("The Wah Watusi") and The Dovells ("The Bristol Stomp"). Dick Clark had his own label, Swan Records, based in town, and then there was Cameo Parkway and Chancellor Records. Philadelphia even had its own equivalent to New York's Brill Building—the Schubert Building at 250 South Broad Street "was filled with songwriters and managers and little one-stop record companies," remembers Joe Tarsia, who was chief engineer at Cameo Parkway's studio in those days. Kenny Gamble and Leon Huff, one of pop music's greatest songwriting/production teams, got their starts, independently, in the Schubert Building.

Around the time of the British Invasion, however, the scene in Philly began to change. Dick Clark moved *Bandstand* to Los Angeles, and the ascent of The Beatles, and rock bands in general, signaled an end of the teen idol period in American pop. "The business really changed," Tarsia says. "What remained, though, was a core of music from the streets [i.e., soul music]. In the mid-'60s we were doing records with The Intruders—'Cowboys to Girls,' 'Together.' Kenny and Leon recorded 'Expressway to Your Heart' with the Soul Survivors. Thom Bell [a talented producer/arranger] was developing an act with The Delfonics—they did 'La-La Means I Love You.' They started to explode. Most of the work Kenny, Leon and Tommy were doing was not for their own labels but for others—Dusty Springfield for Atlantic, Joe Simon for Spring, Wilson Pickett for Atlantic, Jerry Butler for Mercury.

PHOTO MICHAEL OCHS ARCHIVES/VENICE, CA

The O'Jays, 1974 (L to R): Eddie Levert, William Powell and Walter Williams

"By 1967 Cameo was fading into the sunset with all the other independents," Tarsia continues, "so I decided to take a shot at running my own studio. I opened Sigma Sound in 1968, and right away we got a lot of work from Gamble and Huff and Thom Bell." Sigma started as an 8-track studio, with Scully 4- and 8-track recorders mounted in one cabinet and wired with a supplemental harness to accommodate 12-track 1-inch, "a format that was not to be," Tarsia says. The console was a custom 14-input Electrodyne model built from components.

Spurred by the success of Gamble and Huff, and Bell, Philadelphia once again became a major recording center from the late '60s through the '70s. Most agree that Motown was never the same after the label moved to Los Angeles in the early '70s; indeed, it's around that time that the Philadelphia Sound really began to take off and Gamble and Huff's Philadelphia International label topped the pop and R&B charts with one song after another. Most of the Gamble and Huff productions recorded in Philadelphia used a stable of talented musicians that included bassist Ronnie Baker, drummer Earl Young and guitarist Norman Harris as a core group, augmented by such fine players as guitarists Bobby Eli, Roland Chambers and Bunny Sigler, organist Leonard Pakula, percussionist Larry Washington and vibist Vince Montana. Thom Bell's sweeping string arrangements and Bobby Martin's crisp horn charts brought a grandeur to the productions that hearkened back to the Big Band era but also sounded modern.

The O'Jays were not a Philadelphia band; the group was formed in Canton, Ohio, in the late '50s. Originally a doo-wop quintet called The Mascots, the group became The O'Jays in 1961—the new moniker was a thank-you gesture to a Cleveland disc jockey named Eddie O'Jay, who had given them valuable support and career advice. They scored a few minor R&B hits in the mid-'60s, but by 1967 they were contemplating breaking up. The following year, though, they signed to Gamble and Huff's Neptune label and their fortunes began to rise. By 1971, when Neptune folded, the group was down to a trio—Eddie Levert, Walter Williams and William Powell—but their best days were still ahead of them. Gamble and Huff regrouped and started the Columbia-distributed Philadelphia International label, and they wrote some of their strongest material for The O'Jays during this period. In 1972, the O'Jays had two chart-topping smashes—"Back Stab-

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the new legend

bers" and "Love Train." Both were recorded by Tarsia at Sigma using the players mentioned above (except Ronnie Baker).

"For the Love of Money" was another socially conscious Gamble and Huff tune tailor-made for the O'Jays' powerfully gritty vocal style. It was recorded in the fall of 1973 at Sigma. Typically, Gamble and Huff's productions were done in three or four separate sessions, days or weeks apart. At the first session, Tarsia would record the basics on what was often a ten- or 11-piece group: "It was a mass of people to do rhythm," Tarsia says. "On a typical Gamble and Huff record, if you count doubling, we would have 54 to 60 people—that's almost a symphony orchestra.

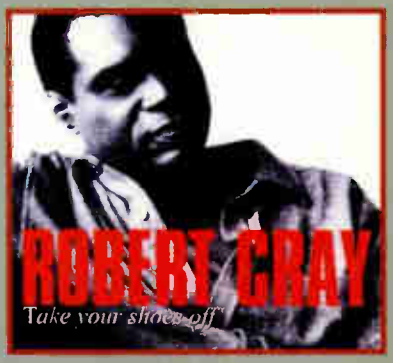
"We might cut four tracks in a day; or we might cut just one and then recut it the next day if we didn't like it," he continues. "So rhythm was one day. Kenny and Huff would take the finished roughs of the tracks and listen to them over and over again and then work out the backgrounds and vocal parts. Then the next thing to be recorded was voices, when enough songs were assembled. With the O'Jays, they'd usually be

Cool Spins

The Mix Staff Pick Their Current Favorites

The Robert Cray Band: *Take Your Shoes Off* (Rykodisc)

So many times you read a review of a



new R&B release, and the press insists it's reminiscent of great Motown or Stax soul. Then you listen, and you've been deceived; Brandy does not sound like Ann Peebles. Well, this time it's for real. Robert Cray's first album for Rykodisc sounds so much like the old school that you'd swear Hi Records was back in business. On his familiar blues recordings, Cray's voice and, in fact, songs have usually taken a back seat to his original and virtuosic guitar work, but this release showcases his sweet, powerful singing, and his usual backing band has been seamlessly integrated into a big, stellar group of keyboard and horn players (including the famous Memphis Horns). There are also a few blues numbers on this album, including a great, deep version of Willie Dixon's "Tollin' Bells," but it's the real soul on this record that's so refreshing and beautiful. Cray's always been known for his considerable talent; now he'll also be recognized for his versatility.

Producer: Steve Jordan. Recording engineers: Niko Bolas and Don Smith, except "It's All Gone" recorded by Steve Jordan; assistant: Greg Parker. Mixing: Don Smith. Recording studio: Woodland Studios, Nashville, except "It's All Gone," recorded at Woodland and Knotek, NYC. Mastering: Greg Calbi/Sterling Sound, NYC.

—Barbara Schultz

Dennis Kamakahi: *'Ohana* (Dancing Cat)

In Hawaiian, "'Ohana" means family, and on his superb second Dancing Cat slack-key guitar release, honey-voiced Dennis Kamakahi celebrates *two* of his families: He pays tribute to the close-knit band that gave him his professional start, the Sons of Hawaii (he came onboard in the '70s following the death of the great Gabby Pahinui); and a handful of tracks are duets

with his son David, who plays ukulele in a style clearly influenced by the Sons' Eddie Kamae. Sons fans will enjoy Kamakahi's spare but sparkling takes on several of that group's best tunes. Kamakahi also taps into the songbook of the late Sonny Chillingworth and the prolific Queen Li'liuokalani—Hawaii's last monarch—who wrote so many great songs in the 19th century. And for something a little different, father and son duet on a lovely version of

—CONTINUED ON PAGE 229

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around only for that; they'd do their parts and leave. If there was any kind of sweetening—like putting on another guitar part or a solo part—that would be done next. Strings and horns were a day, and then the mix was a day."

By 1973, Tarsia had put in a 32-input Electrodyne console, and he was recording to 16-track Scully (the studio went 24-track the following year). "It was a primitive board," he says. "It had one echo send and a three-setting equalizer. But we used to use outboard EQ—we had some API equalizers in the rack and a couple of Orban parametrics." The studio had a 40x6x12 live chamber, as well as EMT reverbs.

Effects were usually kept to a minimum, but "For the Love of Money" is notable in part because it did have some interesting audio trickery on it. The relentlessly funky bass line by jazzer Anthony Jackson (who even received a co-writer's credit for his contribution) is curiously altered, and then there's the distinctive background vocal wash—the famous, ghostly refrain of "Money, money, money" blowing through the song like an ill wind. The song proffers the notion that money is the root of all evil, and sonically the effects on the track do sound sinister.

Tarsia credits another Philadelphian, Todd Rundgren, for getting him into experimenting more with effects. "Back when Todd was doing The Nazz, he came in here with an engineer from the West Coast and they had all sorts of interesting ideas. I was basically a one-man studio so I spent a lot of time on this. They proceeded to do things like take a guitar amp, plug it into a Leslie cabinet from a Hammond organ and turn the input up with nothing plugged in, so it made noise. They double-miked the rotating horn in the tone cabinet to produce a stereo swishing sound. Then they were flanging part of another song. They were creating all these psychedelic effects and it was totally fascinating to me.

"And I absorb like a sponge, so lo and behold a jazz player [Anthony Jackson] comes to Philly and he's working with Gamble and Huff and he has a wah-wah pedal on his bass. Now the way Kenny used to work is he'd hand out chord charts to the musicians and Huff would sit at the piano and they would literally run down the song 20 or 30 times, and the musicians would start to gel together. Norman Harris would play a little guitar line, or Vince Montana would do something on the vibes, and they would weed and cultivate the

arrangement. And after a couple of hours, they'd be ready to cut a track. On 'For the Love of Money,' I remember Kenny was sitting down on a stool in the middle of the studio, Huff was at the piano, and they were running down the song. I had just gotten an Eventide automatic phaser, and I heard that bass line and I plugged the phaser into [that and] the drum tracks and I thought, 'I better play this safe because Kenny might not like it.' I recorded them twice—once as I normally would and once phased. And when Kenny came into the control room he loved it. The other new toys I had just gotten were Kepex noise gates. We used that on the vibes—Kenny didn't like the vibes on the record and wanted to dump them. I decided to try to get something out of the the vibes by employing a Kepex gate, which was triggered by the snare drum and gated the vibes, adding tone to the snare."

As for the effect on the voices, after the O'Jays had left the background vocal session, "I took the tape, put it on the machine backwards and recorded echo on different tracks in reverse so the echo precedes the vocal. It's reverse echo," Tarsia says. "I was printing effects, but to the extent that I was covering my ass and had it with and without effects. The vocals were already down, so the backward echo was on another track and I would add that at will. And in the case of the drums, I doubled up. The other effects—the Kepex stuff, the echo on the bass—happened in the mixing. When we mixed it we went for broke. [On the opening of the track] Kenny reached up, grabbed the echo pot and turned it on the bass and then turned it off. At the time I hated it, but today I love it."

On the album version of the song, which runs seven minutes and 21 seconds, the horn arrangement is fleshed out considerably and there's some nice interplay between the lead trumpet and the rhythm section. Tarsia says the horn parts were worked out in a sweetening session by Gamble, trumpeter Rocco Benie and saxophonist Michael Pedicine Jr. Obviously, the single version is more compact, though no less effective. "For the Love of Money" made it to the Top 10 in the spring of 1974 (Number 9 pop, Number 3 R&B) and catapulted the group's *Ship Ahoy* album to Gold status. The group continued to churn out Gamble and Huff-produced hits for the next few years—"Give the People What They Want," "Let Me Make Love to You," "I Love Music," "Livin' for the Weekend,"

etc.—but they were briefly derailed by the death of William Powell in May 1977. He was replaced by Sammy Strain (of Little Anthony & The Imperials), and the group's best-selling album actually came in 1978 with *So Full of Love*. Though they have long since split from Gamble and Huff, The O'Jays, still led by the incomparable Eddie Levert, continue to tour and record, inviting young and old to board the Love Train with them one more time. ■

—FROM PAGE 210, CESAR ROSAS

does mark a return to the earthier, more straight-ahead style of the first Los Lobos albums. "It's just fun music," he says. "It's a roots kind of record, kind of bluesy in places. There's no social comment or any political things attached to the music. I didn't get too modern with it. I just wanted to have a good time with it."

Rosas says that he first entertained the notion of making a solo record several years ago, around the time Hidalgo, Perez, Froom and Blake cut the first of their two strange and offbeat Latin Playboys CDs. But he couldn't find the time to get the project off the ground until more recently. The Latin Playboys benefited from having a production team actually *in* the band, but Rosas decided that for his project he would go it alone, engineering the record himself at his L.A.-area home studio and playing most of the instruments. Some of the songs on *Soul Disguise* are tunes Rosas originally intended for Los Lobos albums, but most were developed specifically for the new disc.

"We've been around the music business so long, and I've always been interested in recording," Rosas says when asked how he acquired his engineering chops. "Even in the early days of Los Lobos, in the '70s, I had a 4-track and a few mics, and I've always had something going on with tape recorders. I

picked up a lot through the years, too, just making the Los Lobos records. You're in the studio hour after hour and you learn about mics and where to put them; which is best on a kick and a hi-hat and all that."

And then there's Tchad Blake who throws out the rule book, I interrupt. "Right!" Rosas says with a laugh. "You go in with Tchad and he'll mike a hi-hat with some little cheapie mic, put it in a little cheapie tube amp, put the mic in the corner facing away from the amp..."

Rosas built his home studio in his four-car garage. "It's nothing fancy," he says. "It's a small 16-channel ADAT studio with a handful of old mics. I have a Mackie 32•8, but I don't use it much to track. I have some old outboard tube pre's, and so usually I go directly to the ADAT. I have Siemens D72s and a pair of Neves. I have some APIs and a couple of Manley tube pre's." His personal mic collection includes a U47, a U87, various AKG models and others. The studio has a pair of iso booths, one for drums and another to house amplifiers.

Because of his demanding touring schedule, the album was constructed piecemeal over a long period. "Most of the tracks started with just a drummer—Victor Busetti, who's the percussionist for Los Lobos—and myself," Rosas says. "It was usually electric guitar and a vocal track and drums. We'd go over it a couple of times until we found what we were looking for. I'd keep it and maybe move on, do a couple of songs on that session. Then a month or two later, I'd do the same thing again with a couple more songs. Once we had that base to work from, I started adding bass and guitars and bringing in people to play things. It took me a couple of years to do it that way."

Wasn't it difficult to stay focused on the material over such an extended period? "Not really, no. I didn't have any choice but to work on it in pieces. It allowed me to really take my time. And I'm very comfortable in my studio, so I didn't get tired of working on it the way you might if you were going down to a regular studio every day for weeks."

In addition to Busetti, guests on the CD include friends such as drummer Aaron Ballesteros, accordion legend Flaco Jiminez (who was, with Rosas and Hidalgo, part of the recent Los Super Seven project), sax player Jack Freeman, and B-3 players Eddie Baytos and Rosas' brother Rudy. "Rudy would come over for a family get-together, like for Thanksgiving or something—a family reunion—and people would be outside barbecuing and we'd be in my studio tracking," Rosas laughs.

Rosas says he went out of his way to come up with different guitar textures for the CD's 12 tunes, which range from the emotional ballad "Better Way" (one of four songs co-written by Rosas and Leroy Preston, one-time member of Asleep at the Wheel) to the rough-and-tumble R&B of Ike Turner's rarely covered "You Got to Lose," the aptly titled "Shack and Shambles" and the Hendrix-influenced title track. "I played so many guitars I can't even remember some of 'em," he comments. "'Soul Disguise' *was* inspired by Jimi. That was a Strat straight into a 100-watt [amp] cranked all the way, full-blast. Then we put a flange on it during the mix."

Though Hendrix is one of Rosas' obvious heroes, he says he was also influenced by dozens of other famous and obscure blues and R&B guitarists. And then there's his extremely talented bandmate, David Hidalgo: "Dave has been a great influence on me. I don't get a chance to say that too often. People always want to know about other

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influences—Hendrix and whoever—but David was already an accomplished guitarist when I wasn't playing guitar myself back when we were kids. He was already in bands when I was still riding my bicycle everywhere. And, obviously, we've been playing together all this time so he's had a tremendous influence on me. He's a great player."

Soul Disguise was mixed on an API console at the Sound Factory in Hollywood by Rosas and longtime Los Lobos associate John Paterno. "We went for a regular kind of sound where the instruments sound like the instruments; nothing too unusual, no tricks or anything," Rosas says. When I gingerly ask if the simple approach so evident on the disc is a reaction to the sound of recent Los Lobos records, he chuckles and says, "I had a feeling someone would ask me that question! That sound—this music that's on *Soul Disguise*—is just instinctively mine, and if I had to say something about it, I'd say, 'That's me.' God knows what kind of music I'll be doing as 'me' down the road, but this is 'me' right now. This is where I'm most comfortable, that style of music—more bluesy. Perhaps it's something that wouldn't have a chance in the way [Los Lobos is] recording these days and I kind of miss that vibe. But that's not to say I don't totally dig what we're doing in Los Lobos, because I do. I'm comfortable in both worlds."

When we spoke in January, Rosas was just beginning to assemble a band for a winter/spring tour to promote *Soul Disguise*. As always, there were Los Lobos gigs looming, too, as well as a new Los Lobos record due in May. That band remains Rosas' priority, but *Soul Disguise* marks a wonderful detour in a career that's been filled with fascinating musical destinations. ■

—FROM PAGE 211, *FOOTLOOSE*

dience stands up and screams with sheer delight. And it isn't only happening on Broadway—the producers also have a touring production out on the road.

On a Monday in November, a little more than a week after the show's opening night, *Footloose*'s 40 cast members got together in the big room at Hit Factory to take the usual one-day shot at distilling the show's essence into an audio-only experience: the cast album. With Broadway runs now being overshadowed by touring companies in their impact on the producer's bottom line, it seemed a good idea to have a cast CD available as soon as the road company's buses and trucks began to roll.

The tension and excitement of recording the show in one marathon run appeared to be one of the few similarities between the *Footloose* session and other typical cast recording dates. Unlike a normal Broadway cast session, where the singers face the conductor and the orchestra all together in the biggest studio available, the room appeared devoid of musicians. The show's leads were all arranged around the piano played by the show's slightly manic conductor, Doug Kastaros.

Had the tracks been laid down in advance for the singers to overdub? Upon closer examination, the half-dozen or so musicians were found, hidden behind baffles and in iso booths, pop-music style.

"*Footloose* is a real hybrid, musically," says Tom Snow, who co-wrote much of the music for the original film, as well as nine new songs for the stage show (with lyricist Dean Pitchford; Snow also co-produced the cast record with Tom Krasker). "The vocals are very Broadway-like with the big chorus and lots of dynamics and step-outs, but backing the singers is an amplified pop band. We started out thinking about the

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sound of the record as the integration of the ambient sound of the 40 voices in the studio, with a very live stage, with the precisely tracked and mixed sound of a pop band."

"We're walking a fine line between pop and theatrical recordings," adds Trasker. "We don't have a lot of predecessors to refer to."

"On a conventional show album done with an orchestra, you give some isolation to the principal singers and then make the orchestra and the chorus be one sound element," adds engineer Joel Moss, who is not only a veteran of numerous cast album sessions, but also recorded the *Footloose* film soundtrack album nearly 15 years ago. "In this case, the sound element that's most exciting in the show is the chorus and the singers. The band is a rock 'n' roll band. So we did everything the opposite: We took the band and isolated them and we made the big room at The Hit Factory be a giant vocal booth where we set up a very large spread on this chorus of 40 people, and then we brought the nine principal singers downstage in front of the chorus and created the spatial effect with the voices. I recorded the instruments pretty much as if it was a pop record.

PHOTO: ERIC RUDOLPH

At The Hit Factory, being filmed, were (L to R): conductor Doug Kastoros, engineer Joel Moss and director Walter Bobbie.

"We broke the chorus into sections because there's a lot of Bachian interplay in the vocals, where one part is singing a hymn, say, and another more of a background type thing," Moss continues. "So we had three large setups with risers that were in a big arc around the back of the studio and the principals down front. Each section was miked LCR with TLM170s in omni, so there were nine mics on the chorus. I had TLM 50s in an LCR pattern that were the basic overall frontal mics, and then B&K 4011s behind the chorus as the surround mics. For the soloists, we primarily used TLM170s, which they had a lot of at the studio. [For economic reasons] we stayed away from some of the more esoteric tube microphones that I would normally rent for the soloists."

Moss worked on Studio A's SSL 9000J console, cutting to high-bit multitrack through Avalon preamps. "We recorded everything to 48 tracks at 24-bit," he notes. "There's never been a cast album done that way, and probably about five albums ever. The technology

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is pretty new—we're using the new Sony 3348 HR recorder, and the signal stays 24-bit all the way through the mixing and mastering, which is being done to the Sony PCM 9000 optical disk. I've been locked in digital hell for so many years because of all the orchestral things I do. I'm not a 16-bit fan. I've got that thing—not as strong as some of my friends who can't stand to be in the same room with it—but I heard little digital stuff happening. But 24-bit is beyond that."

PHOTO: ERIC RUDOLPH

Principals and chorus during the tracking session

Snow points out that "cast recordings are usually fraught with sheer terror" because of the pressure of having to record the entire album in one day. This is due to strict Broadway Actor's Equity union rules dictating that each cast member be paid one *week* of salary for each day of recording; any overtime automatically triggers another full week of pay. So 55 minutes of music and voices had to be recorded in a single 14-hour session.

That said, "These were the smoothest and most satisfying cast sessions I'd ever been through," says Krasker, whose cast album credits include the Broadway hit *Titanic*, the recent revival of *The Sound of Music*, as well as 1995's *I Wish It So* by Dawn Upshaw and the current debut album by multiple Tony Award-winner Audra McDonald. "But it just wasn't that the tracking was smooth; the songs were cut efficiently and also very energetically."

The session actually was concluded more quickly than some cast tracking dates. It began at 9 a.m. and ended at 11:30 p.m. "There was no overtime whatsoever; the record company was very happy," Krasker says. Snow adds, "We finished with about eight seconds to spare! When we started that last take, Tommy [Krasker] turned to the contractor and said, 'Stop us when we're out of time,' meaning even if we're in the middle of the take. Fortunately, we made it all the way through."

Time is normally set aside in the days following the tracking for cast members to come in and do patches or retrack songs. "You need to schedule that post-session time in case someone gets laryngitis or some other unusual situation comes up," Krasker explains. For *Footloose*, two of the leads were brought back the next day to try to inject more intimacy into their big duet, "Almost Paradise," "without everyone in the studio watching," Krasker says. "It worked, and those are the takes we used."

What's the secret to getting 55 minutes of great recordings out of a single long day from a group of very young professionals? "Part of the reason things went so well is Tommy Krasker's great vision of how to organize the day," Snow explains. "You don't want the entire cast there for 12 to 14 hours, so you stagger the artists' call times to allow them to be as fresh as possible when they're needed on mic."

"Basically, I scheduled the smaller numbers for early in the day so that we could get our own pacing together before we were trying to deal with a room full of 40 voices," Krasker explains.

The *Footloose* recording was also a

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noteworthy and taxing technical undertaking because it was recorded with an eye toward a possible 5.1 release. "We did the main tune and the finale as a sort of calling card for the 5.1," Moss says. "Most 5.1 audio releases are created after the fact. But for *Footloose* we set up the chorus and principals in the studio in such a way that we created the appropriate spatial quality with regards to the three dimensions."

The principals' mics were set up in a left-right pattern, and "we envisioned the movement onstage when we did that," Moss notes. "So the principals moved to the appropriate mic station relative to their position on the soundstage rather than having us create that movement through panning, because we were also taking ambient sound from overhead mics. So as they moved from one of the principal mics to another, they also moved within the ambient space." The chorus was treated in a similar way.

For the mix, Moss worked on The Hit Factory's Sony OXF-R3 (Oxford) digital console, and he gives the new board high marks. "We were able to move through the mixes very rapidly and compare one to the other because of the Oxford's instant recall," Moss explains. "Plus, when we got a drum sound we really liked, we could go from song to song and match that sound easily. The Oxford is a great tool. If you're going to be in the digital domain and have the liberty to use the Sony 3348 HR recorder with its high bit rate, it is really fantastic to be able to maintain the digital purity all the way to the final mix. There was absolutely no coloration of the sound that we didn't create ourselves."

Moss says he enhanced the sound in the mix by adding a bit of reverb, but most of what's on the CD is the sound of the room. "I used the B&Ks [intended for the 5.1 recording] in the stereo mix, too—I added them as a reverb element, and it was actually quite nice. There was a little time delay that happened with those mics, and that kept us from having to go too deep with the outboard stuff."

With the tracks in the can, the team faced a grueling post schedule. "We're trying to make a two-week turnaround from tracking to master," explains Krasker. "It's a fairly intensive schedule for us, but the CD is a pretty important piece of paraphernalia to the touring shows, so we're hard at work, ten-plus hours a day."

The hard work was worth it. The producers and Moss have effectively transformed the theatrical experience to the CD. While the recording cannot recreate the spectacle of several dozen enthusiastic young people dancing and singing their hearts out, the power of the vocal performances and the essential energy of the endeavor come through. "We wanted to capture the youthful power of the show," says Krasker. "We're quite pleased to say that we believe we succeeded." ■

—FROM PAGE 211, KMFDM

identical equipment in their studios, so they can exchange ideas and tracks easily, with no compatibility problems. Konietzko thinks this contributes greatly to the freshness of their sound. "It's good because you never really run out of ideas," he says, "you just pass it on and it comes right back with a new breath of life in it." Their setups include Power Mac 9600s with 350MHz processors, Akai S3000 samplers, Pro Tools 24 rigs, Opcode Studio Vision sequencer/recorders, a variety of synthesizers including Nord2 racks, a Korg Monopoly, several Roland modules (803, 808 and 809), a Pro1 circuit and a total disc array of 70 Gbits. Sometimes Skold uses a

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Kurzweil 2000, and they use the Akai MPC2000 sequencer for live shows.

"Tim and I started this particular project last December," Konietzko says, "and it was basically shopping-list style. First of all you just assemble everything that you want this album to be composed of. That means a lot of poking around and sound shaping and sound design, those kinds of things. Then, with all the bits and pieces you already know, you say, 'Okay, I want to use this loop with that sound.' You start the assembly phase. At the same time lyrical ideas start to pop up and things start to get arranged in a way so that you know this is probably going to be the verse on the track and this will be the chorus."

By February '98, the sound shaping and sound design were done, and Skold and Konietzko began sequencing and mixing. In May they brought the results (along with gear from their studios) into Studio X in Seattle for final mixing and overdubs. These sessions lasted 30 days, allowing approximately three days of mixing per song. Konietzko says the move to the bigger studio was a welcome experience. "The big studio is more or less an emotional type of step in the making of a record," he says. "You finally get out of the confinement of your little studio, and you can put everything together and hear it in a room that is slightly bigger than what we deal with in our studios. The big studio is important for us because that's where we have our big console—the SSL with 64 inputs—and enough space to spread out and have more than two people in the room."

It was in Studio X that fellow KMFDM members En Esch and Gunter Schultz joined Konietzko and Skold. Working with Chicago-based engineer and longtime collaborator Chris Shepard (whose credits include Smashing Pumpkins, Wilco, The Spinnanes and Sonia Dada), the band overdubbed, remixed and polished the pieces. (Guest artists—a norm for KMFDM—were also brought in at this point, including Nina Hagen, Ogre from Skinny Puppy, Bill Rieflin of Ministry and Revolting Cocks, and Cheryl Wilson.)

In terms of the actual process involved at this stage, Konietzko says, "We bring up each song that we have done in our respective studios, and then we just get everything set up on the console, map the entire song, make a document that tells us things like, 'the next time we bring up this song, the kick drum will be here, etc.' Once we do that with every song, we go back and figure out if we want to add something to this or if it's really at the point where we figure this could be mixed. If the answer to that is yes, then we go into mix mode. We take a few hours and lay down a rough idea of a track. And in the meantime, of course, on the way home each night we just listen to these. And after about a total of 10 or 15 days, each song has been up on the console at least twice and has been worked on more or less. Then we go into the final mix mode. That's when we spend a day or sometimes two—sometimes more—on a song. There are songs that almost mix themselves, and then there are songs that pose a problem and need some overhauling or some reworking."

One of the most distinctive and unique portions of any KMFDM release is the vocals. Whether contributed by guests or the members themselves, who can mistake the distorted, massively overdriven lyric lines on a KMFDM CD? Shepard describes the method used to obtain this distinctive sound with the simple phrase: "distort and distort again." Working with a variety of old

tube mic preamps, as well as SSL, Focusrite and Neve preamps, Shepard overloads and cranks the outputs beyond recognition. Any pristine quality gained from an overdriven tube is quickly shot through solid-state electronics for clipping. "A lot of the songs we use distortion on aren't actually sung really hard," Shepard adds. "We do use mounds and mounds of compression."

Compressors and limiters play a large role in the band's signature sound, as Shepard indicates: "Sascha's Manley compressor played a big part, used as a limiter. We also used a lot of 1176s and several LA-2As. We definitely pounded the mix through an SSL limiter. We like it pumping. Sascha owns several good limiters, and the studio had several good ones, too."

As far as software is concerned, this is the first full-length project on which KMFDM have used Propellorheads' Rebirth application. (Rebirth, originally created by Propellorheads Software, is a software synthesizer modeled after classic Roland synths, including two 303-type bass line synthesizers, 808 and 909-type drum machines, plus a multi-input distortion box, delay, compressor, Pattern Controlled Filter and sequencing functions.) Konietzko likes it but emphasizes that it is a complex tool and to be used correctly must be treated as such. "We use Rebirth, but we use it in not so obvious ways. Everybody has it, and a lot of people are obviously able to make fantastic-sounding stuff with it and put out records. We figured that if we used Rebirth, it shouldn't sound like run-of-the-mill type of stuff."

KMFDM fans will be pleasantly surprised with the sound of the new record, as the band has again gone in a different direction. In Shepard's eyes, the difference was the role played by Konietzko. "Sascha is not a guitar player," Shepard says, "and he had more control at home to record this record. He did more of the soundscaping thing. He found nice tools to work with at home that were aggressive-sounding for him."

Konietzko agrees that there is a difference in the new album, but he sees it more as a function of his intent: "We consciously omitted as much as possible of the real kind of recording process. Technically speaking, there are little to no guitars on this album. There are hardly any real instruments used at all. Everything is completely synthesized. In the past we used a lot of things like brass sections and guitars. Besides the occasional guitar and one track where there's a real bass being played, there's not a single drum hit that is from a real, recorded drum kit."

Two Pro Tools 24 rigs were used in the studio, one for sequencing and handling all the sound source material and another for recording. They also made limited use of a Studer 827. Shepard likes the Studer because "it creates really good reverse effects; the transport runs in reverse, so it's handy to do quick little reverse things. Sometimes we do them in the computer, and other times we flip them around in the 827."

The album was sent to the mastering house on a Pro Tools 24 disk. Shepard points out that the use of the Pro Tools 24 system gave them more control of the final product: "We sent the mastering person a 24-bit mastering file. In the past we would send out just a 16-bit DAT tape. It would come back and we would think, 'Hmm, it sounds good, or it doesn't sound so good. Maybe we need to tell the guy to change something.' This time we were very much involved in the mastering process without physically being there."

When asked what it is that he does to achieve that signature KMFDM sound, Shepard responds that he isn't really sure, even after all these times in the studio. "It's a combination of a lot of things, and it's a lot of things I don't know. We work really hard to make it different, but it always comes out KMFDM."

Alas, *Adios* is an all-too-appropriate name for the new KMFDM album, for it was recently announced that the group was splitting up. Still, the legacy of 12 years remains, and no doubt we'll be hearing more innovation from these music/mixing pioneers down the road. ■

—FROM PAGE 214, COOL SPINS

Victor Young's main theme from *Around the World in 80 Days*. Kamakahi is a romantic through and through, and both this CD and its underrated Dancing Cat predecessor, *Pua 'Ena*, serve as marvelous introductions to the beauty of Hawaiian folk music. A polished gem!

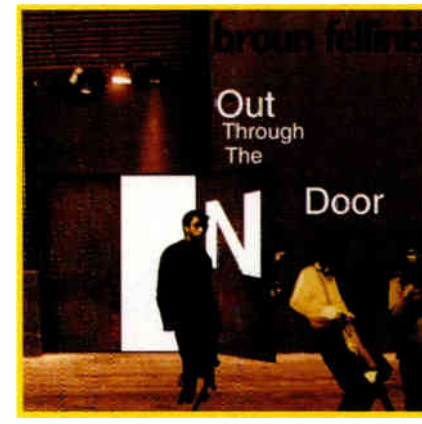
Producers: George Winston, Dennis Kamakahi. Engineer: Howard Johnston. Additional engineering: Justin Lieberman, Mark Slagle, Dave Millington, Porter Miller. Studios: Audio Resources (Honolulu), Different Fur (S.F.). Mastering: Bernie Grundman/Bernie Grundman Mastering (L.A.)

— Blair Jackson

Broun Fellinis: *Out Through the N Door* (Brounsoun Records)

Ever since acid jazz took a strong hold on the

new music scene in the early '90s, San Francisco's Broun Fellinis have maintained a constant presence. Because so much of what they do is live improv, it is perfectly fitting that the band recorded their second release, *Out Through the N Door*, in front of an audience at Found Sound Studios in San Francisco. The album explores territory from mellow to fierce, moving from avant-garde jazz through funked-up dance floor grooves and into hypnotic chill-out. At the forefront of the Fellinis' sound, David Boyce's saxophone brings the spirit of '60s improv jazz to the group, his full-bodied tone drawing inspiration from players such as

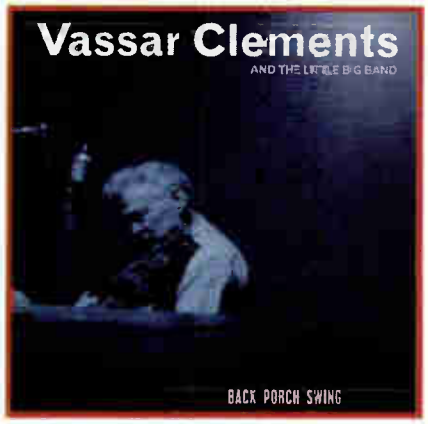


John Coltrane and Archie Shepp. Boyce also expounds Afrocentric spoken word on top of the grooves on tracks such as "Point of View" and "T.A.B.N.I.T.S." Propelled by the music, his eloquently worded, esoteric soliloquies hit hard. The album features the group's new bassist, Kirk "The Redeemer" Peterson, creating a chemistry that improves on the feel of their first release, while exploring similar terrain.

Engineers: Thom Canova and David Kaplowitz. Mixers: Keith "Kount" Yansurak, Professor Boris Kamaz, Black Edgar Khenyatta and David Ogilvy. Studios: Found Sound, Hyde Street (S.F.). Mastering: Paul Stubblebine, Hyde Street. —*Alex Butkus*

Vassar Clements & the Little Big Band: *Back Porch Swing* (Grand)

Known primarily as a bluegrass/country fiddler, Clements is one of the great improvisors of our time. He's an endlessly inventive solo and ensemble player who is comfortable in virtually any style. This aptly titled CD puts him in a new context: a horn-heavy, swinging "little" Big Band. As you might expect, there are echoes of Bob Wills' Western Swing ("Hillbilly Jazz"), but there's plenty of variety, from a version of Jelly Roll Morton's venerable "King Porter Stomp" to the bluesy, Lyle Lovett-ish funk of producer Fred Bogert's "If That's Love." "String of Pearls" and "Old Black Magic" are well-chosen and imaginatively arranged standards, and Bogert's "Ezra's Holler" is a satisfying taste of fusion. All in all,



quite an eclectic mix of new and old, instrumentals and vocal pieces, united by Clements' deep, deep talent.

Producer/mixer: Fred Bogert. Engineers: Chris Munson, Joe Hayden (mix). Studio: RCA Studio B (Nashville). —*Blair Jackson*

Wes: *Welenga* (Epic)

Singer/songwriter Wes Madiko hails from Cameroon, Africa, where he was an itinerant

storyteller, or Griot; French pianist/composer/arranger/producer Michel Sanchez is well-known for his Deep Forest projects. This unlikely pair has teamed to produce an unusual record that floats Wes' high-pitched and emotive vocals over Sanchez's electronic keyboard washes and techno dance grooves. Though some of the songs suffer from synthesizer fatigue and an unwaveringly metronomic beat, Wes' impassioned extemporizations and the African-style chanted countermelodies make for a cheerful and joyous noise. With the exception of "We Don't Need No War" and the soccer anthem "Midiwa Bôl (I Love Football)," all the songs are in Bafoun, one of the languages of the Bantou tribe. Cultural anthropology rocks!

Producer/engineer: Michel Sanchez. Studio: Ekongolo Studio. "Midiwa Bôl (I Love Football)" produced by Tony Amaraggi and recorded and mixed at Townhouse, London. Mastering: Vlado Meller/Sony Music Studios (New York). —*Chris Michie*

COAST TO

L.A. GRAPEVINE

by Maureen Droney

As Seagram Co.'s restructuring of the music business began with its $10.4 billion acquisition of PolyGram, the industry entered a new era with plenty of speculation about what changes this would bring to the studio business.

In the most dramatic early events, after 37 years of operation A&M Records (but *not* the studios—see below) closed its doors on Thursday, January 21, letting go of nearly 170 employees who were given the day to pack and leave. As tearful staff gathered in the parking lot, a symbolic black band was draped over the A&M sign—a gesture Universal officials must have found embarrassing because they quickly ordered it removed. A few miles down the road, about 110 Geffen Records employees got the word that they no longer had jobs, with some of them heading across the street to rock 'n' roll hangout The Rainbow for a farewell bash. With 200 laid off in New York at Motown, Mercury and Island, all in all, Black Thursday saw nearly 500 staff cut in the first round of reorganization, which is expected to downsize 15 record labels into four major U.S. music groups and will take until at least July to complete.

Reactions to the events included a combination of sadness and hard-headed realism. At their peaks, A&M and Geffen had represented the apex of independent labels (with artists like Herb Alpert, the Carpenters, Peter Frampton, Supertramp, The Police and Janet Jackson on A&M and Guns N' Roses, Nirvana, Don Henley and Peter Gabriel on Geffen), but both labels had begun losing chart position as well as autonomy after they were swallowed up in the last decade by PolyGram and MCA.

A&M chief Al Cafaro, who was fired, spoke to the belief of many when he told the *Los Angeles Times*, "The record business is changing fundamentally. Don't think that there are calm seas on the other side of this threshold. If the quake that devoured A&M and Geffen is a 6.0 on the Richter scale, there's a 7.0 coming in this industry. It's a Wall Street world now.

—CONTINUED ON PAGE 234

In Studio A at Skip Saylor Recording, owner Saylor (R) is joined by Snoop Doggy Dogg.

PHOTO: MAUREEN DRONEY

NY METRO REPORT

by Gary Eskow

Exit the Holland Tunnel or one of the two PATH train lines that link Manhattan and New Jersey and you've made it to Hoboken, a town unlike any other in the Metropolitan area. Famous as the birthplace of Frank Sinatra, Hoboken seems pleasantly trapped in an earlier time (although older neighborhoods have released liberal tracts of territory to the renovation that the post-Yuppie hordes have demanded). Attracted by low rents in the warehouse district, about five recording studios operate as colleagues in this town. We visited a pair of them recently.

Rob Grenoble is not George Harrison's twin, but Central Casting would send him to read for the part in a flash. "Yeah, I've gotten that one for a long time—Mick Jagger, too," says the guitar-toting Grenoble. Despite the demands of owning Water Music and engineering a fair amount of sessions himself, Grenoble still identifies himself as a rock player and writer.

He insists that the studio be artist-friendly before all else. "I view studios not from the eyes of an engineer or producer but from those of the people playing the music," Grenoble says. "That thinking can lead to some debates; a producer or engineer would want the outboard rack right behind the console, for example, because it's easier to turn around and access the equipment, but, hey, when I cut a guitar solo, that's where I want to stand! Another example has to do with the way we set up lighting in our main room. Most studios have all of the lighting controls in the control room. But we have the studio light controls out in the room, so that the band can adjust the lighting to make themselves more comfortable. Little touches, to be sure, but they reflect the fact that we're here for the artists all the way down the line. There's one more funny story that illustrates this point. We once had a very famous English producer make a record here. When he looked into the control room, the first thing he said was, 'Get rid of those two couches, otherwise the band will be hanging out in here all the time!'"

Water Music has been operating in its current location since 1993. Grenoble is unabashed in his admiration for famed Bearsville Studios (upstate a bit from New York City). "We based our

—CONTINUED ON PAGE 236

COAST

NASHVILLE SKYLINE

by Dan Daley

Writing a monthly column implicitly limits the timeliness of the news, but it's time well spent on observation and commentary. By the time this column appears in April, either of the two burgeoning megastudios in town, Emerald Recording and Seventeen Grand Recording—both of which completed significant acquisitions by the year's start—could have made good on promises to grow even larger by way of more acquisitions. (And if Dale Moore is looking for a nice little 8-track setup in Bellevue, I've got something on the second floor of my house for him.)

People who read this column two years ago would have seen this consolidation coming, though at the time I didn't have a clue who the initial players were going to be. But I wasn't an Eagle Scout for nothing. If you look closely, you can find clues that give you a pretty good idea of which way the wind is going to be blowing.

One of the more oblique clues for the next round of Nashville's future might be found in a small newspaper clipping noting that another aspect of record label consolidation (Nashville lost Rising Tide and Imprint Records in 1998, and Seagram-owned Decca fell in January, the same month that L.A. lost A&M and Geffen) might affect the studio community here, as well. Provident Music Group, a sizable player in the Christian music industry, purchased Christian label Reunion Records in 1996. A musician's union agreement, of which Reunion was a signatory, expired January 31, and Provident had indicated it was not planning on renewing it. It has no problem paying scale; what it's rebuffing are payments to the union's pension and performance trust funds.

Oblique to the studio industry? You bet. But the implication is that union musicians will not be permitted to play on Christian

—CONTINUED ON PAGE 238

Deborah Harry recorded vocals with the group Pray for Rain for the soundtrack to Three Businessmen, a new film from director Alex Cox, at City Sound Productions (NYC). Pray for Rain leader Dan Wool (L) produced, and studio owner Bob Kirschner engineered.

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Kiss mixed in Studio A at Encore Studios (Burbank) with engineer Jimbo Barton. Also tracking and mixing in A was Will Smith, with engineers Rob Chiarelli and Steve Durkee. Mauricio Iragorri assisted on both sessions... The reunited TLC tracked vocals with producer Jimmy Jam and engineer Dave Rideau in the SSL-3 room at Record Plant (L.A.). In SSL-1 Sony artist Nikki Hassman mixed with producer Pat Leonard, engineer Mick Guzauski and assistant Gordon Fordyce...At Skip Saylor Recording in L.A., Jon B tracked and mixed a remake of Marvin Gaye's classic "Mercy Mercy Me" for an upcoming Motown tribute with engineer Daniel Romero and assistant Rollin Moone. Trash Wednesday was in mixing with producer/songwriter Kidd and engineer Chris Puram. Ariel Bell and Tracey Brown assisted...Producer/engineer Caleb Southern recorded Ben Folds Five for their next Sony Music release at Grandmaster Recorders (Hollywood)...Janice Robinson recorded for her Warner Bros./Reprise debut in Studio B at Ocean Way (L.A.) with studio owner Allen

—CONTINUED ON PAGE 239

PHOTO MARCY G. PHOTOGRAPHY

At Offplanet Studios (San Francisco), Dr. Funkenstein himself, George Clinton (L), recorded his contribution to a forthcoming Sly and the Family Stone tribute album. Joining Clinton during a dinner break were Hamp "Bubba" Hanks (center), executive producer of the project, and Bay Area-based music critic Joel Selvin.

—FROM PAGE 232, L.A. GRAPEVINE

Get ready."

Still, the industry has always traveled in cycles. A&M, Geffen, Motown, Mercury and Island all have performed poorly in the last few years, with few hits and balance sheets often in the red, and there are those who acknowledge that the downsizing was probably merited. Seagram's expects to produce $300 million in savings annually by consolidating the companies, and, also as reported in the *L.A. Times*, analysts suggest that the restructuring will provide Universal with economies of scale that are guaranteed to boost operating margins and position the company for strong earnings growth.

What will all this mean to recording studios? Well, the first, most visible and interesting effect is that the A&M lot, with its five studios, numerous mastering rooms and historical landmark Chaplin Stage is up for sale, while continuing normal day-to-day operations. The staff at A&M Studios is experienced in surviving management transition (it wasn't that long ago that PolyGram purchased A&M), and business continues as usual, although, as the joke goes, there's now plenty of parking on the lot. "Last year was our most successful year ever, and we just had our most successful January, so obviously for us it's very frustrating to be operating in a vacuum," says chief technical engineer Gary Meyerberg.

Studio manager Ron Rutledge lists recent projects: "We've had The Wallflowers, a long stint with No Doubt, Black Sabbath's reunion record, Kiss' new release and mixing for Guns N' Roses' live record. Seal has been in doing remixes with Trevor Horn. Ringo Starr, who did his last record here with Geoff Emerick producing, is coming up again shortly. Another exciting thing that's happening is an addition to our mastering team: Stephen Marcussen has left Precison Mastering after 20 years and will be working with us for some time while he maps out his own facility."

"We've had a lot of great people in recently, we've got a lot of great things coming up, and we've got a lot of great plans for the future," continues Meyerberg. "Although right now we're in a holding pattern, people should realize that the studios haven't really been impacted. At A&M we've lived through a lot of transitions, and we've been able to make the effects be transparent to the client base. Nothing gets degraded—we're as committed as we've ever been to the clients in what we stand for, and in the standards and legacy that we maintain.

"From the days where Herb gave us an open checkbook, to PolyGram where we had a very tight checkbook, to now where we don't know what checkbook we'll have, through it all we've maintained the quality of our staff and the quality of our equipment," Meyerberg says. "We're also profitable, partly because we haven't jumped on any purchasing bandwagons. It's certainly one reason we're still here and we're in the black. I can guarantee that if we'd put in two SSL 9000s two years ago this studio would be closed. Instead, the equipment we have is all hot-rodded, and we've probably got the best tech people in the world. We're well-positioned in the rational world of accounting and columns and numbers as to why we should exist."

Studio Referral Service's Ellis Sorkin probably knows more about what's happening in the overall studio business than anybody. "Until things settle down, it is going to be difficult and people are going to become more and more uptight about collecting their monies," he observes. "It is a bit better now than at the end of last year, when speculation was rampant and people were really nervous. We saw a lot of projects set up to happen that got canceled at the last minute because shifts were still going on at the companies. Now people know more of what's going to happen. I expected business to be slower than it is, but we're breaking new ground here so it's difficult to predict.

"I do expect it to get interesting, with an eruption of a lot of new labels, which will be good for studios," Sorkin continues. "Business might get better on my end also, in that there will be more of a need for what I do—matching projects' budgets to facilities—with less people able to get things together on the labels' end. Business should improve for our company and other related businesses like production coordinators and contractors; I expect there will be a lot more outsourcing going on. Managers of producers and engineers as well as artists will also probably be taking on bigger roles to replace some of what was previously done at labels."

With so much staff gone and addresses changing almost daily, it's a given that there will be more confusion in A&R administration, which can only lead to one thing: slower receivables. Few understand better than industry vet Rose Mann Cherney, president of Record Plant, that cash flow is the lifeblood of a studio. "When the merger actually went through, we had PolyGram and Interscope acts in all three studios, so you can bet we feel very close to the issue," she comments. "As far as day-to-day operations, the only effect I expect to see is on payment. It's probably going to take longer to get paid, and if one company is late now, they'll all be late! I'm glad to hear that Lynn Weiner will be at Interscope—that should help! We have our system down here at Record Plant, though, we follow up on each stage of the payment process to make sure we get paid in a timely manner.

"As far as effects on overall business," she adds, "we're very optimistic. It's a sad thing when people lose their jobs, but who knows? With employees cut, maybe there will be more money available for bands and recording and

PHOTO: MAUREEN DROHEY

At the Record Plant: Engineer David Channing (L), studio president Rose Mann Cherney and producer Patrick Leonard.

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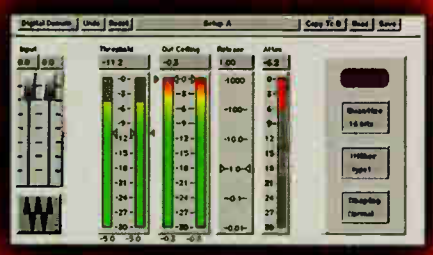

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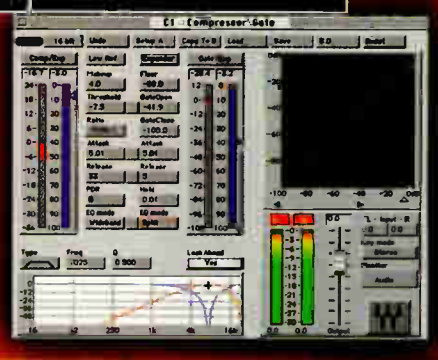

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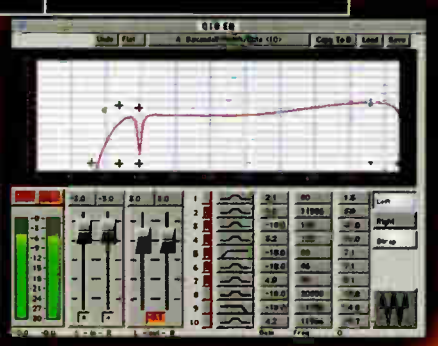

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more money for artist development."

Shivaun O'Brien, manager of Sound City, agrees that billing headaches have increased. "The whole payment process is more difficult. Universal had one system, PolyGram had another and there's a lot of confusion. Just trying to get purchase orders takes more time. Finding the right person to issue them isn't a given anymore, and then that person has to take bills for approval to someone who may not even be at the company anymore. The future can look very scary.

"Still, I believe in the end the overall effect will be positive. There are going to be a lot of very savvy, experienced executives on the street looking for talent and starting their own companies—that could end up being a very good thing. The best scenario would be a healthy resurgence of indie labels and more places for new and better music to get a foothold. At a place like Sound City, where our hearts are in cutting-edge rock, we would love to see that happening."

Skip Saylor has run his eponymously named studios for 18 years and, with his trademark wry sense of humor, voices a different opinion. "With all those people on the street, there are going to be more and more people out there trying to make records with credit cards, private money and bad checks in order to get something going."

Joking aside, Saylor also sees mixed issues on the horizon. "I've been busy as all get-out since January 4, but I would say the business is very volatile. I get ten phone calls for every session instead of the usual five, and I wouldn't give you five cents for predictability. As far as payment goes, a P.O. number isn't what it used to be, even from real companies. You get your P.O. at the last minute, and people tend to be so slow in paying that even the A&R administrators are apologetic. Every record is different, every P.O. number is its own particular experiment in terror, with the only thing that's consistent being that none of them are easy. As far as billing goes, I'm going to play it the same way I've been playing it for 18 years—cash, or, if I trust you, a check, or a P.O. number from a major label. Sony, Warner, Capitol—Capitol is great, by the way. Some days I wish all my projects were with them. Maggie Sikkens and Jonna Terrasi are wonderful. So are Evelyn Burgueno and Dee Dee Gordon at Sony, and Lynn Weiner, who was at A&M.

"As far as what it all means in the overall scheme of things, when the people who actually know how to make music are not at all in control, it lowers the bar," Saylor continues. "Record companies were started by people who knew how to make records. Capitol and Johnny Mercer, Reprise and Frank Sinatra, Herb Alpert and A&M. Now, the whole quarterly profit thing has changed the dynamics of the entire process. It's no longer the cheeseburger; now it's the wrapper. Actually, though, I don't have a problem with the idea of consolidation. I think the smaller the music industry gets, the broader the brushstrokes will be, meaning that the creation of the music will become the work of small independents. I'm not certain record companies even want to develop music—maybe that's not what they're for anymore. So, my joke about making records with credit cards...in the long run, that might not hurt us; it might be very healthy.

"Right now everybody's sitting around like vultures waiting to see what artists get dropped in the corporate paring down." Saylor says. "We'll get more work when everybody decides who they're going to sign and they have to start getting product from those artists. So as far as business goes, I think we're going to have some real busy times."

The pragmatic Buddy Brundo, owner of the 1998 TEC Award-nominated Conway Recording Studios, also holds a positive viewpoint of the consolidation. "I think it's wonderful," he comments. "You know why? You get rid of the deadwood. Whenever you have huge consolidations like this it's better for the independents, because the bigger the companies are, the slower they become—there's more bureaucracy and everything takes longer to get done. So right now is a good time for the young person, the person who has ears.

"It's sad that a lot of our friends are gone from labels, but from what I've seen they're going out and starting up their own companies and looking for new talent. I think it's the perfect time for the independents to come screaming in with new product. I think it's great. It's going to be an exciting time." ■

Fax your L.A. news to Los Angeles editor Maureen Droney at 818/346-3062 or e-mail msmdk@aol.com.

—FROM PAGE 232, NY METRO REPORT

concept of coupling an outstanding facility with comfortable living quarters directly on the Bearsville model," he says. George Augspurger was brought in to design the studio and control rooms. "I marvel at the signature George is able to put on his rooms. There's so much air—

both for sound and people! We have good equipment—a 48-input Neve 8088 with Flying Faders automation, Augspurger's custom monitors and so on—but in this day and age most of the equipment is standard issue to all studios. The real differences lie in the design of the rooms and the feel that artists get from working in a studio."

Water Music books a fair amount of regional acts, but most of their work comes from across the country. That's where housing comes into play. "We have two residences," Grenoble says. "The Loft is primarily a band residence." Well-lit and newly renovated, this 1,800-square-foot space sparkles with decidedly un-rock-like freshness. "Lots of times artists from New York City will book a few days and say that they don't want to stay here but change their minds when they see the place." Producers often stay at The Duplex, a two-bedroom apartment with bath, laundry and kitchen. Outside, flower beds dot the property, making Water Music feel as if it's located somewhere in the south of France. "Hoboken has a small-town, neighborhood feel—a little bit like the Village, or the lower East Side. It's distinguished from New York by its slower pace. We could never have afforded to build a studio this size in New York."

Jolly Roger Recording is in a 5,000-square-foot loft space several blocks from Water Music. The studio has a distinctly informal air to it: A freight elevator will deliver you to the fifth floor, but I took the wooden stairs instead. The original section of the building is over a hundred years old, but Jolly Roger co-owner Roger Johansen has operated his studio for considerably less time. However, walking through the storage space (littered with vintage Studer 2- and 4-tracks, ancient Rhodes pianos and various pieces of classic processing gear), one might be forgiven for assuming that the studio is an original tenant!

"My accountant tells me that the recording business is very difficult," Johansen says, "and he's right! But we run this studio out of love. The fact that we're able to make it work as an enterprise is a plus." (The other owner is Gene Holder, who was a member of critically lauded melodic rockers The dBs in the '80s; the band had relocated to New York from their South Carolina home, and when they disbanded, Holder decided to stay in the area.)

"Both Gene and I love classic equipment," Johansen says. "We have a pair of Neve 5316 broadcast consoles, ten Langevin AM16 mic pre's that we real-

Missy "Misdemeanor" Elliott recorded for her new Elektra/Goldmine release at Master Sound in Virginia Beach, Va., with (L to R) producer Timbaland, engineer "senator" Jimmy Douglass and second Drew Coleman. Timbaland and Douglass mixed the album at New York City's Manhattan Center Studios.

ly love, a bunch of Pultec EQs and lots of quirky things—early Roland synths, fuzz boxes, etc. We track to an Otari 90 2-inch machine and half a Studer A80 2-inch deck."

Bowing to the demands of its client base, however (and out of an appreciation of the advancements in the sound of digital recording), Jolly Roger has installed a Pro Tools 24 suite in a comfortably sized, well-lit back room. "Hip hop artists in particular like to work in Pro Tools," Johansen comments. "Pro Tools 24 is a great-sounding system." Johansen and Holder decided to forego a traditional console completely in this room. "We decided to commit ourselves to the Mackie HUI as a control surface. The amount of features they've been able to put into this piece of equipment is amazing, especially given its relatively modest cost."

Johansen had only recently completed his Pro Tools room when we visited, but he says that early indications are that it will integrate smoothly into his otherwise tape-based facility. "Clients like working first on 2-inch," he says. "So do I. My experience is that bumping material over to Pro Tools works very well. There's something about working initially in the analog realm that gives that warmth that we all love. Transferring via 24-bit retains that warmth and gives clients all of the flexibility of digital editing."

If you're in the New York area, check out these and other Hoboken studios. And when you visit, make sure to drive by Monroe Street and 5th Ave. Sinatra's birthplace is gone, but a star marks the spot where it once stood. ■

E-mail your New York news to New York editor Gary Eskow at scribeny@aol.com.

—FROM PAGE 233, NASHVILLE SKYLINE

recordings for that label. The implication, already voiced aloud by Nashville A.F. of M. Local 257 president Harold Bradley, is that the two other large Christian music distributors, EMI Christian Music Groups and Word Entertainment—both also based in Nashville—might follow suit and reject musician union contracts as a cost-cutting measure. The response from Provident president Jim Van Hook, according to the newspaper, was, "There's a fundamental question in terms of whether we're responsible—or should be—for the retirement programs for freelance musicians."

Unlike the union locals in places like New York City, where Local 802 has for years been a nonentity as far as most musicians are concerned, Nashville's Local 257 is strong. The union recognized years ago the necessity of establishing demo rates that protect musicians even as it lets publishing companies and writers work affordably within their framework, a decision that has benefited studios for years by encouraging legitimate sessions (and, hopefully, legitimate rates). The almost incestuous degree of interaction between musicians, studios, record labels and other music industry participants has been a key ingredient in the glue that has held country music's center of gravity in Nashville for half a century. Christian music is now nearly 3% of the $12 billion U.S. music market, and with spinoff sub-genres like "positive country," it's growing, offering Nashville the potential to be the base of yet another burgeoning music type. There are several studios in Nashville that already see a large percentage of their revenues coming from Christian music. And it's also a genre that offers up-and-coming producers opportunities that the caste system of country music often does not.

Randy Ford, secretary treasurer for Local 257, notes that the sum of the formulas for the two pension funds—which are based on unit sales—total less then 1% and are reduced by an exclu-

sion of the first 25,000 units per title, as well as additional exclusions for special packaging and promotional units. "It's not a lot in the grand scheme of things," he says. However, he adds that he has heard that other Christian labels would likely refuse to renew union agreements if Provident and the union do not come to terms. Local 257, he says, is not planning to budge, though. "The musicians have reaffirmed to us that they will not be working for non-signatories after the January 31 deadline," he says.

However, some wonder if this issue could push the Christian recording industry elsewhere, or at least further away from mainstream studios in Nashville. Kelly Pribble, manager of Quad Studios, where Christian accounts for upward of 70% of revenues, observes, "If they go elsewhere, that would be a huge problem. The trouble is, so many musicians were already doing some projects off the card [non-union] for some labels while doing them on the card for others. The labels know this, and they're trying to draw the line."

Hilltop Studios in Madison, Tenn., founded in 1963, derives half its revenues from Christian music. Owner John Nicholson believes that area studios can ride out the dispute, at least initially. "They still have to record somewhere, and they can't make a record as good or as fast as they can with Nashville musicians," he says. "But eventually it could become a war between the labels and the musicians, and the studios could get caught in the middle."

Nashville didn't really have a lock on the recording of country music until the end of the 1950s; prior to that, country records were routinely being made in cities like Dallas and Cincinnati. And when some musicians spearheaded a drive to implement double-scale payments in the 1970s, secular labels balked long and hard before they eventually acquiesced.

The bottom line is that larger forces are at work, and they affect every aspect of the business. ■

Send Nashville news to Dan Daley at damuriter@aol.com or fax 615/646-0102.

—FROM PAGE 233, SESSIONS & STUDIO NEWS

Sides producing and engineering...At Sound Image (Van Nuys), Universal artists Stroke 9 recorded in Studio A with producer Rupert Hine, engineer Ruadhi Cushnan and assistant Chris Morrison...8 Stops 7 mixed their Reprise debut with producer/engineer Toby Wright at Scream Stu-

dios (Studio City); James Murray assisted...

NORTHEAST

Production team The Berman Brothers recorded tracks for Tommy Boy artist Amber at City Sound Productions, NYC. The sessions were engineered by Jeff Coplan, assisted by Corey Folta...At Zippah Studios in Boston the Willard Grant Conspiracy recorded for a forthcoming album on Slow River/Ryko, co-producing with Pete Weiss. Peter Linnane engineered...Saxophonist Marty Nau tracked and mixed a new CD with engineer Bob Dawson at Bias Recording (Springfield, VA). Also in the studio were combo Eddie From Ohio, recording with producer/engineer Billy Wolf...Gov't Mule mixed for Capricorn Records at Bear Tracks (Suffern, NY) with bandmember Warren Haynes producing and Michael Barbiero engineering. Steve Regina assisted...Renowned funk drummers Clyde Stubblefield and John "Jabo" Starks overdubbed and mixed for a new release with producer/arranger Fred Wesley and engineer Bob Both at Both's Twain Recording (West Milford, NJ)...At Philadelphia's Indre Studios, G Love recorded horns for his next Columbia release with engineer Bogdan Hernik. Hybrid/Sire artists Martin's Dam recorded their debut at the studio with bandmembers Brian and Scott Bricklin producing and engineering along with Kevin Killen...Recent projects mastered by Leon Zervos at Absolute Audio (NYC): the Aerosmith single "Full Circle" for Columbia and an album for RCA artist Jennifer Brown...Edie Brickell and the New Bohemians tracked and overdubbed in Studio A at New York City's Sear Sound with producer/engineer David Castell and engineer Dave Fisher...At Trutone (Hackensack, NJ), Phil Austin mastered for Tito Puente Jr. and for Latin artists Cuerpo Y Alma...

NORTHWEST

At Roof Brothers Recording in Oakland, CA, Gary Floyd (of Sister Double Happiness) was in with his new band, Black Kali Ma, recording with Josh Roberts and Deanne Franklin at the board. Dr. Frank (from Mr. T. Experience) worked on his solo album with producer/engineer Kevin Army...The San Jose Children's Musical Theatre mixed and mastered the cast recording of their show *Pulse! Rhythm of Life* at Music Annex (Menlo Park, CA), with engineer Tom Carr...Seattle update: At London Bridge, the Fighting Machines recorded with producer John Plumb and engineer Rick Parrish...Robert Lang Studios reports a busy month with Erin Werner engineering The Tim Turner Band, Cruiser, Man Called Sun and Sub Dweller. Engineer Frank Bry was also in, working with Michael Gettle. Lang is finishing construction on its new Studio B...Bell was in at Avast Recording with engineer Stuart Hallerman and Jack Endino mixing...Bicycle completed work on new material at Ironwood Studios with engineer Jon Smith and producer Chris Ballew...Gravelvoice Studios' producer Scott Colburn started work with The Sandwich People and recorded demos with Eva Tree and Bill Dickerson...

NORTH CENTRAL

At 4 Season Media Productions in St. Louis The Jones Family Singers tracked in Studio 1 for their new album on Family-Styled Records with producer Fred Allen Jones Sr. and engineer/producer Joe Thatcher...Red Rocket completed their self-titled debut with producer/engineer Cal Moore at his Immortal Productions Studios (Canal Fulton, OH)...Hollywood Records artists Atrixo tracked and mixed a song for the *Ten Things I Hate About You* soundtrack with producer Eli Shaw at Smart Studios (Madison, WI)...

SOUTHEAST

Widespread Panic recorded a forthcoming Capricorn release with producer John Keane and engineer Bradshaw Leigh at Keane's studio in Athens, GA. Rob Haddock assisted...At Sound Emporium (Nashville) Jesse Winchester tracked for Sugarhill Records with producer Jerry Douglas, engineer Bill VornDick and assistant John Skinner, and John Michael Montgomery tracked and overdubbed for Atlantic with producer Garth Fundis, engineer Dave Sinko and assistant Matt Andrews...Atlantic artists Matchbox 20 overdubbed and mixed live material from an Australian tour in Studio A at Tree Sound (Atlanta) with producer Matt Serletic, engineer Jeff Tomei and assistant Shawn Grove...

STUDIO NEWS

With several new rooms up and running, The Sound Kitchen (Franklin, TN) promoted Jennifer Rose to general manager and Tim Coyle to operations manager. The studio also added 44 Audio-Technica mics to its collection, including AT4050, 4033, 4051, 4060 tube and 30 Series models...Kampo Audio/Video (NYC) installed a pair of Genelec 1034B Tri-amplified Active Control monitors as its new mains system...Windmark Recording (Virginia Beach, VA) installed a 32-channel SSL 4040 G Plus (to be used primarily for tracking and overdubs) in its B room. ■

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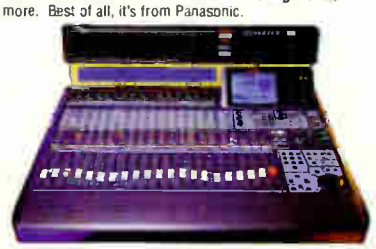

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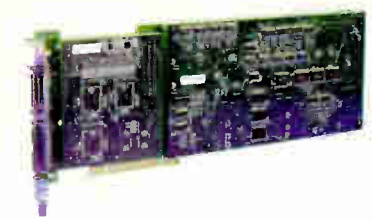

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- 300 high-grade factory presets including Halls, Rooms, Plates, Ambience, Gated Reverbs, and more
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- Dual engine configuration featuring 24-bit A/D/D/As.
- Connections include AES/EBU, Coaxial S/PDIF, Optical Tos-Link/ADAT & analog XLR I/Os, MIDI IN/OUT/THRU, Clock Sync and External Control.

Lexicon MPX1 Multi-Effects Processor

The MPX-1 is truly an outstanding multi effects device. Using Lexicon's Lexchip, it offers outstanding reverb or ambience as well as a separate processor for effects for awesome power in the studio or on the road.

FEATURES–
- Intuitive user interface for easy editing, built-in help.
- Balanced Analog I/O (1/4" & XLR)
- 56 effect algorithms
- Digital Inputs & Outputs (S/PDIF @ 44.1KHz)
- 18 Bit A/D; 20 Bit D/A Conversion, 32-bit processing
- >90dB of Dynamic Range
- Intelligent Sorting by Name, Number, Application, etc.
- Parameter Morphing
- Dynamic MIDI® patching & MIDI automation

COMPRESSORS

PreSonus

ACP88
8 Channel Compressor

New

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

Model 566
"Silver Series" Compressor

The new Silver Series introduces a 2 vacuum tube circuit design making the 566 no ordinary compressor. Loaded with features including custom designed analog VU meters that monitor tube level, gain reduction, or output levels. Full sidechain functionality, including sidechain monitor, Contour function allows low frequency material to pass through the threshold without triggering un-musical compression effects.

FEATURES-
- Hand selected Premium 12AU7 vacuum tubes
- +4/-10 operation
- Drive control for a wide variety of great tube effects
- PeakPlus limiter on each channel
- Complete sidechain, OverEasy, and Auto function
- Optional TYPE IV Conversion System outputs
- Separate 1/4" sidechain insert send and return

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TUBE MICROPHONES

AKG

SOLIDTUBE
TUBE MICROPHONE

The SOLIDTUBE combines the best of solid state and tube technology to provide a "warm" sounding microphone suitable for professional recording applications.

FEATURES–
- Large diaphragm condenser
- Integrated pop screen surrounds the capsule, reducing excessive pop noise
- ECC 83 (12AX7) vacuum tube which provides perfect transfer characteristics
- Includes elastic shock mount
- Low-cut switch, Ground lift switch

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

Hand-crafted in East Berlin, 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
New

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.
E6400 Professional Sampler

The e-6400 from EMU features an easy interface that makes sampling easy. Automated features like looping, normalizing and more allow you to flexibly create your own sound palettes or access any of the 400 sounds provided on 2 CDs for unlimited sound creation. It is upgradeable to 128MB of RAM (4MB standard) and features 64 voice polyphony, 8 balanced analog outputs, SCSI, stereo phase-locked time compression, digital re-sampling and more. A dream machine.

MIC PREAMPS

Focusrite
Green 3
"Voicebox MKII"

The Voicebox MKII provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice, and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications.

FEATURES-
- +48V Phantom power, phase reverse, and a 75Hz high-pass filter.
- Mute control and a true-VU response LED bargraph are also provided
- Includes a Mid-Parametric band with controls especially designed to enhance vocal characteristics.
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu
- Dynamics section offers important voice processing functions such as compression and de-essing combined with a noise reducing expander.

dbx 586 Vacuum Tube Mic Pre

The DBX 586 Vacuum Tube Dual Mic Preamp uses hand selected and matched premium 12AU7 vacuum tubes ensure 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 SYSTEMS, INC.

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.

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

MACKIE.

HR824

These new close-field monitors from Mackie have made a big stir. They sound great, they're affordable, they're internally bi-amped. "What's the catch?" Let us know if you find one.

FEATURES-
- 150W Bass amp, 100W Treble amp
- Full space, half space and quarter space placement compensation
- Frequency Response 39Hz to 22kHz, ±1.5dB

TANNOY

Reveal

The latest playback monitor from Tannoy, the Reveal has an extremely detailed, dynamic sound with a wide, flat frequency response.

FEATURES-
- 1" soft dome high frequency unit
- Long throw 6.5" bass driver
- Magnetic shielding for close use to video monitors
- Hard-wired, low-loss crossover
- Wide, flat frequency response
- Gold plated 5-way binding post connectors

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—FROM PAGE 24, 2 TO 5 TO 7

Once it was: "You must see it twice to see it at all." And once: "You can't understand a place until you've seen it from another." You get the idea, I think.

I have mentioned in past columns that I used to live on an Indian reservation in Arizona, but perhaps it is not automatically evident to all that peyote was often used in certain American Indian religious ceremonies. The purpose was simple: the reality-altering drug, used in a guided, structured ritual, taught you to see the world around you through other eyes, even as you saw it through your own. This was my first exposure to the concept that there even *were* other points of reference, other points of view, other ways to see what I had seen all along. The wondrous result of these altered states was that I became aware that there *are* states at all, that everything one normally sees is only *one* of the myriad ways to experience it. This simple lesson—that the way you see it, hear it, understand it and experience it—is in fact *not* the "right" way, but only *one of many ways* is what this is all about.

I remember being envious of the affluence of those outside the 8-foot-tall cyclone fence that enclosed the reservation—their food, homes and cars—yet sad for their blindness and deafness, knowing that they were going through their lives unaware of the three-dimensionality of their world. I specifically recall that their only hint of the value, no, the necessity, of multiple views was when they were taught isometric drawing in shop—you know, a flat piece of paper with three views, describing one three-dimensional object. Unfortunately, it seemed that for most of the kids, this window to the true nature of the world closed as soon as they left the classroom; they never applied this neo-cubist gift of perception to their lives. Flatlanders. They could only drive while we could fly.

In my case, the spirit guide that first greeted me one 95-degree desert night is still with me today, offering other eyes and ears, other views, of everything I experience.

THE INDIAN GETS A REAL JOB, AND IT AIN'T BINGO

In the evolution of our careers, most of us mixing music or film have come to realize that we need at least two references in order to trust one. We have all tested our glorious mixes on little squawkers to see if they survive, and most of us will take them home as well. But this may not be enough any more.

We cannot truly perceive and predict the real world environments that our product will compete in until we can build a poly-dimensional world model in our brains—an adaptive, universal model that must be far richer than can be developed by learning and using a single control room, no matter how incredible that room may be. A second room shows us the character of the first, character that we are deaf to without the simultaneous alternate reality for comparison.

I'm not talking about a cheesy consumer boom-room as your alternate listening environment. This room must be viable. It must tell you *something*, even if it disagrees with your main room. In fact, assuming obvious electronic and acoustic shortcomings have been avoided, it is the *differences* and only the differences that are important. The more subtle differences, the more the overall character feels different in your second room, the more valuable your first.

YOU CAN TAKE THE INDIAN OUT OF THE RESERVATION, BUT YOU CAN'T TAKE THE RESERVATION OUT OF THE INDIAN

You know what a horse looks like. But *not* from what you see. At one point you saw the horse from the side, at another you saw it from the front, then maybe the rear. Only then did you actually know what the horse looked like, what it *was*. From that point on, whenever you saw a horse from any angle, your brain called up the other angles and built a tangible three-dimensional object. You are then, in effect, viewing from multiple angles simultaneously. Two views can do it, ten can do it better, but *one cannot*.

And there is the point. The initial or primary environment turns out to be next to worthless compared to a learned three-dimensional model. With one reference you can only match, only copy. With more than one you have the tool to *extrapolate*, to create for any environment that you can imagine. I think that this approach to mixing produces a far more reliable and stable end product. It has certainly worked for me.

So what's the first step? Well, you don't know what your first room sounds like until you build your second. ■

SSC really believes this stuff, so be careful when you see him.

—FROM PAGE 32, 04/01/Y2K

a company long enough to accrue any vacation time at all.

A number of companies have managed to bring to market, remarkably quickly, new products that are well-adapted to our post-ECAWKI world. Alesis Corporation, long known for providing useful new technology at rock-bottom prices, has had great success with its "true digital" 1-bit recording device, known as "Sucaba." It achieves economies by relying on finger power (hence, "true digital") and offline storage (when you get a number, write it down). Its continuously adjustable sample rate is not reliant on AC line frequency or voltage, which is particularly helpful in areas where there isn't any. Religious groups at first objected to the name and picketed Alesis' headquarters with signs saying "Stop the Spawn of the Devil" and "If God had wanted us to record digitally he would have had our fingers coming out of our ears," but they quietly went away when it was pointed out to them "Sucaba" was merely "abacus" spelled backwards.

A small company in the south of England has a hit with its model "Fred," a unique "power-independent" amplifier that is being snapped up by both studios and sound reinforcement companies as fast as the assembly line can turn them out. It features a massive cooling system with two large squirrel-cage fans, but no AC plug or even a battery pack. The secret is that the squirrel cages are indeed just that,

The unit ships with two healthy young squirrels, one male and one female, whose constant running provides a continuous source of current to the amp's power supply.

and the unit ships with two healthy young squirrels, one male and one female, whose constant running, motivated by their reproductive imperatives and a supply of peanuts, provides a continuous, although somewhat erratic, source of current to the amp's power supply—enough to drive a pair of 4-ohm speakers to levels sufficient to drown out the noise of the unit itself. The company now plans to offer a slightly smaller, more portable version that uses hamsters, which will be called "Barney," as well as models for the domestic hi-fi market, "Wilma" and "Betty."

Casio has come back into the professional products arena with the first DAT machine that uses neither AC power or batteries. The users' manual, produced entirely on an old Underwood typewriter, explains that an "angular motion storage and retrieval device" must be engaged prior to operating the unit, and users are then to "release the energy reserve drive mechanism" when they want to Record or Play—in other words, a wind-up crank and a spring. The only problem users have been complaining about is that the device can't be used indoors, since it needs bright sunlight to operate the D/A converters, but since no one has any indoor lighting anyway, this is not as much of a drawback as one might think.

One group that has made out exceptionally well in the last few months is exporters of pro audio gear to the Third World. Orders from China, the Arab nations and Israel for computer-based DAWs soared in the final weeks of 1999 and have continued high since then. Companies in those countries that no one ever heard of suddenly had lines of credit worth millions, and they were snatching up Mac, Wintel and stand-alone systems like it was, well, the end of the world. At the same time, major recording studios opened up or beefed up their overseas operations and started shipping large numbers of personnel to these outposts.

The reasoning behind these extraordinary moves became clear when a disgruntled employee of Seagram's (now owner of all 18 remaining major record labels) leaked an internal confidential memo: "How to set your computer's clock to local time." Prominent in the text were instructions for setting the year to conform with non-Christian calendars: In Moslem countries it is 1421, which pushes the Y2K problem far off into the future, while in Israel and China, where the current years are, respectively, 5761 and 4698 (since February), the problem went away centuries ago.

So systems are working and people are living their lives as they always have, wherever they haven't gotten hung up on all of those zeroes, and on a calendar that was four years off from the day it was created. It's only in our part of the world, where we boast of being rational, scientific and technologically mature, that society has been brought to its knees by the power that, in our imaginations, numbers hold over us.

Only in this "advanced" civilization can the fears of the technology that we have created utterly negate all of the knowledge it has allowed us to accrue. Only here can the hucksters, screaming loudly that the end of the world is nigh while they scurry about finding ways to cash in on the terror they create, actually bring it about themselves. As the immortal bard Pogo Possum might have said, had he lived into this last year of the 20th century, "we have met the Y2K problem, and he is us." ■

Paul D. Lehrman isn't hoarding batteries, canned tuna or Sterno. But he isn't planning on being on top of the World Trade Center next New Year's Eve, either.

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Acoustic Products

Computer Products

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- Must have operational and technical familiarity with Roland and BOSS products; familiar with applications in which products are used such as music production, performance, composition, education, post-production and recording. Knowledge of computers, software and applications on multiple platforms is mandatory.

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Equipment Financing

Equipment For Sale

SEE OUR AD IN MARKETPLACE pg. 253

SEE OUR AD IN MARKETPLACE pg. 251

Equipment For Sale

Otari Concept 1 console. 48 100 mm moving faders in 64 fader frame. 24 bus w/split bus option. DiskMix auto, external patchbay. Like new. $25,000 obo. Ed (404) 522-6430.

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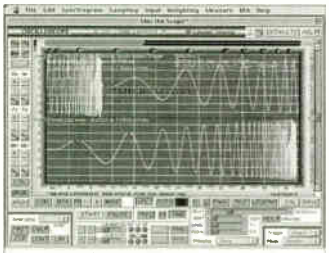

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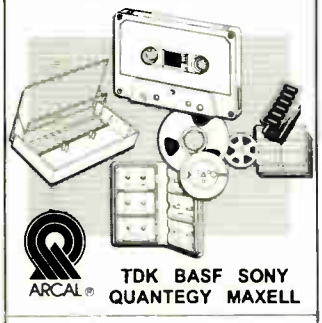

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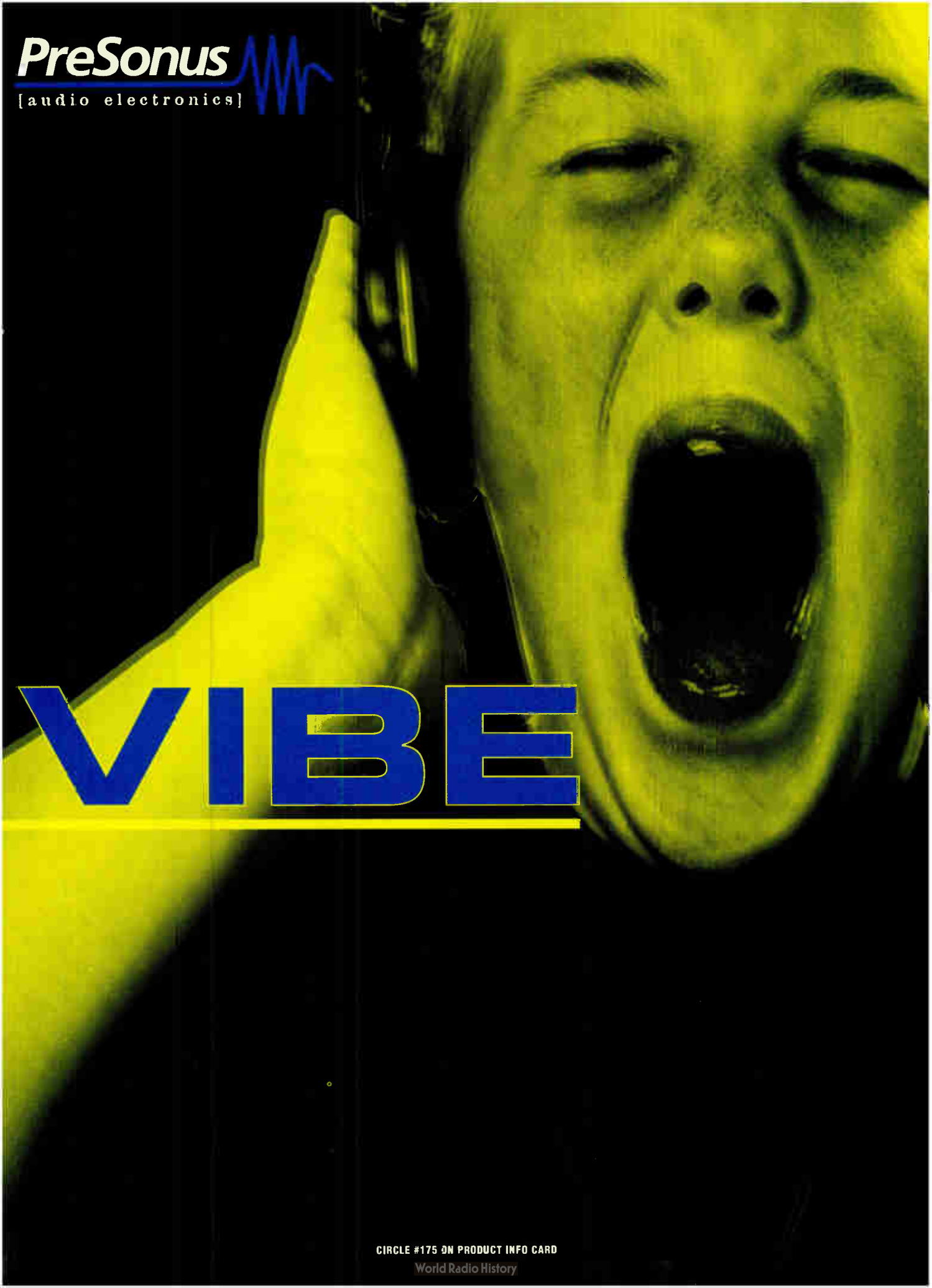

CIRCLE #175 ON PRODUCT INFO CARD

TASCAM DIGITAL DUBBERS

ON THE DUB STAGE WITH THE MMR-8/MMP-16

Since opening in December 1997, Soundelux Vine Street Studios has been using Tascam digital dubbers as the primary record and playback machines on many feature films, including *Out of Sight, Urban Legend, A Simple Plan* and *The Man in the Iron Mask.*

MULTIFORMAT PLUG-AND-PLAY

The ability to pull drives directly out of the MMR-8 and instantly mount them on an editorial system lets us keep up with the astronomical number of picture changes during the dubbing process. We can take predubbed materials directly from the MMR-8, give them back to the dialog editor and quickly reconform the materials to the new cut with no generation losses. We now deliver the bulk of our materials on hard drive for playback in the MMP-16 in either Pro Tools or WaveFrame format. Note: The MMP-16 does not support automation or plug-ins and is limited to 16 tracks at once.

The MMR-8 *can* translate projects between various formats, including from Pro Tools sessions to WaveFrame, and vice versa. With the current software, writing directly in Pro Tools format is allowed, as well as playback/export support for Akai dubbers and Zaxcom Deva, with more to come. Another useful feature is sharing files and sequences with Avid picture editors through OMF. For Disney's upcoming *Tarzan* release, the picture department sent us an OMF export of each reel as it was finished. The process of translating into WaveFrame format is not instant, and we have had problems reading OMF files directly from an Avid Film Composer. But we have found that by using the Pro Tools OMF Tool we can turn Avid OMF output projects into Pro Tools, then mount them on the MMR-8, turn it back into OMF, and then finally into WaveFrame format.

EDITING IDEAS

Low-level editing can be done on the stage directly on the MMR-8s. We often cut pull-ups at the end of reels, or join single reels into an AB reel right on the spot. Making sure that materials such as backgrounds tail slightly over the LFOP and before the FFOP is important. The MMR-8 has an Edit Crossfade Duration parameter, which can really help smooth our joins that involve music or background shifts. Since most recorded projects are eight tracks wide, it is sometimes better to cut any pull-ups to new tracks (Tracks 9-16) and mount the project on an MMP-16 player; this allows the mixer to level-correct or slip the pull-up if necessary.

Since editing a project requires you to enter Nondestructive mode, you should create a new project when starting to edit a Tape mode project. Cutting and pasting the materials from a Tape mode project into a Nondestructive project does not rewrite anything but edit data on the disk, and saves the original project in its Tape mode format. The only disadvantage is that you will eventually build up an edit list that is so complex, the drive will eventually stop accessing the recorded data. You can convert back to Tape mode, but it takes time, about equivalent to real-time, for eight tracks of recorded material. We often just make an AES transfer to another disk when we need to get back into Tape mode.

BY BILL JOHNSTON

PROJECT MANAGEMENT

Since it is somewhat cumbersome to name each track, you can prepare empty project tracks on your workstations. You can then mount these projects on the MMR-8 with the track names you want, and the project will still be in Tape mode since you have not yet recorded any sound.

The backup process is relatively quick, taking about 40% real time for eight tracks of material. It is useful to check your available disk space by record-enabling the number of tracks you are using, and hitting Shift-FreeSpace. This will tell you how much time is actually left on the disk for the number of tracks you are using. (The latest software revision allows the user to view which SCSI address a project resides on by hitting Load Track a second time. This is essential after doing a SCSI backup, as both versions of the project will exist in the Load menu.) We use both SCSI backups and DA-88 AES copies to preserve our materials against failure.

NEW BI-PHASE CONTROL

We constantly use bi-phase for controlling the MMR-8. The machine slews up and down, with sound, and plays in reverse perfectly. You can now take any unit off line, while the rest of the units continue to run, load a new project or drive, and by hitting Shift-Online, return the unit to the current bi-phase location. ■

Bill Johnston earned a Master of Science in music engineering from the University of Miami. He is currently director of engineering for the Soundelux Entertainment Group in Los Angeles.

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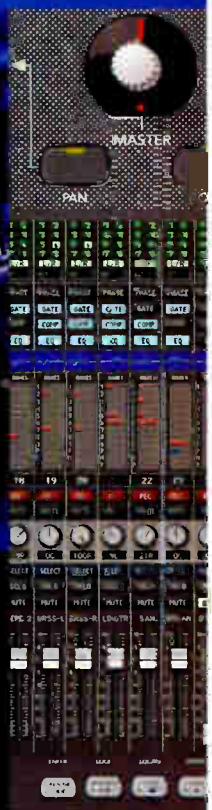

"With the Digital 8·Bus, you just go for it. You can keep your mind on the music and the task at hand." Steve Boyce, Engineer, Redmond, WA

"(The Digital 8·Bus) acts, walks and talks very much like an analog console." Bruce Nazarian, co-owner, Virtual Post, Burbank, CA

"Right out of the box, it's so easy to use. The Digital 8·Bus allows you to experiment. It lets you go down different roads — the creative options are endless!" Brian Foraker, Engineer, Nashville, TN

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CIRCLE #176 ON PRODUCT INFO CARD

The First Integrated Professional 5.1 Monitoring System With THX® Approval

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The All-New JBL LSR Monitors are, quite literally, just that. Highlighted by a long list of performance-tailored components and customer-inspired features, they're like no other systems on the market today. The entire line, including the LSR32 3-way, 28P 2-way and 12P Subwoofer, is a technical triumph; resulting in new standards and performance levels for a rapidly emerging multi-channel recording industry.

Performance-Tailored Components

Revolutionary transducer designs, optimized network topologies and innovative materials are some of the reasons why the LSR line is being hailed as 'the world's most advanced monitor'. JBL's all-new ***Differential Drive®*** woofer permanently dispels the notion that better linearity, higher power handling and greater dynamic accuracy are somehow an unobtainable, evil triangle. ***Dynamic braking*** produces truly accurate bass at higher SPL's with maximum reliability. Composite materials, including ***Carbon Fiber*** in the woofer as well as ***Titanium*** and ***Kevlar®*** in the high and mid frequency components, insures performance that is always optimally maintained.

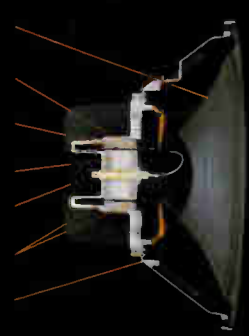
Not Just A Better Spec... A Better Monitoring System

While all companies boast about their specifications, JBL went one step further. To guarantee that every component of the LSR family worked together for optimal performance, LSR development employed JBL's unique 'system-engineered' design philosophy. Simply put: the entire line was researched and refined as one, with an overall performance goal in sight. What this means to you is a monitor and subwoofer that work together as a system; delivering stunningly uniform and accurate performance in both stereo and multi-channel applications.

LSR 32
12" 3-way mid-field monitor with rotatable Mid/High Elements.

LSR 28P
8" 2-way close field monitor with bi-amplification and active filtering.

LSR 12P
12" Active Subwoofer with Bass Management System.



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