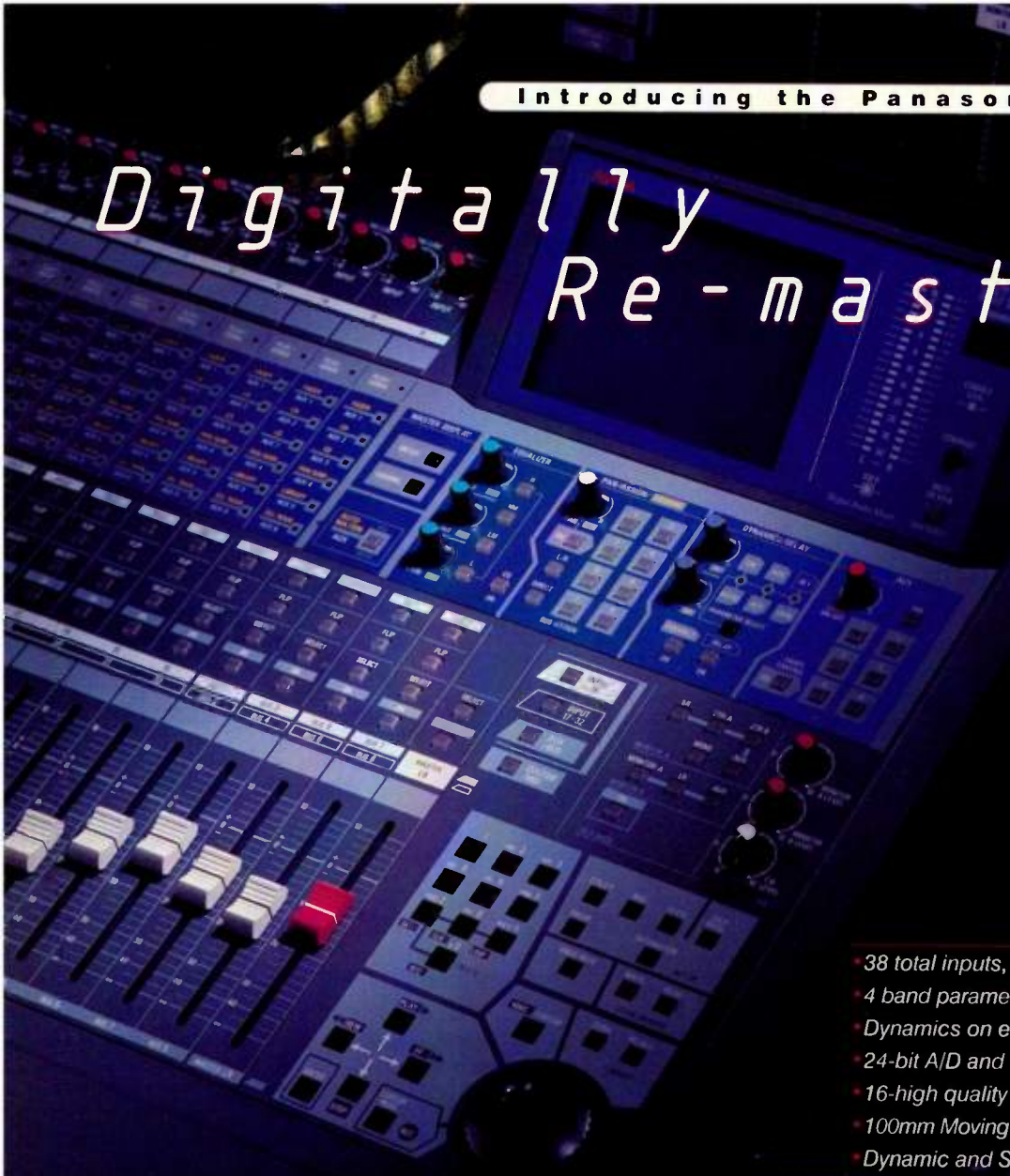
Introducing the Panasonic DA7 mkII

Digitally Re-mastered.



- 38 total inputs, with up to 24 digital inputs
- 4 band parametric EQ on every channel & buses
- Dynamics on every channel and buses
- 24-bit A/D and D/A converters
- 16-high quality mic pre-amps
- 100mm Moving Faders, Instant recall of all settings
- Dynamic and Snapshot automation with Offline Editing
- Custom/MIDI Layer and DAW mode
- 5.1 and 3+1 Surround Sound Panning with Discrete outputs
- Over 200 User LIBRARIES and SCENE Memories
- Optional Tandem mode allows bi-directional control of two mixers

A classic is back, and better than ever.

Great sound quality, flexibility and high performance: It's easy to see how the Panasonic DA7 became an industry favorite. To improve it, we had to turn to the experts—and that's where you came in.

The Panasonic DA7mkII Digital Audio Mixer is the board you helped design. It's loaded with the improvements you asked for—including new shortcut keys, advanced MIDI faders, a new version 2.5 operating system, and a lot more than we had space to list here.

Visit www.panasonic.com/proaudio to see everything new about the DA7mkII, and to find out how other professionals are using theirs. (Check out the new 96 series of AD and DA converters while you're there.) You'll be glad we couldn't leave well enough alone.

Taking Digital Further . . . Again

Panasonic RAMSA
Professional Audio Group

If you have one of these...

The Perfect Pro Tools® Companion:

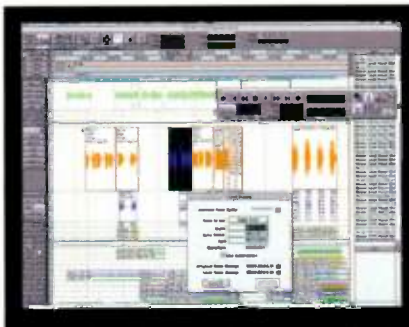
If you're one of the thousands of people that rely on computer-based Digital Audio Workstations (DAWs) for recording and editing music and audio, here's something you need to know. The **TASCAM MX-2424** was specifically designed to work with – not against – your DAW system. Here's how.

Time-Stamped Sound Designer II and Broadcast Wave Audio File Formats

The MX-2424 offers your choice of two native audio file formats: Sound Designer II on HFS/HFS+ Macintosh-formatted drives, and FAT-32 Broadcast Wave on PC disks. Why did we choose SDII and Broadcast Wave? Because they support time stamping, giving you a fast, convenient way of transferring audio into your Pro Tools or other DAW system. While other formats can be exported and imported to and from a DAW, the MX-2424's time-stamped files will appear in the exact location in which they were originally recorded, with sample accuracy. Started your guitar solo two minutes, twelve seconds into your tune? That's where it will stay when you bring it into Pro Tools. Other hard disk recorders may force you to spend hours aligning each track to its approximate original location.

Hot-Swappable SCSI Drives

Since the MX-2424 records to reliable, robust SCSI drives, there's another advantage: hot swapping. Unlike IDE drives, you don't have to shut down your recorder or computer every time you need to exchange SCSI drives...just pop in the drive, mount it and keep on working. SCSI is a time-tested, professional hard disk format that ensures the highest degree of compatibility with all DAW systems.



Using its native Sound Designer II and Broadcast Wave audio files, you can send audio to and from Pro Tools with sample-accurate time stamping. If the kazoo solo started at 3:12 in your original recording, it will still be there when you open the session in your DAW system... not at the start of the song.

You don't have to go through a lengthy process of converting files to get them between the MX-2424 and Pro Tools. Just record onto a removable SCSI drive with your MX-2424, then pop it into your Mac or PC. Your DAW system will open the files just as if they'd been originally recorded on the computer.

...you need one of these.

TASCAM MX-2424

The Portable Solution

Lugging your entire computer, keyboard, monitor and mouse to gigs for live sound recording isn't the most convenient way to record. Same goes if you work at multiple studio locations. But the MX-2424 is a sturdy, reliable recorder that fits in a four-space rack and goes where you go. Leave your computer in the studio where it belongs, and let the MX-2424 be your mobile recording solution.

Feels Like A Tape Deck

One thing that computer recording leaves to be desired is the classic feel of a tape recorder. With the MX-2424, the transport controls, jog/shuttle wheel and editing buttons give you a familiar environment for doing your best work without being forced to mouse through your tracking session.

Superb Audio Quality

While the power of nonlinear editing is a huge creative advantage of hard disk recording, the sonic fidelity of your DAW may not satisfy your highest expectations. With professional-quality 24-bit converters, audio pros have found the MX-2424 and its IF-AN24 24-channel analog interface module perfect for everything from audiophile classical and jazz recording to scoring feature films.

TASCAM
a whole world of recording
CIRCLE 78 ON INFO CARD

If You Don't Have Pro Tools...

MX-View: Waveform Editing for the MX-2424

If you don't have a DAW system, the MX-2424 offers a high-powered editing interface of its own: MX-View™ waveform editing software. Running in native Mac and Windows versions and connected via a fast 100Mb Ethernet interface, MX-View offers sophisticated, sample-level waveform editing. You can drag and drop on the fly, repair clicks and pops with the pencil tool, get onscreen metering for up to six MX-2424s, edit across multiple machines, manage virtual tracks and much more. Included at no cost with every MX-2424.

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For all the details on the MX-2424 go to
www.mx2424.com

24-TRACK 24-BIT HARD DISK RECORDER/EDITOR MX-2424

VOLUME 12 • ISSUE 9

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ON THE COVER:
RUSS TITELMAN BY WES BENDER

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For literature, call (800) 937-7171 ext. 627, visit www.yamaha.com/proaudio or www.AW4416.com. *Case is optional. **Estimated street price.

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CIRCLE 67 ON INFO CARD

WRH

EDITOR

EDITORIAL

Second Opinion

Conceptually, product reviews are simple. The reviewer sits down, goes through the product's features, tests them all, puts the product to work in a real-world application or two, and writes up the results. The write-up is a combination of the hard, empirical test results and the subjective opinions of the reviewer. And that's where the rub lies; subjective opinions are fine — often quite valuable, in fact, since the reviewer is likely to be a recognized expert in his or her field. Hopefully, he or she is able to look beyond his/her particular biases and examine the product in context, taking into account price, intended customer, intended application, and so on. In other words, the reviewer's subjective opinions should be based on apples-to-apples comparison criteria. You wouldn't, for example, subjectively compare a $50 small-diaphragm cardioid electret microphone to a $5,000 large-diaphragm multipattern tube microphone — the subjective opinions garnered from such a comparison wouldn't be valid for most readers.

But even if all the comparisons are valid, the fact that the reviewer's opinions are subjective can still weaken the value of the review. Using our example above, maybe that particular reviewer has a pre-existing slight preference for low-end electret mics that colors his opinions. If you're familiar with a particular reviewer, having read his articles before, you might be able to spot such subjective biases and adjust your interpretation of the review accordingly — I do this all the time. I read a review by someone I've read before, and when I come to a subjective statement I think, "Ah, of course this guy is going to say the large-diaphragm tube mic is too bulky, I've noticed in his past articles that he prefers small, pencil-type mics." But what do you do when you're unfamiliar with a reviewer's preferences, when you've never seen him review a similar product before, or when you just can't remember what he likes or dislikes?

This problem is of utmost concern for me. I know how important *EQ*'s reviews are to our readers — most of you use the product reviews you read here for at least part of your gear purchase decision-making process, and some of you rely heavily on us for our gear evaluations. This isn't a responsibility I take lightly.

Over the last few months, you might have seen our solution to the problem emerging. In fact, there's an example in this very issue. For larger product reviews, we've started adding "second opinion" sidebars to our coverage. This issue's Mackie HDR24/96 feature review includes a second opinion by Michael D. Clute, well-known engineer behind such Nashville acts as Diamond Rio, Restless Heart, Michelle Wright, and many others. This is a trend that will continue in these pages. Where time and resources allow, and the product warrants it, we'll be soliciting as many second opinions as we can.

I hope you'll find these second opinion consultations useful. As always, I want to know what you think — drop me a line!

—Mitch Gallagher
mgallagher@uemedia.com

EQ

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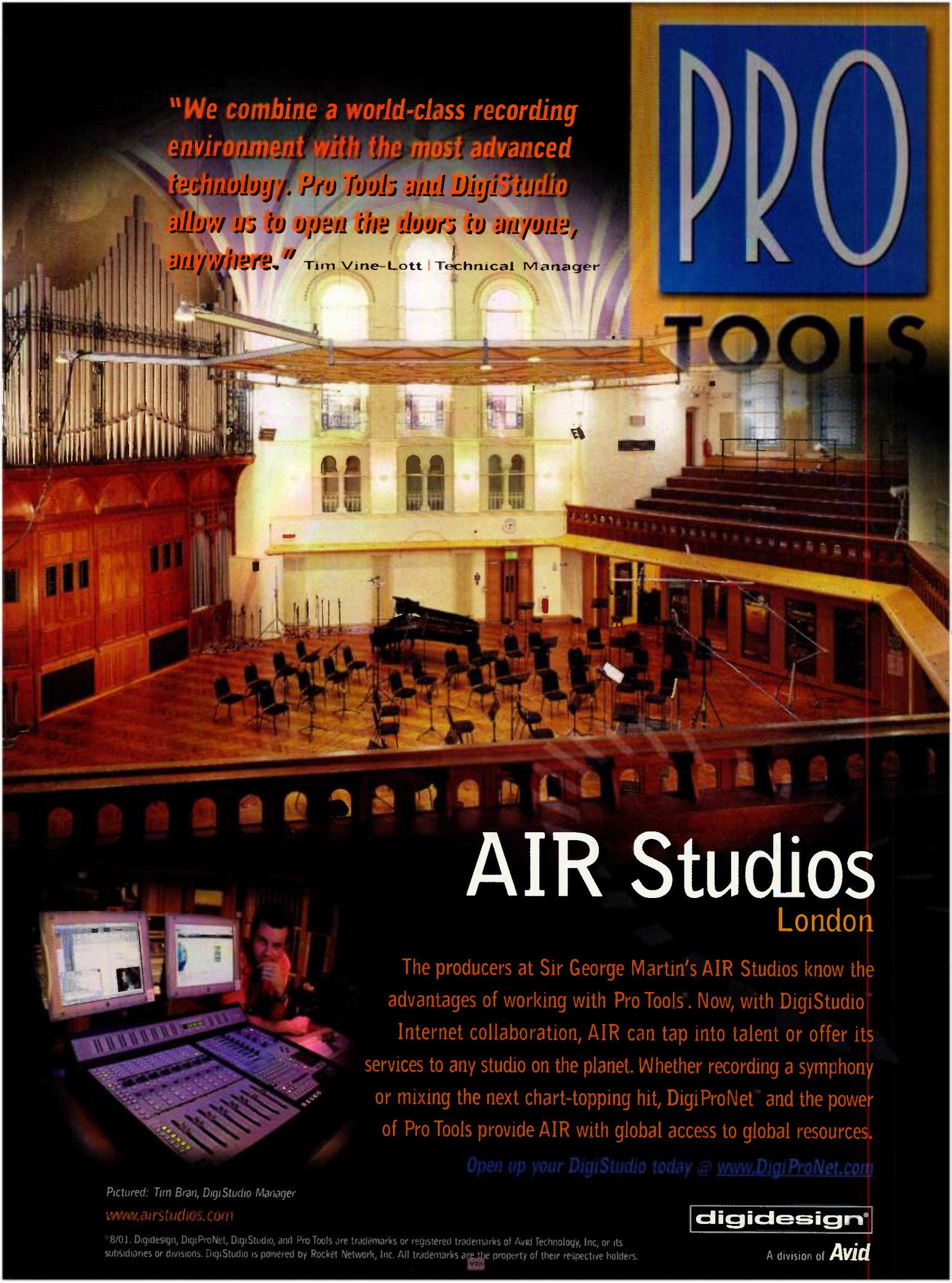
"We combine a world-class recording environment with the most advanced technology. Pro Tools and DigiStudio allow us to open the doors to anyone, anywhere." Tim Vine-Lott | Technical Manager
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The producers at Sir George Martin's AIR Studios know the advantages of working with Pro Tools. Now, with DigiStudio Internet collaboration, AIR can tap into talent or offer its services to any studio on the planet. Whether recording a symphony or mixing the next chart-topping hit, DigiProNet and the power of Pro Tools provide AIR with global access to global resources.
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HOW DO I FIX HI-HATS THAT ARE TOO LOUD?

I'm working on a project where the hi-hats were recorded too loudly in the overhead mics. How can I reduce their level without doing too much damage? (I'm willing to automate the fix so that it only affects the passages when the 'hats are playing.) I was thinking that a de-esser might work. —Kevorkian

De-essers don't work for that. Your mileage may vary, though. You could EQ the overheads, and, if the 'hat is predominantly in one range, EQ it. Is it on every hit? Or just a handful of open 'hat hits? You could darken the overheads and fake the drum ambience with a good room-style reverb. Or, worst case, plod through and hand-level (automate down) the loud hi-hats. *—George Massenberg*

I've had passable results using the Waves C4 multiband compressor. Obviously, it won't ever be as good as if the piece was better played/recorded/mixed (whatever the case, or maybe a mixture of all three), but it does the trick in a pinch. Just make sure you don't majorly suck out a frequency range in the process. *—Scott*

HIGH-FREQUENCY CONTENT

I'm recording a flute and harp duo in the studio using a close three-mic setup on the harp, and getting wonderful dry tracks. However, when I start mixing, I'm having to add a large amount of high-frequency EQ to bring the harp out, as per several commercial CDs I'm using as references. Classical CDs of harp are generally recorded in nice halls with distant mics (5–10 feet or more), and are much softer in the top end than more popular recordings, like folk harps on Celtic music. This group is playing mainly Celtic-type material, so I'm EQing accordingly. The harp player hates the top end, and wants me to round it back off to sound more natural. I agree that it sounds more like the real harp without the extra top end, but I feel like, without some top end added, the harp will not cut through and sound clean. I can't convince the harpist of that, however. Should I mix it the way the talent wants it, or use my best judgement and add some high-end EQ? —jnorman

I would listen to the harpist. They have heard more harps than anyone has, so that should count for something. Take some of the high end off, and make the flute match.

Theoretically, you should be able to leave the harp and flute flat and they should match pretty well. It's usually after you have five or six instruments that you have to start compensating for high-end masking.

There is nothing wrong with smooth-sounding harp and flute duo recordings.

If you feel strongly about the extra high end, compromise with the artist. *—Roger Nichols*

BACKING UP PRO TOOLS

I just bought a Digi 001 system, and was wondering about the best way to back the files up. Most of my clients are local bands recording demos, so money is a fairly big concern. I'm assuming that most of my projects will be between 12 and 15 gigs in size. I was looking at the ORB drives. They hold 2.2 gigs of information, but it's compressed. My question is this — does data compression affect the sound quality of DAW sessions like it does for two-track audio (i.e., MP3s)? Could I use a file-compression program to squeeze a couple of gigs out of the entire project, or should I get used to saving my projects on 25–30 CD-Rs? —Anderson Council Sound

What about DVD-RAM? The initial investment in the drive isn't outrageous, the disks are about $40, and while it's slower than something like AIT or DDS4 tape, it's a lot faster than using 25 CD-Rs! A DVD-RAM disk will hold about 9 gigs (4.5 gig per side). Just a thought. *—Andrew*

Well, first, 12–15 gigs? That's a lot of audio. Tons in fact. (Fifteen gigs is nearly 127 minutes of 24-track audio at 16-bit resolution, 44,100 kHz sampling rate). Are you sure that's how much you'll be using? In whatever case, I agree that DVD-RAM would make a very nice backup system. *—Danny*

From my experience with Pro Tools, working in 24-bit at 44.1 kHz, once the song is mixed and over with, I get rid of the unnecessary files (using compact data, clearing unused audio and all) with a max of 32 tracks. I can usually back one song per CD-R, sometimes two. In very rare occasion, two CDs are needed for one song. There's usually room left for bounced mixes, too. If I don't scrap any takes or files out, songs almost never go over 1.5 GB.

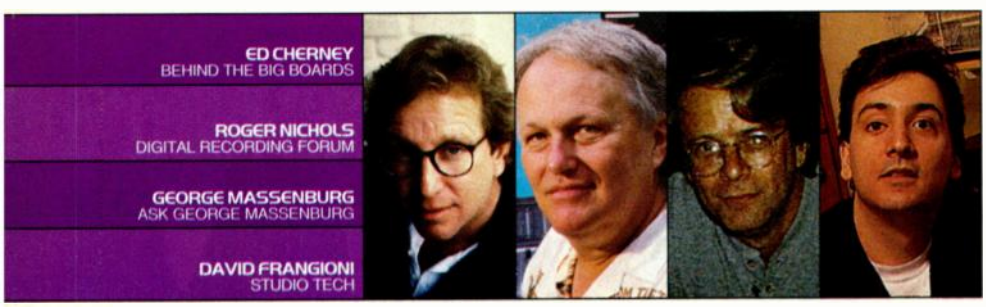
So, for a 12-song project, in a worse-case scenario, you're looking at the very max 20 CDs, which is what, $20–$25? That's pretty cheap, and, as I said, you'll probably need less than that.

Data compression (like zipping on a PC or stuffing on a Mac) doesn't affect audio quality like perceptual coding based compression (MP3, real audio, etc.) does, but it's just not effective for audio files. It can only shrink maybe 5% of the original files.

The whole point of backing up is to preserve the integrity of the work for possible future needs. You don't want to mess with the quality there. *—Emile*

▶ weblink

Have a question you'd like answered? Visit Roger Nichols, George Massenburg, Ed Cherney, and David Frangioni online at www.eqmag.com.



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CIRCLE 62 ON INFO CARD

• **THE PRODUCT:** TASCAM and Korg software updates
• **THE BASICS:** Updates for TASCAM MX-2424 and US-428 controller software, and Korg D12 and D1600 personal recording studios
• **THE DETAILS:** If it wasn't news enough that TASCAM has acquired NemeSys Music Technologies (the makers of GigaStudio and GigaSampler), they announced the release of Version 2.0 OS for the MX-2424 hard disk recorder. The new version will be free, and adds features such as higher sampling rates that benefit DVD authoring. Also, the free software version 3.0 for the US-428 digital audio workstation controller is available for Mac. The Windows version (compatible with Windows ME and 2000) will be available later this summer. Updates include a chromatic tuner, compatibility with MOTU's Digital Performer, and control of Native Instruments' B4 virtual synthesizers.

Korg Version 2.0 software (free) for the D1600 and D12 personal recording studios provides support for up to 8x speed for burning audio CDs, data backup, and exporting/importing WAV files from CD-R/RW. This software feature requires the CDRW-1x8/CDRW-2x8.
• **CONTACT:** TASCAM at www.tascam.com, and Korg at www.korg.com. Circle *EQ* free lit. #105.

THE PRODUCT: Aardvark Direct Mix USB3
THE BASICS: USB audio interface
THE DETAILS: USB-equipped Macs, PCs, and laptops can be easily set-up for recording, playback, and monitoring with Aardvark's new Direct Mix USB3 audio interface, which provides a self-powered USB connection to your computer. The USB3 includes a 1/4-inch mic preamp input that doubles as a Hi-Z guitar input, a 1/4-inch headphone jack with slider level control, 24-bit A/D converters for direct analog signals, input clip LEDs and output metering, and up to five channels of low-latency monitoring for recording, mixing, and playback. The USB3 pack includes Cakewalk Metro SE for Mac and Cakewalk Guitar Tracks 2 for PC.
CONTACT: Contact Aardvark at www.aardvark-pro.com. Circle *EQ* free lit. #106.

THE PRODUCT: Line 6 Vetta and Line 6 Studio Modeler
THE BASICS: High-end amp and effects modelers
THE DETAILS: Making a big splash at the Summer NAMM show was the Vetta from Line 6, utilizing new "Point to Point Interactive Modeling" technology. The Vetta includes Line 6's Double Tracker technology, which allows the player to utilize two independent amp models simultaneously with independent XLR balanced direct outs, routable effects loops, and independently assignable and routable stompbox effects.

Line 6's Studio Modelers bring together a rare collection of vintage and new effects into convenient packages through effects modeling. They come in three varieties: Echo Pro (with effects such as Roland Re-101 Space Echo, Electro-Harmonix Memoryman, and Maestro EP-1 Tibe Echoplex), The Filter Pro (which includes Mu-Tron III, Oberheim VCF, and Moog), and Mod Pro (with features such as Vox AC15 Bias Tremolo, MXR Phase 90, and Fender Vibratone). All Studio Modelers feature 24-bit processing, 99 user-definable programs, MIDI clock sync, tap tempo, TRS stereo in/out, MIDI out/thru, and universal power supplies.
CONTACT: Line 6 at www.line6.com. Circle *EQ* free lit. #107.

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Apogee quality.

Apogee conversion is legendary. The world's leading engineers, producers and artists specify Apogee – because our converters make a significant, audible difference.

Now, with the **AD-16 & DA-16** converters, Apogee conversion is available in an economical, versatile, 16-channel, 1U form-factor.

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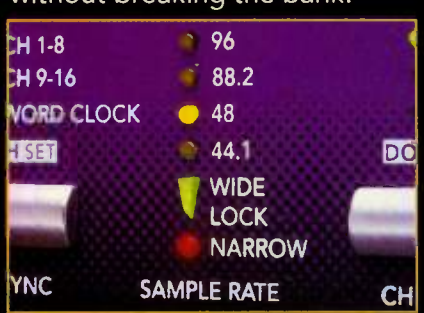

The DA-16 features a unique two-stage clock that can lock to almost any signal, remove jitter and re-clock the data to Apogee specifications.

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CIRCLE 07 ON INFO CARD

THE PRODUCT: Vox Valvetronix AD60VT and AD12VT
THE BASICS: Modeling amps
THE DETAILS: A collaboration between Vox and Korg's Toneworks has produced an impressive new modeling amp called the Vox Valvetronix. Using Korg's new REMS technology (Resonant structure and Electronic circuit Modeling System), the amps reproduce the circuitry of the originals (including the "tone-stack" networks that allow the Valvetronix's controls to interact in the way the modeled amps did). The Valvetronix amps feature 21 effect types, custom-voiced Celestion 12-inch speakers, a chromatic tuner, and 32 programs. The VC-4 foot controller is sold separately.
CONTACT: Vox at **www.voxamps.co.uk**. Circle *EQ* free lit. #108.

THE PRODUCT: ART "Home and Project Studio Hot Pak" and Live and Studio "Dyna Pak"
THE BASICS: Mic and preamp bundles
THE DETAILS: ART Pro Audio is now offering a "Home and Project Studio Hot Pak" that includes a TubeMP preamp, an Apex 430 large-diaphragm condenser mic with suspension shockmount, a custom stand mount with pop filter, and a carrying bag. There's also a "Live & Studio Dyna Pak" bundle with a TubeMP preamp, Apex 850 handheld dynamic mic, mic clip, and a cable.
CONTACT: ART at **www.artproaudio.com**. Circle *EQ* free lit. #109.

THE PRODUCT: Yamaha AW2816
THE BASICS: Audio workstation and acoustic guitar preamplifier
THE DETAILS: Described as a response to the public demand for a smaller version of the AW4416, Yamaha is now offering the Yamaha AW2816 professional audio workstation. It provides up to sixteen tracks of 24-bit digital audio, 28 automated inputs, and full 32-bit DSP capabilities. There are 28 fully automated audio inputs (16 from the internal hard drive), nine motorized faders, four fader and mute groups, four bus and four aux sends, and stereo cue busses. There is a 16-track recording system with editing and mastering capabilities. It delivers 24-bit, 48 kHz resolution (non-compressed data) directly to the internal 20 GB IDE hard drive. The AW2816 is fully expandable.
CONTACT: Yamaha at **www.yamaha.com**. Circle *EQ* free lit. #110.

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CIRCLE 49 ON INFO CARD

WRH

THE PRODUCT: Audio-Technica Mics
THE BASICS: AT3035, AT3031, and AT3032
THE DETAILS: The Audio-Technica 30 Series includes three new microphones. The first is the AT3035, a low-noise, large-diaphragm offering, with high SPL handling (up to 158 dB with pad). It has a switchable low-frequency roll-off and requires 11-52 volts of phantom power. The new AT3031 cardioid condenser and AT3032 omni condenser have a frequency response of 30–20,000 Hz, switchable roll-off, high SPL handling capability, and 48-volt phantom power operation.
CONTACT: Audio Technica at www.audio-technica.com. Circle *EQ* free lit. #111.

THE PRODUCT: MXL AV-1000
THE BASICS: Integrated A/V control center
THE DETAILS: Is your control room visually separated from one of your studios? MXL might have a solution with its new high-resolution full-color LCD monitor that will allow you to see and communicate with your client. It has two user-definable function keys, programmable muting, and is compatible with most gooseneck mics. Instead of cutting a window through the wall, give this one a look.
CONTACT: Contact Marshall Electronics at www.mxlmics.com. Circle *EQ* free lit. #112.

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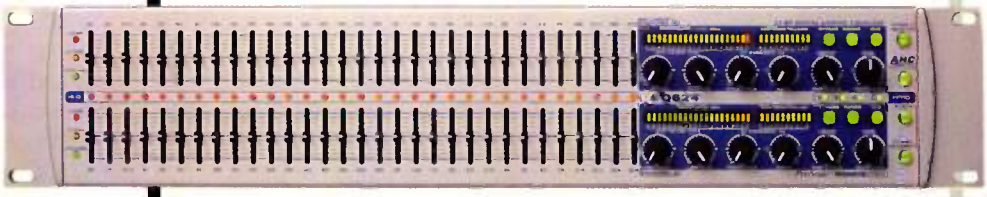
And it carries S Class's assurance for intelligent design, superior functionality and unparalleled performance.

AEG Auto Envelope GENERATOR
SKD Smart Knee DETECTOR
EFR Enhanced Frequency RECOVERY

THE PRODUCT: Five new releases from PreSonus
THE BASICS: EQ, gate, compressor, tube instrument preamp and mic preamp
THE DETAILS: The DEQ624 24-bit digital graphic equalizer has 100 MIPS of processing power and its two 31-band EQs have switchable ranges of ±6 dB, ±12 dB, and +12/–24 dB. The GTX44 four-channel frequency dependent gate/ expander offers high- and low-pass filters coupled with a sidechain monitor. The DigiTube mic preamp combines a single-channel tube preamp with equalization and 24-bit digital output. The CL44 four channel compressor/limiter combines PreSonus's proven analog circuitry with the latest in DSP sidechain technology. The Acousti-Q Tube acoustic instrument preamp/EQ/blender features two tube preamps for accommodating both pickup and condenser microphone inputs. An internal mixer allows the user to blend the two signals to XLR outputs. A comprehensive EQ section includes a tunable notch filter and Brilliance and Bass controls, along with a sweepable midrange control.
CONTACT: PreSonus at www.presonus.com. Circle *EQ* free lit. #113.



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CIRCLE 31 ON INFO CARD

Macworld NYC 2001

By Emile Menasche

Still looking for the Mac-daddy leap in technology

Macworld July 2001 wasn't all that eventful — no announcements of earth-shattering new processors, no cute Cubes, and no major OS overhauls. Instead, the Mac community basked in the glow of the success of Apple's current roster of G4- and G3-based computers, unveiled some evolutionary machines, and demonstrated growing support of OS X.

HARDWARE

While Apple has yet to break the 1 GHz processor barrier, they are offering a significant performance bump from generation G4's. The new sleek, silver machines *start* with clock speeds of 733 MHz — the previous high for the last generation. For $1,699, you also get 128 MB of RAM (there's room to add up to 1.5 GB), a 40 GB hard drive, a 12x10x32 CD-RW, and a Nvidia GeForce MX video card with 32 MB SDRAM. Plus, there are two FireWire ports, two 12 Mbps USB ports, 10/100/1000 Base-T networking, and a built-in modem. Even more important for power users, the latest G4's sport a total of four free slots for PCI cards.

Midrange G4's ($2,499) clock out at 867 MHz with a 2 MB L3 cache, 128 MB RAM, and a 60 GB hard drive. But there's more: In place of a standard CD-RW, the 867's boast Apple's mighty SuperDrive, capable of burning standard audio and data CD-Rs and CD-RWs, as well as DVD-R discs. Included iDVD software (for OS X) lets you burn discs that can play back on consumer DVD players right out of the box.

In addition to the goodies listed previously, the $3,499 flagship machines boast dual 800 MHz processors, each with a 2 MB L3 cache, 256 MB of onboard RAM, and a dual monitor-capable GeForce 2 MX video card. Unfortunately, Apple failed to include a drool cup in the press kit.

Apple also showed a new line of CD-RW equipped iMacs (topping out with the 733 G3 model). The iBook looks less like a toy than previous models, and includes a CD-RW on mid and high-end models, and the sleek and powerful Titanium G4 PowerBook boasts built-in CD burning capabilities. While these computers lack the PCI resources of desktop G4's, the advent of FireWire audio devices such as Mark of the Unicorn's 828 make them viable in audio applications as well.

In other news, Iomega sparked some interest with the slick new Peerless removable drive that can store up to 20 GB of data on a cartridge. The basic system, starting at $359, includes a Base Station, FireWire or USB interface, and one 10 GB disc; 20 GB bundles are $399. Additional discs cost $159 (10 GB) and $259 (20 GB). FireWire versions are reportedly spry enough to handle multimedia tasks in real time.

SOFTWARE

With all new Macs shipping with OS X (which must run OS 9-compatible apps in "Classic mode"), and Apple's announcement of OS X 10.1, it's interesting to note how few major audio community vendors were showing "carbonized" versions of their goods at MacWorld. Emagic had an OS X version of Logic Audio Platinum on display that was able to access the OS's multichannel driver (it's due to ship in fall 2001). BitHeadz was showing Unity DS-1,

▶ continued on page 119

▶ weblink

For more information, visit www.apple.com, www.emagic.de, www.bitheadz.com, www.iomega.com, www.macworldexpo.com.

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VS-2480 back panel

The AKG C3000B: the perfect input source for the VS-2480's COSM Mic Modeling effect.

Right Brain

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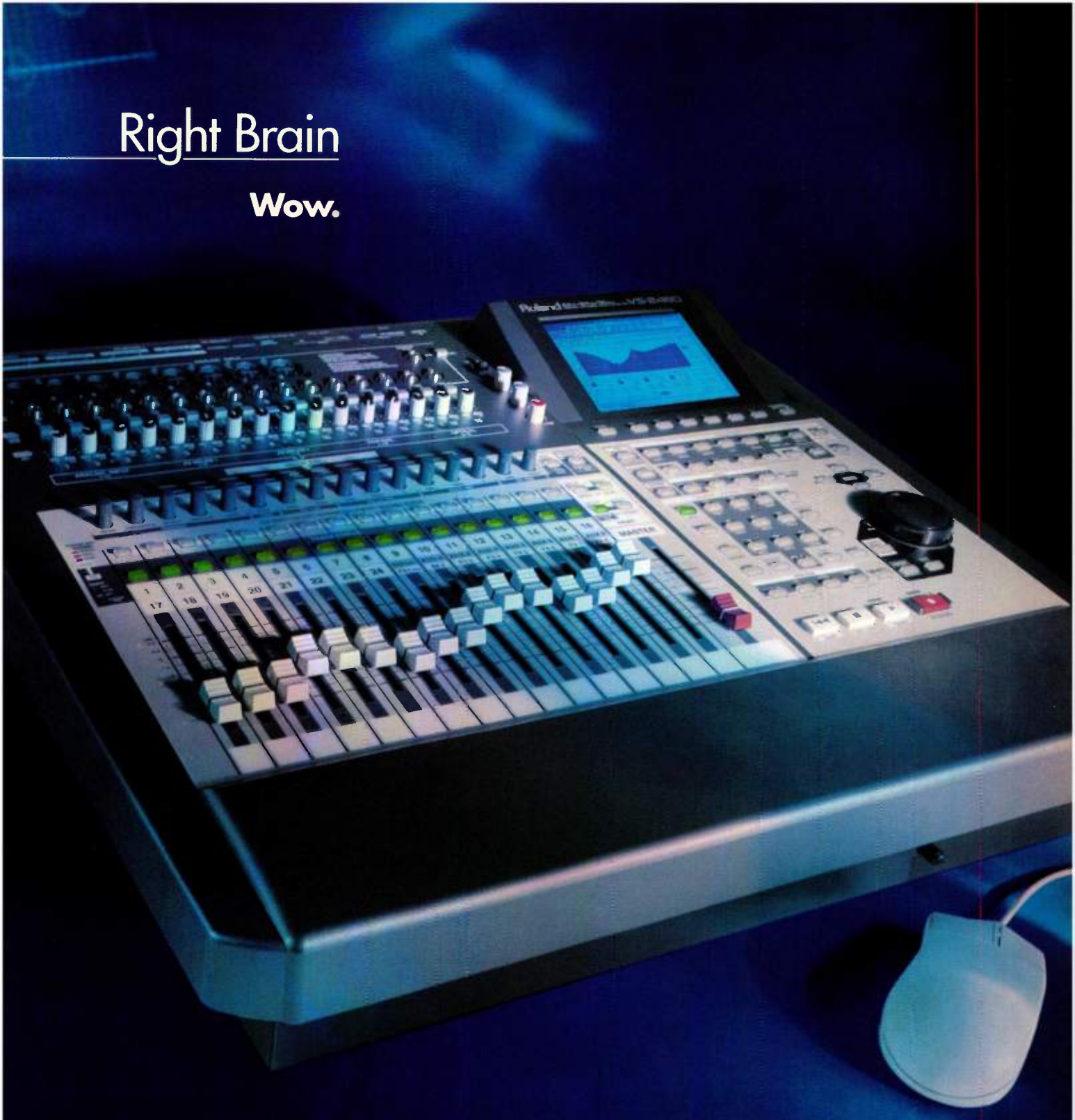

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VS-2480 24-track Digital Studio Workstation Roland

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FaxBack Information: (323) 890-3780 (Doc.#10522). Specifications and appearance are subject to change without notice.

CIRCLE 75 ON INFO CARD

By Lisa Roy

Dixie Chicks Vocals

How the trio recorded the vocals to their hit "Goodbye Earl"

DATE: March 1999
STUDIO: Westwood Studios
LOCATION: Nashville, Tennessee
ARTIST: Dixie Chicks
PROJECT: *Fly*
TRACK: "Goodbye Earl"
PRODUCERS: Blake Chancey and Paul Worley
ENGINEER: Billy Sherrill
ASSISTANT ENGINEER: Tony Castle

SIGNAL PATH

"For Natalie's [Maines] lead vocals," explains engineer Billy Sherrill, "we tried many different mics and mic pres — a [AKG] C-12, [Neumann] U 47 and U 67, a Sony C800G, and the Manley Gold. There really wasn't anything wrong with any of them on her voice. The winner was a [Cameron Labs] Fred Cameron hot-rodded Neumann U 87. It's a conversion from a transistor '87; a tube '87 with Fred's own power supply. We then picked a Neve 1073 mic pre. The Neve 1073 helped the smoothness shine through with the mic. We then went through a Tube Tech compressor and, finally, through an Avalon E55 EQ. The Avalon was used because Natalie had a little peak around 2.3 or 2.4k. With the parametric EQ, it was easier to dial this out. It was only about 1 to 2 dB, just enough to smooth it out.

"With Martie [Seidel], we used the Fred Cameron U 87 also with the Neve 1073 and Tube Tech compressor. It was flat — no EQ. Emily [Erwin] liked the Sony C800G through the Neve 1073 and Tube Tech. She sang all the lower parts, and the Sony C800G naturally gave her a little more top-end, so we didn't have to use any EQ.

"We recorded all of the girls' vocals on a Neve V3 console, to a Sony 3348 digital tape machine. We transferred everything into Pro Tools 5.0, which we used only for comping on 'Goodbye Earl.' We did record some background vocals straight into Pro Tools, but not on 'Earl.'"

MIC POSITION

"We chose the Fred Cameron U 87 for Natalie because of the smoothness on her voice. It was just truer all through the spectrum," adds Sherrill. "Natalie worked the mic pretty close because she moves around a lot. When the music starts, she can't stand still, which is very cool because she was really into 'Earl.' The closeness just kept the presence up.

"We recorded Martie and Emily pretty

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Brant Biles

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CIRCLE 55 ON INFO CARD

close also, just to have a lot of presence, because all of the parts weren't doubled. All the vocals were recorded in the piano booth at Westwood. We moved the piano out of the booth. It's a pretty live room, and since we used no reverb on the vocals, the room gave us a nice, natural ambiance. I did put a blanket over the glass double doors right in front of the mic, so the reflections were more from the back of the room — no baffles, just an old floor lamp and an Oriental rug so we couldn't hear the girls tapping their feet."

PROCESSING

"We didn't use any reverb or delay on anything. As a matter of fact, there weren't even any plugged in," Sherrill asserts. "Blake and the girls don't like reverb, so we listened to everything dry."

"Compression was pretty light — slow attack, pretty fast release at about 2.1 ratio. I tried to keep it about 2 to 3 dB of compression. Of course, that doesn't always work out, but I tried to keep it around that."

TRACK NOTES

Sherrill concludes, "'Goodbye Earl' was such a natural for the Chicks. Everyone knew it from the very start. When we played it for the band so they could make the music chart, everyone was just laughing out loud. It was the perfect song for three feisty Chicks. Natalie had a ball. Her feisty attitude, which is always there, was really magnified on 'Earl.'

"Recording her vocal didn't take too long because she knew what she was doing. We made about four passes and transferred to Pro Tools. Natalie, Blake, and Tony, our resident Pro Tool genius, went to the Pro Tools room to comp. Paul and I kept on overdubbing other things. We had quite an assembly line going, but it was a lot of fun. The girls really enjoyed killing off a worthless wife-beater. We wondered at the time if they would get letters either way, but it was all in fun and it *is* only a song." ■

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CIRCLE 10 ON INFO CARD

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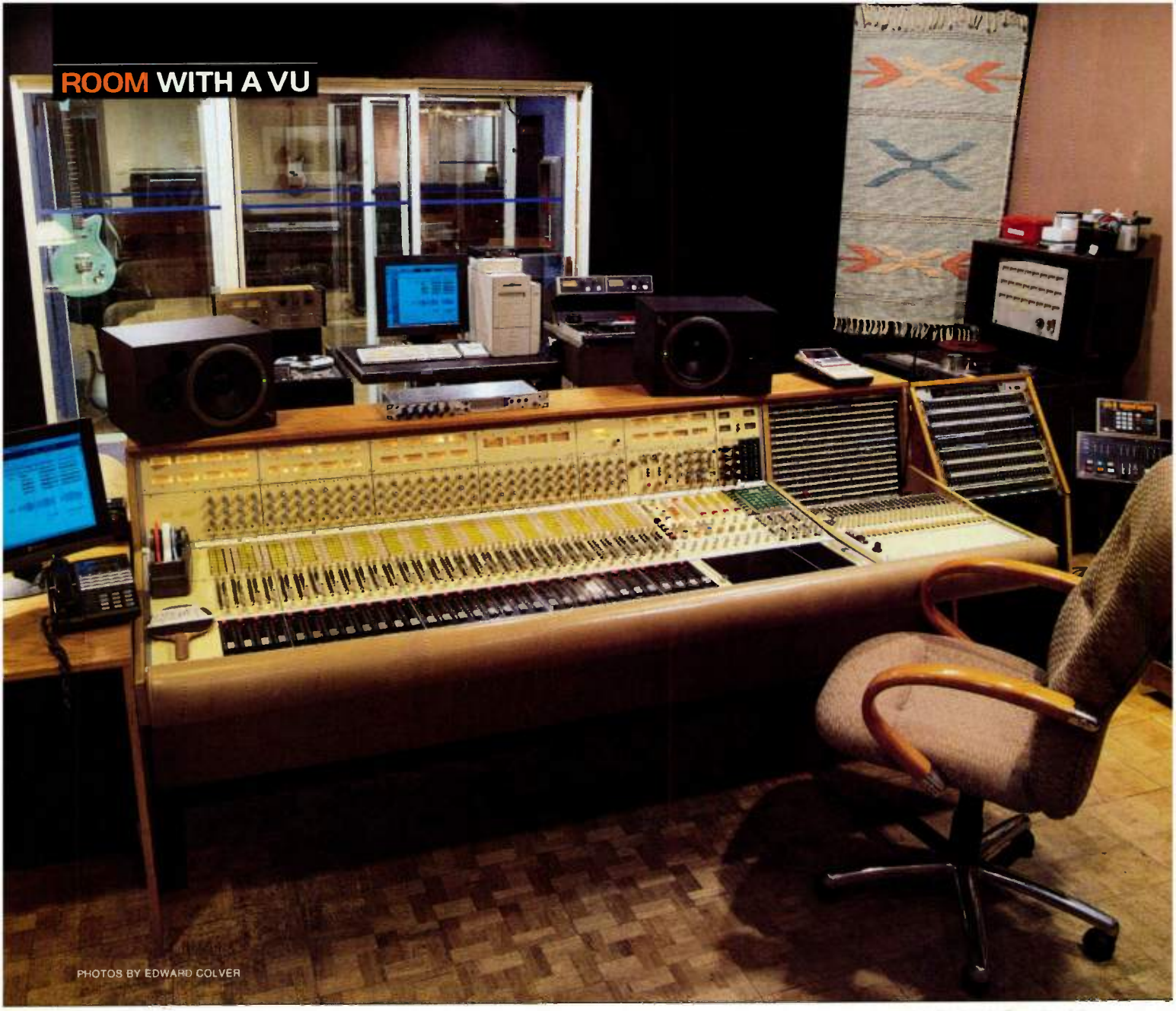


PHOTOS BY EDWARD COLVER

By Bobby Owsinski

Sonora Recorders

The best of both worlds

STUDIO NAME: Sonora Recorders
LOCATION: Los Feliz (Los Angeles), California
KEY CREW: Richard Barron, Jeff Peters (owners), Dan Hoal (studio manager), Seth McClain, Chad Travis, Sarah Kilion
CREDITS: The Backstreet Boys, Supertramp, Los Lobos, Los Super Seven, Jakob Dylan, Aimee Mann, Manhatten Transfer, Keb Mo, Brian Setzer Orchestra, Dan Hicks, Nancy Sinatra, Joe Henry, John Doe, Simon Shaheen, Corey Stevens
MIXING CONSOLE: API 32 x 16 x 24, Neve 12-channel sidecar
AMPS: Phase Linear 700, QSC MX-700
MONITORS: Custom 3-way system with Mastering Lab crossovers and JBL-2241 18-inch subwoofers controlled by White 4400 equalizers, Event, Tannoy NFM-8, Yamaha NS-10, KRK, Alesis, Mackie
TAPE RECORDERS: Stephens 821 24-/16-track with auto locator [2], Ampex ATR-102 1/2-inch 2-track, 354 1/4-inch tube 2-track; Panasonic SV3700 DAT [2], Lexicon 20/20 A/D converter [2], Aiwa cassette [2]
OUTBOARD: API 525 [2], PYE limiters with mic pres [2], RCA BA-6A [2], BK-25 (stereo); Manley Electro-Optical (stereo), Valley People Stereo Dynamite Limiter, Universal Audio LA-2A, UREI 1176LN [2], LA-3A, LA-22 (stereo); Inovonics 201 [2], dbx 160 [2], 160x [3], 162; Drawmer DS-201, Aphex 622, Pushtech EQH2, BBE

802, Inward Connections Equalizer [2], Orban 3-channel de-esser

EFFECTS: EMT stereo plate reverb [2], AKG BX-20 stereo spring reverb [2], Lexicon 300 w/ LARC, PCM-41 [2]; Eventide H-3000 Harmonizer, Yamaha SPX-1000, SPX-90, REV-7; Roland SDE-3000, 555 Chorus/Echo [2]; Pilotrol @%!*-up Box [2], Electrix Filter Factory, MO FX

MIC PREAMPS: Pultec MB-1 [2], Manley Vox Box, Neve 1272 [2], Jensen 990 Twin Servo, Langevin AM-16 [2], Martec MS-510, Ampex MX-10

MICS: Neuman M 49, SM 2, KM 54 [2], U 87 [2], KM 84 [2], KM 86 [2], KM 140; AKG C-414 [2], D-12 [2], C-451 [2], D-20, C-452 [2], C-460 with mods [2]; Telefunken M-221B, Shure SM57 [6], SM56 [3], SM7 [2], 333 Ribbon; Electro-Voice RE-20 [2], RE-15, 664; RCA DX-77, DX-74; Sennheiser MD-421 [5], MD-409; Soundelux U-95S, Fostex Stereo [2], Coles 4038 [2], Crown PZM [2]

DAW: Digidesign Pro Tools Mix Plus 5.1 [2], 888/24 Interface [3], ADAT Bridge, USD; tons of plug-ins

COMPUTERS: Macintosh G3 with 458 MB RAM, multiple swappable hard drives, MOTU MIDI Express, ECRIX tape backup

STUDIO NOTES: "The studio was built in 1990, and I bought it in 1993," states owner Richard Barron. "My partner Jeff came on board about two years ago. The real evolution of the studio has been our clientele. We started off doing just locals, and now we're doing acts like the Backstreet Boys, Manhattan Transfer, and Supertramp. We don't advertise, so if people come here it's because their friends recorded something here that they really liked.

"We tend to sell time in larger lockouts. People just move in and rock. We don't do commercials or movies, we just make records because that's what's most important to us."

PRODUCTION NOTES: On vintage gear, Barron says, "If something sounded good when I first bought it way back when, I didn't sell it. My partner's the same way. We always knew what we liked, so we just held on to it even though we might have been tempted to sell some of it at various points."

On combining a DAW with a mostly analog studio: "It's made the studio twice as hard and twice as interesting to run. We keep the vintage gear going just like we always did, but we've had to integrate the Pro Tools and have become intimate with it in this environment. Now we're very happy just typing away in front of the rig and feeding it all the analog gorgeousness of the discrete and tube gear." ■

Meet his Racks: Sonora Recorders has an impressive list of rackmount gear to complement the studio's API console with Neve sidecar.

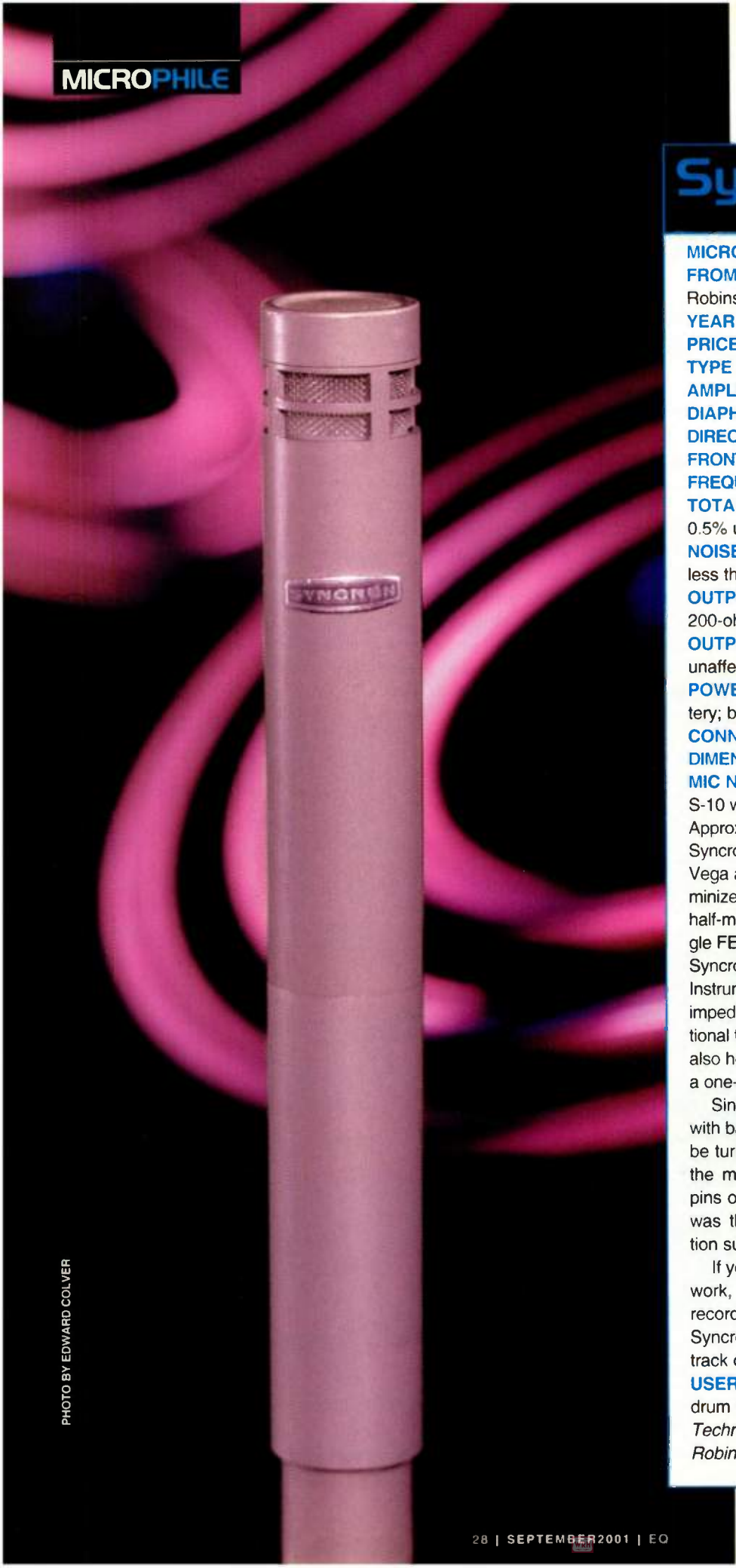


PHOTO BY EDWARD COLVER

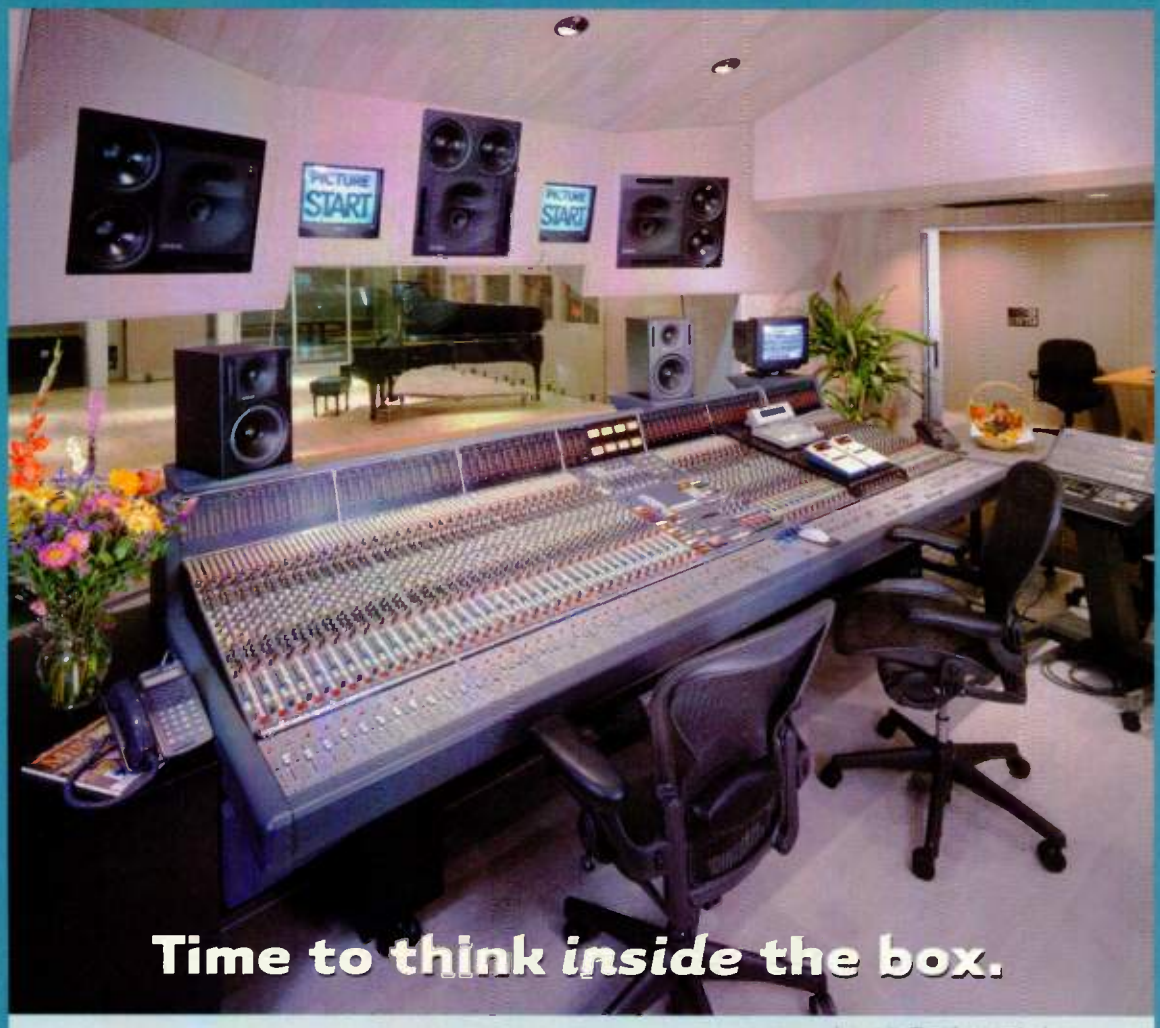
Syncron S-10

by Steve La Cerra

MICROPHONE NAME: Syncron S-10
FROM THE COLLECTION OF: Richard P. Robinson/Trod Nossel Studios
YEAR OF MANUFACTURE: 1966
PRICE WHEN NEW: $240
TYPE OF MIC: Pressure gradient condenser
AMPLIFIER TYPE: Field effect transistor
DIAPHRAGM MATERIAL: Mylar
DIRECTIONAL CHARACTERISTIC: Cardioid
FRONT-TO-REAR REJECTION RATIO: 20 dB
FREQUENCY RESPONSE: 40 to 20,000 Hz, ±3 dB
TOTAL HARMONIC DISTORTION: Less than 0.5% up to 124 dB SPL
NOISE LEVEL: Less than 27 phon (DIN 45405); less than 23 dB SPL (DIN 5045)
OUTPUT LEVEL: –53 dBm, re: 10 dyne/cm-2, 200-ohm load
OUTPUT IMPEDANCE: 200 ohms nominal, unaffected by any load from 30 ohms to infinity
POWER REQUIREMENTS: One TR 126 battery; battery life approximately 1,000 hours
CONNECTOR: 4-pin XLR (see notes)
DIMENSIONS: 0.875 diameter X 7.375 long (inches)
MIC NOTES: Built between 1965 and 1967, the S-10 was the second Syncron product. Approximately 800 of these mics were built by Syncron, and another 200 or so were built by Vega after they purchased the design. An aluminized Mylar diaphragm with a thickness of a half-mil (about 12.5 microns) was coupled to a single FET amplifier with a transformer output. Syncron designers worked closely with Texas Instruments to specify a FET with low output impedance — thus avoiding the use of an additional transistor as an impedance converter. (This also helped minimize battery drain. The result was a one-year life with an 8.4-volt TR126 battery.)

Since the output connector was a 4-pin XLR with battery negative on pin four, the battery could be turned off simply by removing the output plug; the mating connector provided a short between pins one and four. The entirely innovative feature was the self-contained 62-volt capsule polarization supply with its 100-year projected lifetime.

If you want to hear a good example of S-10's at work, try Duke Ellington's *The Yale Concert* recorded in January 1968 at Sprague Hall. Eight Syncron S-10's were used, each routed to one track of a Scully 8-track, 1-inch tape machine.
USER TIPS: Suggested uses for the S-10 include drum overheads and brass instruments.
Technical data furnished courtesy of Richard P. Robinson.



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CIRCLE 23 ON INFO CARD

WRH

Topping the charts with Green Day and Blink 182

Jerry Finn

SUSPECT:	Jerry "Caesar" Finn
ANCESTRY:	Unknown. "I'm adopted."
OCCUPATION:	Producer/Engineer/Mixer
BIRTHPLACE:	Ventura, CA
RESIDENCE:	House in the Hollywood Hills built in 1928
VEHICLE:	Lexus LX470
DIET:	"No thank you."
SHOE SIZE:	11
IDENTIFYING MARKS:	Bulbous nose
PET PEEVE:	Indecision
CREDITS:	**As Mixer:** Green Day *Dookie* and *Insomniac*, The Muffs *Blonder and Blonder*, Jawbreaker "Dear You," Rancid "Ruby Soho," The Suicide Machines *Destruction by Definition*, The Presidents of the USA *II*, The Living End *The Living End*
	As Producer: Pennywise *About Time*, Rancid *And Out Come the Wolves*, Blink-182 *Enema of the State* and *Take Off Your Pants and Jacket*, Sum 41 *All Killer, No Filler*, Fenix TX *Lechuza*
	As Producer and Mixer: Blink-182 *The Mark, Tom, and Travis Show*, Smoking Popes *Destination: Failure*, Superdrag *Head Trip in Every Key*, Fastball *Make Your Mama Proud*, The Marvelous 3 *Ready, Sex, Go*
NOTES:	I observed the suspect during the mastering sessions for Blink-182's *Take Off Your Pants and Jacket*. The mood was easygoing, the band was relaxed, and the work was getting done. On another occasion, he was mixing Bad Religion's upcoming album with singer Greg Graffin offering understated suggestions.
STUDIO VIBE:	Cool, like a pitstop at the Indy 500.
EPITAPH:	"Is a great label!

BONZAI: What are your essential recording tools?

JERRY FINN: Tape!

What are your top ten favorite exotic pieces of gear and instruments, and why?

In no particular order:

Royer mics — They have the perfect curve for distorted guitars. I find myself using way less EQ than I used to.

BLUE mics — The "Bottle" is an amazing mic. The ability to change capsules makes it the most versatile mic I own. All of the vocals on the last two Blink-182 studio records were recorded with one.

Martech mic pres —The detail that they provide is unbelievable. With the right vocalist, you can get a very present sound that's perfect for the kind of records I make.

Mastering Lab mic pres — They're unbeatable when it comes to low frequencies. I've used them on bass guitar and kick drum for six years.

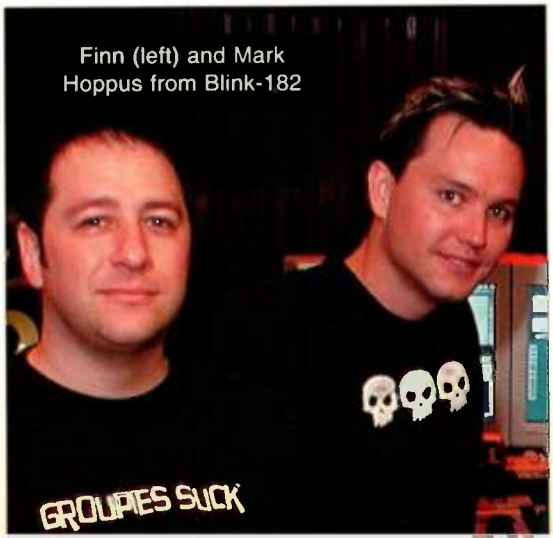
Empirical Labs Distressors — Distressors caught on faster than any other piece of gear I've ever seen. There's nothing that they can't do. I've used them on everything you can imagine, and they always make the source signal sound better.

Alan Smart compressor — Since I don't work on SSL consoles, I bought one to mimic that sound if I should ever need to. Lately, I've been using it on kick and snare, and it sounds amazing.

Canford Audio cable — All my racks are wired with their cable. It's the original spec cable for Neve 80 Series consoles.

Tara Labs speaker wire — They're a hi-fi audio company. I bought some of their speaker wire at a stereo shop in San Diego, and it sounds great. We did A/B tests against four other cables, and everyone in the studio could hear a difference right away.

Galaxy Audio Polarity Checker — Ed Cherney and Erik Zobler taught me the importance of absolute phase. We check every mic all the way through the tape machine to make sure the speakers are pushing when they



Finn (left) and Mark Hoppus from Blink-182

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- Jimmy Jam & Terry Lewis

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- Jimmy Jam & Terry Lewis

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CIRCLE 80 ON INFO CARD

should be. Phase is something that can sometimes be overlooked, but I think it's very important.

Anything made by Manley — Because I love everything they make. One characteristic that runs through their entire product line is the ability to handle midrange frequencies in a musical way.

What the heck is this leopard skin covered box?

It's one of only two custom fuzz pedals made in Atlanta by Pancho and Lefty.

What is this Super Fuzz pedal good for?

Infinite sustain and a fuzz tone with more note than most pedals.

How would you describe your work with Green Day?

Life-changing. Before them, I was an assistant making eight bucks an hour. I was producing gold records less than a year after them.

If you were a musical instrument, which would you be?

Theremin.

What's wrong with the music industry?

The labels are run by shareholders and not by people who love music.

What music would you like played at your funeral?

Tenacious D.

What do you listen to while you're driving?

If I'm in the middle of a project, I'll only listen to that. If I'm in between, I like mellower stuff — Wilco, Shelby Lynne, Willie Nelson.

What is the first music you remember hearing?

Fiddler on the Roof.

What did you learn from Blink-182?

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CIRCLE 39 ON INFO CARD

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CIRCLE 71 ON INFO CARD

I learned the importance of thinking about the fans while making a record. Don't be selfish when you make an album, because that can be a slap in the face to your audience.

Who were your musical heroes when you were getting started?

As a musician, John Bonham. When I got into engineering and producing it was Don Was, Ed Cherney, Mick Guzauski, John Purdell, and Duane Baron.

Who do you respect and admire today?

Daniel Lanois, Bill Botrell, Nigel Godrich, Mutt [Lange].

Is there anyone in the world you would like to work with?

I would love to have been hired for the Chris Cornell/Rage album.

What is your strangest characteristic as a human being?

I never know when to shut up.

Do you know any interesting business tricks?

I know enough to never get involved in the financial side of things. I'm the worst negotiator in the world.

What was your most ridiculous experience in a recording studio?

When I was an assistant at Devonshire studios, I had a producer poke me in the chest with his finger and call me a "Jew" in front of twenty people. I tried to joke my way out of it by telling him I was adopted, and that I was pretty sure that Jewish people never gave anything away, but he got really aggressive with me. I eventually just walked out.

Who is the most amazing artist you've worked with?

I've been so lucky to have worked with dozens of amazing artists, but if I had to pick one, it would probably be John Davis from Superdrag. His talent and commitment floored me every day.

What makes a great producer?

Great songs.

Any advice for getting a good start in the music business?

Make goals for yourself, and keep raising the bar each time you reach one.

Who is the Great Imposter?

Who isn't?

Have you ever really pissed anyone off?

Every person I've ever known.

Where is the quality of music today?

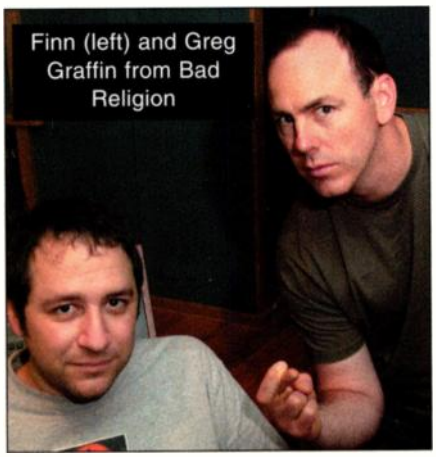
There's plenty of good music out there — it's just not getting signed. The best artists are like painters; they aren't appreciated until years after their best work is done.

Who's your favorite cartoon character?

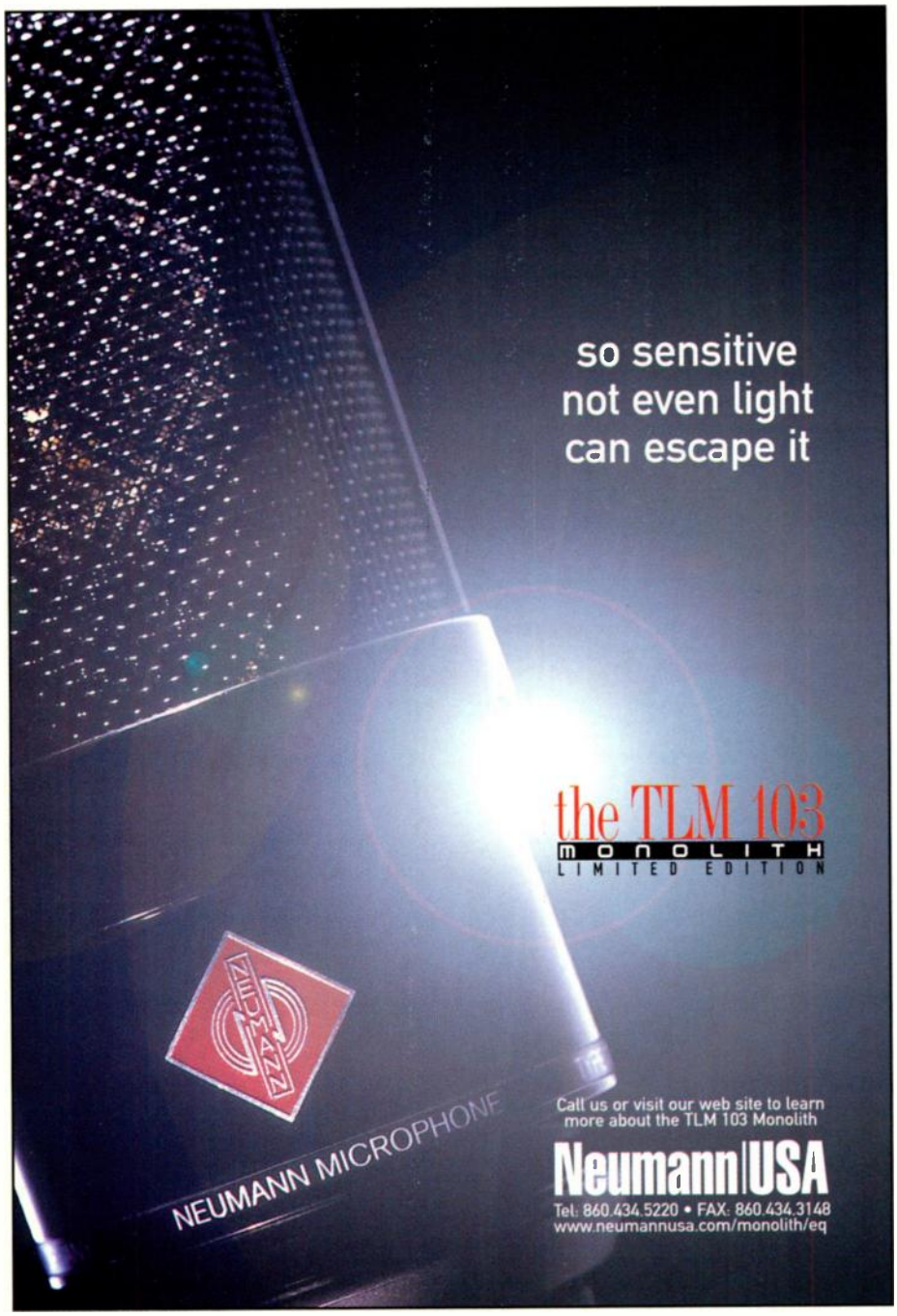
Stewie Griffin from *Family Guy*.

What would you like Santa to bring you this year?

A tan. ■



Finn (left) and Greg Graffin from Bad Religion



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CIRCLE 59 ON INFO CARD

Take advantage of this killer tool from the Waves 3.0 bundle

Using Waves C4 in Surround

By Rich Tozzoli

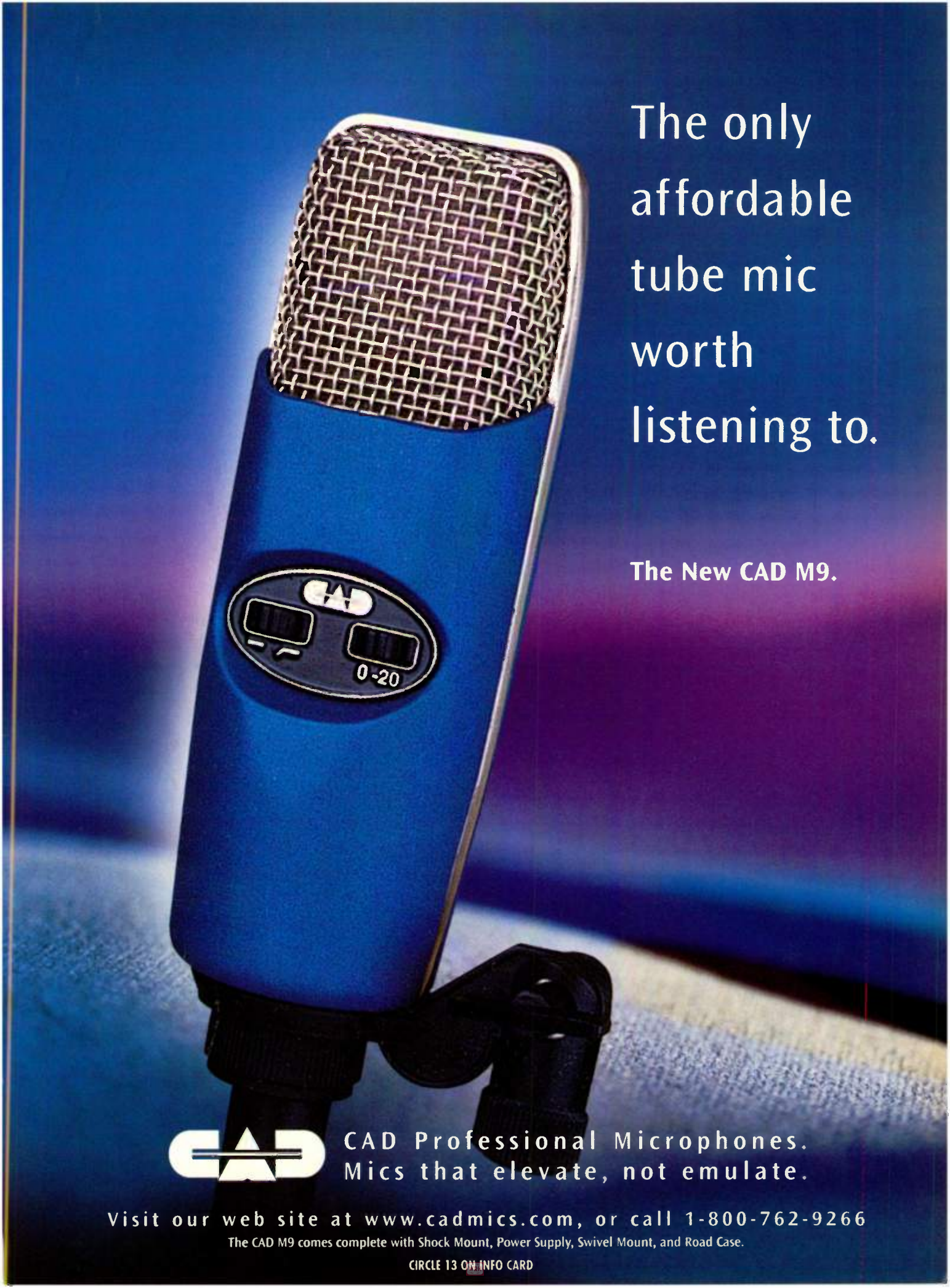
Whether it stems from lack of discussion or fear of trying new things, I've noticed many audio professionals haven't taken advantage of a killer tool hidden deep within the Waves 3.0 bundle: the C4 multiband parametric processor. Within one flexible plug-in, you've got a dynamic equalizer capable of compression, limiting/expansion, and EQ, simultaneously and independently. With careful use, the before and after can be quite stunning, and it's use on a multichannel session can make a huge difference in the final product.

We all know many surround projects, for varying reasons, don't have the luxury of mastering prior to replication. While the C4 isn't a replacement for a serious multichannel mastering session, it can take your mix to the next highest level. A recent session I used the C4 on was an upcoming EMI DVD-V 5.1 mix of the Average White Band live at L.A.'s House of Blues. AWB's talented house engineer Phil Pagano captured a great stereo source, as well as additional audience tracks for use in the surrounds. We decided to do the 5.1 mix in Pro Tools using Kind of Loud's Smart Pan Pro, and thus the ability to use the C4 plug-in came into play.

Transferring the two-mix with time-code off the Digi-Beta into Pro Tools at 16-bit/48 kHz, we loaded the audience samples in off a CD that Pagano had pre-mixed, then sample-rate-converted for use in our session (the DVD-V standard calls for 48 kHz). After spending some time enhancing the mix with the Smart Panners, RealVerb 5.1, and a Sony DRE-S777, it was time to call up the explosive power of the C4 (pun intended). Smart Pan Pro distributes the L, R, Ls, Rs, C, and Sub mix over three stereo pairs, routed to outputs one through six in Pro Tools. This allowed me to bus the channel pairs to stereo aux tracks, on which I could insert instances of C4 plug-ins as needed.

The overall mix needed some top-end sparkle and some compression of the bass frequencies, as well as a bit more gain. I used two instances of C4, one on the Left/Right aux bus and the other on the Left/Right surround aux — mostly focusing on the main L/R. Tweaking the mix with C4 made a huge difference. You must be careful to maintain the balance among the stereo pairs, and I chose not to use it on the center speaker simply because it wasn't needed in this application. I was also aware that the material was going to be encoded for DTS and Dolby AC-3, and, remembering my experience with both methods, I added a bit of extra top end to compensate for the data reduction.

As you can see by the image on this page, there's a Dynamic Line Graph in the C4 plug-in window. What appears to be simple, is actually quite complex. This one colorful graph shows a large amount of information: an animated EQ curve (yellow line), maximum change in dynamic range (purple area), fixed gain (bright edge of the purple area), three draggable crossover points, a global crossover slope, draggable frequency center points, and effective gain change. I usually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CIRCLE 13 ON INFO CARD

begin by loading the factory Multi Electro Mastering preset. From there, I start to sweep the mix with the four-band center markers, finding the frequencies that need improvement. On the AWB L/R mix, we added the highs at about 12 kHz, and a bit of low-end boost with a tight Q at about 120 Hz, since the sub would handle anything below our 80 Hz setting. When you move the band center markers, you can change three values at a time. Horizontal drags will change the band frequency center, whereas vertical drags will change gain. Vertical dragging while holding the Option/Alt key changes the Range. On Macs, you can lock into one direction only by holding the Command key. These are simple but powerful markers that get desired results fast. We finished off the AWB mix with some additional gain and high-end boost at 14 kHz in the L/R Surrounds, again to compensate for the final encoding process.

Along with the Graph, there's a master controls section and four individual band controls. On the band controls, gain is the output level for the selected individual band (a.k.a. makeup gain). If there's no dynamic change in the band, then it simply boosts or cuts — just like a regular parametric EQ. If there are dynamics, this becomes the fixed level that the band's gain will return to when not expanding or compressing. Attack and release work as you would expect, and the threshold slider controls the point at which the band responds to signal level, as in more traditional compressors. The range sets maximum gain change for each band, and, when set to a negative value, the band becomes a compressor. Positive values turn each band into an upward or downward expander. When set to zero, the band has no dynamic action, and can be used as an EQ.

> "WHILE THE C4 ISN'T A REPLACEMENT FOR A SERIOUS MULTICHANNEL MASTERING SESSION, IT CAN TAKE YOUR MIX TO THE NEXT HIGHEST LEVEL."

Another direct application of the C4 was on a solo piano record, captured for multichannel release. The pedals on this 1907 Steinway B were a bit sticky, and would create a low-end "whomp" on occasion. Since this was a solo recording, the sounds

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CIRCLE 04 ON INFO CARD

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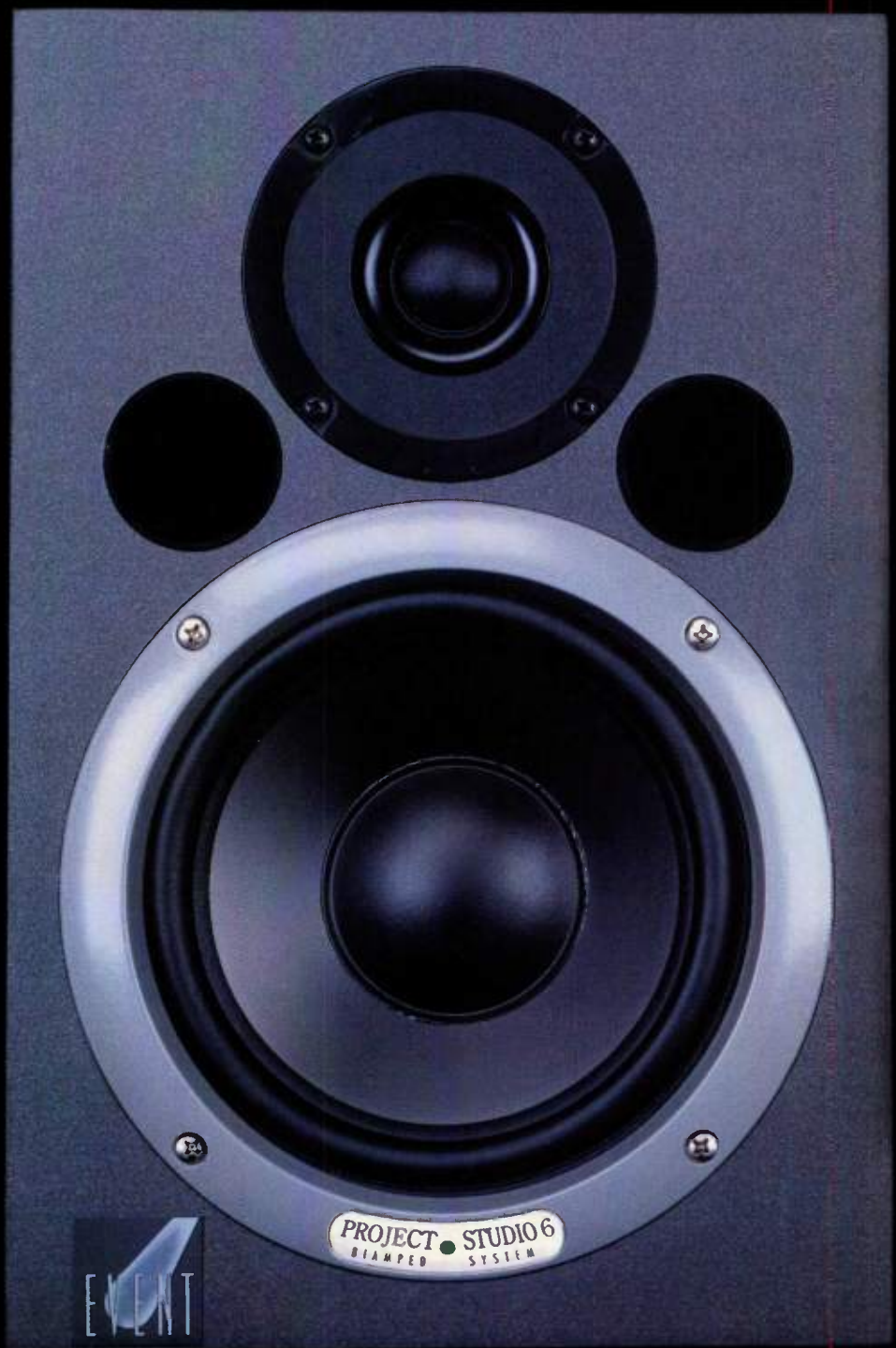

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CIRCLE 68 ON INFO CARD

couldn't be masked and had to be dealt with. Ahh, the world of hard disk recording! With the ability to automate every nuance of the C4, we were able to write out the pedal noises every time they occurred. It was certainly time consuming, but it was better than hearing that annoying pedal sound forever (or until my hearing goes).

The Waves C4 can add to any multichannel mix when used properly. I have personally used it on almost every surround project I've mixed. Like other multiband compressors (although it is so much more), it can be dangerous when overused. It's definitely worth reading the manual, where many more possible uses are described. The factory presets, such as Multi Electro Mastering, BassComp/HiFreqLimit, and Upward Comp+5 dB are great starting points to learn from and expand upon. Throw a C4 or two on your next 5.1 session and enjoy! ■

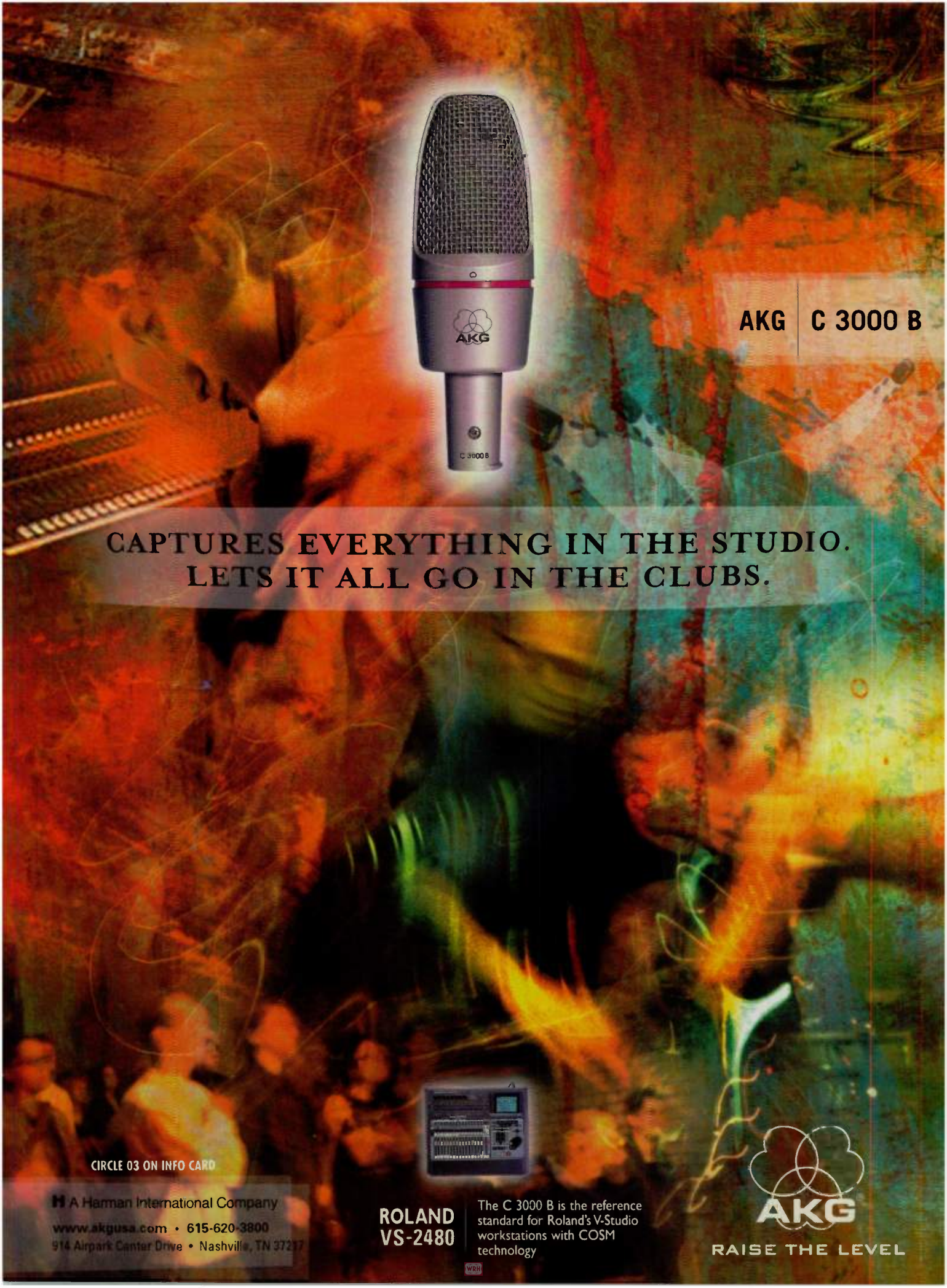
BACK TO BASICS: MULTIBAND COMPRESSORS

Multiband dynamics processors are one of the great developments of the past few years. No longer are we saddled with single-band compressors that over-react to low end and ignore mids. Even cooler, the days of static EQs are fading fast. Rather than just boosting or cutting specific frequencies all the time (whether they need it or not), a dynamic multiband processor responds to the input signal and adjusts its EQ accordingly. This results in a much more consistent sound across the range of a voice or instrument. Or you can do tricks such as making a signal get bassier as it gets louder, or brighter and bassier as it gets softer (like a loudness control on a home stereo).

A multiband compressor works by dividing the audio bandwidth into multiple frequency ranges, each of which can be processed by its own dedicated compressor — sort of the way a two- or three-way PA system works: The signal is passed through a crossover, and each resulting frequency range is sent to its own amp and speaker. The lows go to a subwoofer, the mids to a 12-inch cabinet, and the highs to a horn. This allows for cleaner sound reproduction and greater headroom, since each band's power amplifier can be specified to provide as much power as is needed — the lows require a ton of power, while the highs, with their more efficient horn-loaded drivers, don't need near as much.

A multiband compressor works the same way, but dedicates a compressor to each band. In the Waves C4 plug-in, for example, the audio bandwidth is split into four bands — lows, low-mids, high-mids, and highs. Each of these has its own separate compressor whose settings can be tweaked for the best response for that particular range. This allows you to specify the best attack, release, threshold, and makeup gain settings for each band, a very flexible and powerful arrangement. *—Mitch Gallagher*

CIRCLE 22 ON INFO CARD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Pure analog sound—all of us at Universal Audio know there are times when there is no substitute for it. Our UA Classics such as the LA-2A, 1176LN and 2-610, reflect our passion for natural sounding audio that is true to the original, yet enhances the sound you hear. Our new M610 single channel pre-amp also reflects that passion with it's all tube, high quality sound. With our analog legacy spanning back more than 40 years, it's easy to see that our digital minds understand the needs of today. Our new Powered Plug-Ins are the perfect example, because our analog ears are at the heart and soul of each and every one.
Our UAD-1 card, with it's super-computer DSP chip technology, is what drives these Powered Plug-Ins. Adding a UAD-1 to your host-based digital audio workstation means you'll never have to sacrifice audio quality again. You're free to use the full power of your DAW without compromise—running Powered Plug-Ins with minimal impact to your CPU—to create your music without limitations.
Powered Plug-Ins are the backbone of your music
UA Powered Plug-Ins take every nuance of our analog passion and deliver it digitally with exquisite effects like RealVerb Pro, and true-to-life emulation of our legendary LA-2A and 1176LN classic hardware—all running on our super-charged PCI card. Just one listen and you'll hear how Powered Plug-Ins will liberate your DAW, even better—liberate your ears, mind and music.
To find out more, visit an authorized UA dealer, www.uaudio.com, or call us at 831.466.3737.
To see and hear the new M610 and get a special first look at the newest Powered Plug-Ins, stop by our booth 1366 at the 2001 AES New York show, or check us out online September 21st, for a virtual preview at: www.uaudio.com
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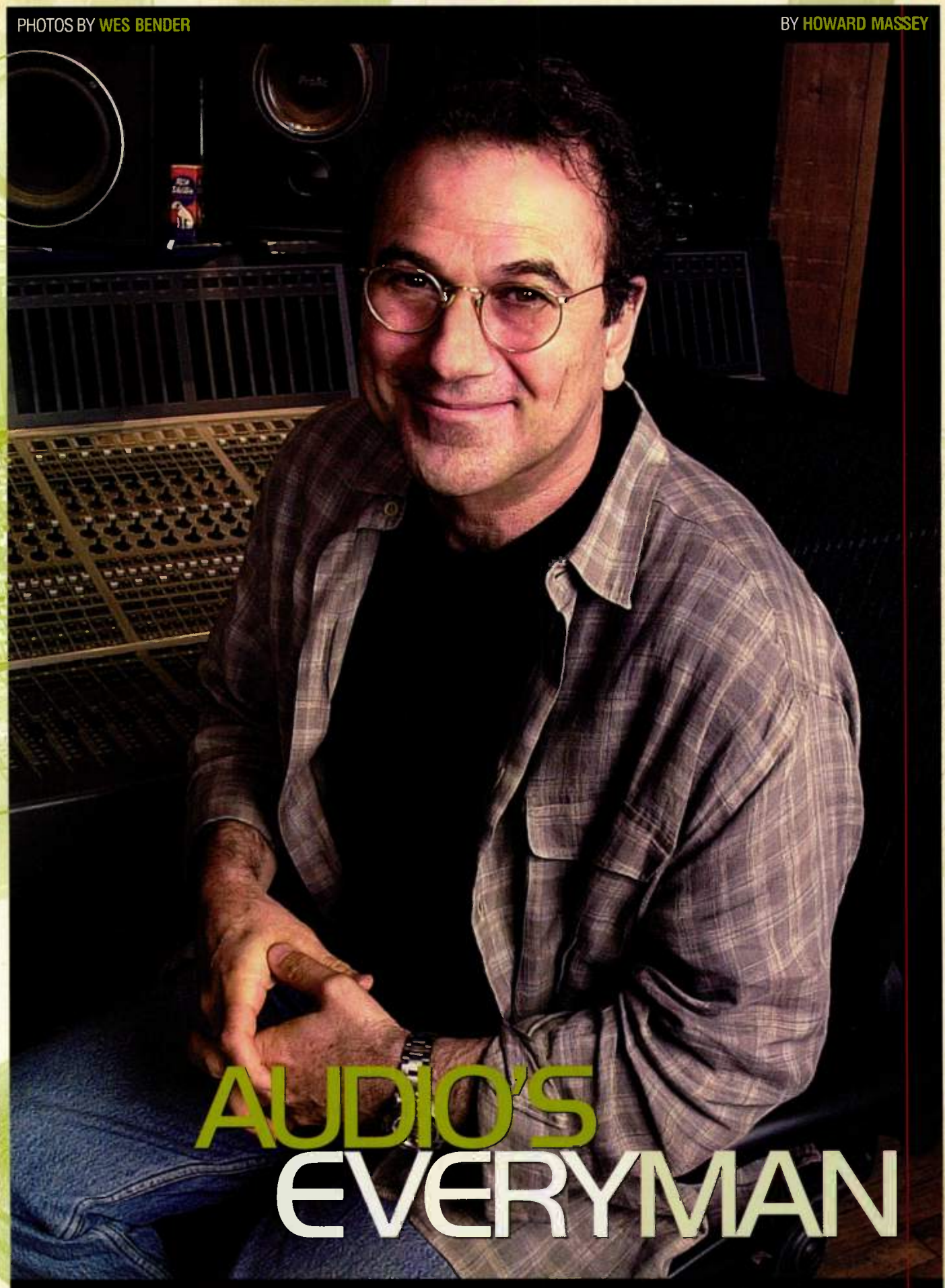

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AUDIO'S EVERYMAN

Russ Titelman's discography reads like a who's who of the major recording artists of the past three decades: Eric Clapton, Steve Winwood, George Harrison, Paul Simon, Brian Wilson, Randy Newman, James Taylor, The Allman Brothers Band, Little Feat, Ry Cooder, Rickie Lee Jones, Chaka Khan, and Jimmy Buffett.

What's more, he learned his craft at the feet of the absolute master — Phil Spector, for whom he served as regular guitarist and backing singer on dozens of records and demos alike. Those of you old enough to remember the '60s show *Shindig* might have spotted Russ, who held down the guitar chair in the house band when he wasn't busy writing songs for the legendary Don Kirshner, and working alongside the likes of Carole King and Gerry Goffin. For more than 20 years, Titelman served as A&R man for Warner Brothers records, before leaving in 1997 to pursue his interests as an independent producer.

Soft-spoken and measured in his thinking, Titelman recently took some time out from his busy schedule to chat with us in his New York apartment about the craft of making records, with specific reminiscences about his work with Steve Winwood on *Back In The High Life* [Mercury, 1986] and with Eric Clapton on *Journeyman* [Warner Bros., 1989], *From The Cradle* [Warner Bros., 1994], and *24 Nights* [Warner Bros., 1991].

EQ: How involved are you technically in the records you produce? Are you hands-on, or do you let the engineers do the work?

Russ Titelman: Well, I usually let the engineers do what they do. I have great guys who I work with. I've been working with Dave O'Donnell for a long time, and I trust him implicitly. We'll discuss things like miking, and if something doesn't sound quite the way I want to hear it, we'll go move mics around. During recording, I don't get involved in any of the EQing or anything like that. I might suggest something to Dave, or we'll just cut it flat and I might fiddle with the monitors to get it sounding the way I like. But, in mixing, if I don't hear what I want to hear, I'll go in and roll my sleeves up.

Obviously, since you're a musician, you have a musical vision — I'm guessing you must work very hard on arrangements. But do you also have a sonic vision when you start a record? Do you have a certain sound in your mind and work toward that goal?

That's a very difficult question to answer. For the most part, recordings with live musicians are living things, and you have to listen to what's going on. You can guide it, but the most important thing is the casting — who you have in there playing. In the brave new world of everybody working in his own little room with a computer, that question is a moot point. But, if you're talking about recordings with musicians playing together, they have a life of their own and you have to be ready for whatever happens, even though it may take you down a road you didn't expect.

You're talking about flexibility?

Yes, to be ready for the unexpected, and for mistakes. You know, sometimes you make suggestions that don't work — they're terrible. Sometimes you might make a suggestion to a great musician who then takes your idea and makes it into something that's so great, you never could have imagined it. That's why the casting is so important.

Though, even for people working on computers, there's a certain degree of their personality that goes into the samples they collect and how they put things together.

That's absolutely true. I always feel that it's the person with the creative force behind the thing that dictates where it goes. You can have a perfect machine record and perfect vocals and everything perfectly in tune, and have it be absolutely soulless — which, for some things, may be just fine. But if you want to get an emotional performance out of something, then you use the technology to fix it so that it becomes this great, idealized performance.

Speaking of working with machines, I remember when we were doing *Back In The High Life,* which was, at the time, *the* pinnacle of machine and human working together. And I think it was on "Higher Love," where [Steve] Winwood wanted the snare drum to rush in the bridge, so

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it sounded like a person who was getting more excited. So we programmed it in. All kinds of little things like that happened during the making of that album.

How did you accomplish that?

Well, Steve had worked on demos for a year, so he had loads of drum and keyboard programs. We actually restructured a lot of the songs by editing and fixing them so they worked better, because some of them were pretty linear. Even "Higher Love" just kind of went flat. It was great, but it was flat. So we made the crazy instrumental and put a little instrumental thing in the middle of the first verse; those things didn't exist beforehand. We also created the breakdown at the end, and then I brought Chaka in. So that was a living thing until the very end of the mix — we were constantly doing stuff to it. But, in any case, after we re-edited the songs, Steve rewrote the programs. Then I brought in Robby Kilgore and Jimmy Bralower to do the drum machines, so the sound of the drum machines was really fabulous. We did the whole album bit by bit — we'd lay one part down, then the next.

Did you ever throw any of the sounds out into the room, or was it all DI?

We did, occasionally, throw sounds into the room, sometimes through an amp. After we laid down the basic keyboard and drum machine parts, Steve sang a little bit. Then we brought in musicians. Somebody might play a rhythm guitar part, and then, when we brought the drummers in, we put a real hi-hat on first. Or we'd have them play drum fills to the track that was already there, then we'd sample the sound of the drummer and key it off the machine so, when the fills happened, it would all sound the same, but we'd also have a real hi-hat in there, so the feel was very human. There'd be real hi-hat, machine hi-hat; real conga, machine conga; real tambourine, machine tambourine. So, it had a very human feel to it — smoke and mirrors.

You once commented that Eric Clapton will work with machines, but he always wants to jam along with them live.

Yeah, that's what we did on *Journeyman*. If we ever used a machine, the whole band would play, and then we would mix and match. Plus, we made comps of the solos, which is a kind of manipulation. Everyone gets up in arms when they think it isn't the actual part that was played live, but I always say it's the difference between going to a play and going to a movie — do they get mad at editors of films?

My theory is that people go to plays because, in the back of their minds, they hope somebody will have a heart attack on stage.

Or make a mistake. They are hoping for the unexpected.

And that's the thrill of live performance, too.

Absolutely. Who's going to hit a real clinker, or maybe you'll witness the most glorious thing that ever happened, and could say you were there.

But how do you achieve those magic moments in a studio, when there isn't the energy of an audience to build on? How do you pull that out of an artist?

Prayer is one thing. Seriously, you do your best to create an atmosphere where there is that feeling of trust and excitement when everything happens. You try to make it sound as good as it can sound. And then you pray.

But the studio is such an artificial environment, such a non-real place.

Yeah, it is, but it's something you kind of get used to, though it definitely is artificial. A lot of people like to record at home these days, do vocals at home, do guitar overdubs at home.

Is that a good thing, or not a good thing?

If it works, it's a good thing.

But isn't that the role of the producer? To be the sounding board?

Yes, that's right, but there are singers who know their limitations or — well, limitations might not be the best word — but they know when it's good and when they've captured a passion. Stevie Wonder produced a lot of his own records; so did Marvin Gaye.

That, I think, is the hardest thing for people working in a project studio — especially those without professional experience — knowing when to stop, when it's done.

I agree with you, but I don't know if I have any guidelines. Part of the job of being a producer is allowing all of those things to happen. If an artist wants to go and sing at home, or do guitar overdubs at home by himself, you say, "Go, do it." And then you listen to it afterwards and say yea or nay, or, "This part was really great, but why don't we do this?" Because that relationship — the collaboration between artist and producer — is extremely delicate, and it's a very special and powerful relationship.

But, as far as knowing when to stop, it's just taste; it's just instinct, touched against something you know of that artist.

Presumably you hear a lot of demos coming out of project studios.

What are the common mistakes people are making when they make these tapes?

I don't know if people are doing anything wrong. What hasn't changed is when you hear a great song. Songwriting styles *have* changed, though. To me, standards of writing have been diminished in a way. People don't use the language as cleverly as they used to. And that tradition of lyric writing, using complicated chord progressions and things like that, was a part of what got the message across, the technique itself. It's like the music of poetry — the way it sounds is part of the message of what you get.

So, if you have very clever Cole Porter or Ira Gershwin lyrics, there's something that tickles your brain about how cleverly their rhyme schemes go and what they're saying. So there was that tradition, and then you have our generation that came next. The late '50s–early '60s, Tin Pan Alley group of Carole King and Gerry Goffin, and Bacharach and David — all the greats who wrote in that tradition — but they simplified it. They took the people's music — doo-wop and music off the streets — and made sophisticated versions of what was going on. Plus, they were interested in symphonic arrangements to accompany these little tracks. I guess The Beatles were the pinnacle of that tradition. They weren't the first, and they weren't the last, but they may have been the best at it.

These days, you have all of these options, you have all of these unlimited tracks, so you're not forced to make decisions. Do you think that may be at the root of perceived lower standards in today's music, or do you see it as a plus?

[*Long pause.*] Well, I just made two albums recently — one with Keb Mo that I'm extremely proud of — and that record was made very quickly on a small budget. I also made a record with Tom Wopat — a recording of standards — and we had to do the same thing — we had a small budget and a limited amount of time. My wonderful production coordinator made me sit down and said, "Okay, what are you going to do on each track?" I've *never* had to do that before; I've never had to pre-conceive every track. So I had to sit there and go, "Okay, well,

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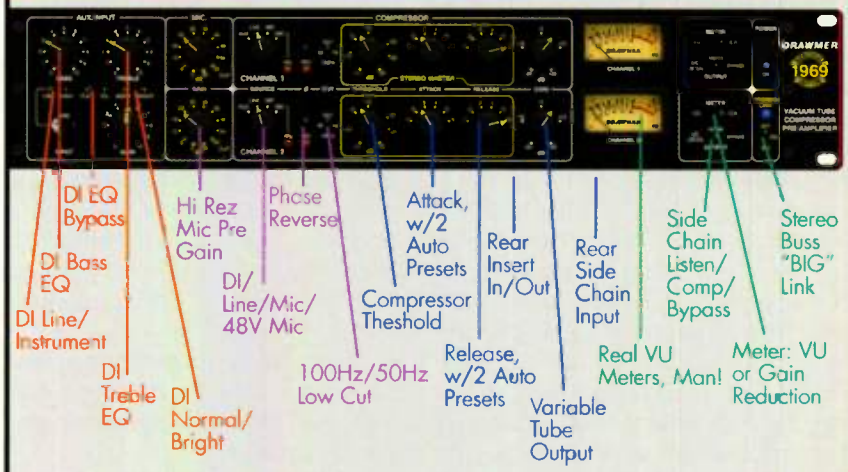

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this one will be like a Nat Cole Trio song with piano, guitar, and bass, and we'll have two saxophones and a trombone. And this one will have a big band, and the horn section will be this, and we'll have this many strings and the band is going to be this, and maybe Arif Mardin will do one of the arrangements…."

Then we had to go in like we were conducting a battle. First day, just piano things with vocal. Next day, the trio things and then these people leave and the horns come back in and they overdub on this, then the small string section comes in the next day…it was incredible. I recorded on analog tape to get that warm sound, and the tracks would then go into Pro Tools so we could manipulate and fix things and do what we had to do. And that's what we did; in five or six weeks, both of those records were done.

That really was an amazing experience, because you had to be on your toes. Everybody had to do his job *right now*, be great now. All the decisions were made as we went along about what we were keeping and weren't keeping, because of the time and money constraints.

> "TO ME, STANDARDS OF WRITING HAVE BEEN DIMINISHED IN A WAY. PEOPLE DON'T USE THE LANGUAGE AS CLEVERLY AS THEY USED TO."

So, for somebody working in a project studio, are you essentially saying it's a good idea to pretend you don't have unlimited time?

I recommend it, yeah. It does something to your creative juices; it does something to your decision-making process.

You cut your teeth with Phil Spector, who was clearly the main creative force in the studio. In fact, [engineer] Larry Levine told me that Phil used to say he could make a hit record with anybody.

Well, I heard Norman Whitfield once say, "I could cut a hit with a chicken." [*Laughs.*]

Could he?

I think at the time he could have. The mighty Norman Whitfield!

What about the concept of the producer being the creator, and the artist essentially being interchangeable?

When you're working with a great artist, the producer and the artist are collaborating on creating something that hopefully will be exceptional and memorable, and will live on and stand the test of time. I doubt that a lot of the stuff on the charts today is going to be listened to 30 or 50 years from now in the way that an Irving Berlin or George Gershwin song is still listened to.

As a guitarist, do you find yourself focusing a little bit more on guitar than the other instruments when you're working?

No, I don't focus more on guitar. The sound depends on the guitar player, on what he's giving you. It's difficult to go into the studio with Eric Clapton and get a bad guitar sound. [*Laughs.*]

Surely that's not only because he's a great player, but because he knows what he's after. He knows how to tweak his guitar and amp to get exactly the sound he wants, and that comes with experience.

But we also did miking things and other tricks. I remember once, during the *From The Cradle* [Eric Clapton, Warner Bros., 1994] sessions, Eric came rushing into the booth, saying, "Come listen to this on these 'phones — this is how I want it to sound!" The guitar was monstrously huge in these 'phones, so the job was to be able to get that sound coming out of speakers. It's an impossible task; you have to make an attempt at re-creating that sound that you heard in his headphones.

Was it a matter of taking the effects that were in the foldback mix and putting them into the main mix?

No, it was largely a matter of echo and balance, and it was the same echo — it was just that he just could hear more of it. Plus the guitar was really loud, things were out of balance, and that's what he likes, so we did our mixes like that.

The other thing Eric did during the making of that album was to play the old original blues records and he'd say, "I want to capture the spiritual quality of this." If you listen to those records, the guitar and the voice would be way out here in your face, the band would be back here, and the drums would be way back, but it would sound tough — the sound is monstrous. If you listen to The Beatles records, a lot of their stuff is like that, too. The drums are back, but they're clear, and they have a sound.

So, it was just a matter of using echo and taking that basic approach like an old record, like it was recorded on one microphone. The singers got up to the microphone, and then the saxophone player came up, then the harp player. We used old-sounding echo, slap echo. Not a lot of tricks, but a little of everything. We had digital slap and real slap. We did that record quickly, too. I remember I was working with Alan Douglas, who's a really great engineer, and on the last day we mixed, Eric had to leave, he had to go on the road or do something. We got to the end of the last mix in the late afternoon or early evening, and I said, "Okay, let's listen to all this stuff." And we listened, and there were five songs where I said, "We really have to fix these things." So we started all over again — we put them back up and tweaked them. We remixed five songs, and we got out at 7:30, 8 o'clock the next morning — we just went for it.

Who are the young artists out there that you see as the bright future, and why?

I like the work that Andy Slater has done with Fiona Apple, the Wallflowers, and Macy Gray. Those are very well-made records, and the writing is good. Jakob Dylan is a good writer, and Fiona Apple is a really good writer. I also like the Sixpence None The Richer record; they're raw and innocent and melodic. Another new group I like is called Stretch Princess — they remind me of Sixpence. I love what David Frank did with Christina Aguilera — "Genie In A Bottle" is great.

▶ continued on page 119

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MACKIE HDR24/96 24-TRACK HARD DISK RECORDER/EDITOR

With so many DAW software packages now available, you might wonder why a musician or studio owner would even consider a dedicated hard disk recorder. I can give you several reasons: the stability that comes with a dedicated box, ease of use, never having to worry about system conflicts, and as a unit for people who are computer-phobic. In response to these needs, we have the Mackie HDR-24/96, a dedicated hard disk recorder/editor that packs a powerful punch at a modest price point.

OVERVIEW

The Mackie HDR-24/96 is a dedicated 24-track hard disk recorder capable of operating at either 16- or 24-bit resolution and at sample rates of 44.1, 48, and 96 kHz. The unit records to an internal 20 GB IDE drive, but is also capable of recording to a removable IDE drive that's intended to be the primary means of backup (more on this later). The HDR has a variety of I/O options, including analog, AES, TDIF, and ADAT, as well as built-in sync to all flavors of SMPTE, video blackburst, MIDI, or word clock, and communication to other systems via a 100BaseT Ethernet port.

Although most of the unit's functions can be easily accessed from the front panel, the HDR takes on more of the complexion of a computer-based DAW when a monitor, keyboard, and mouse are added. It then becomes a very powerful editor, capable of large-scale editing functions with ease. This is a great feature in that you don't need an external computer to see the waveform for editing — all you need to do is connect the monitor, keyboard, and mouse and you're there.

Actually, the HDR fits more into the category of recorder/editor than DAW, mainly because it doesn't do (nor does it claim to do) many of the finishing functions that full DAW packages do, namely on-board mixing and digital signal processing via plug-ins. In reality, the on-board mixing portion is of little consequence if you're using the unit with a console, although having the ability to use plug-ins would be nice. And, in fact, the HDR does have the ability to do rudimentary level automation. It's possible to import mono or stereo interleaved AIFF or WAV files into the HDR, but AIFF files are converted directly to WAV files and interleaved files are converted to two mono files.

Although the HDR editing features are made somewhat easier when a monitor is connected, the HDR is quite a capable machine even without a monitor since the front panel provides most of what's needed thanks to a number of displays and dedicated buttons. The HDR's front panel features 24 channels of high-res metering, an LCD location display that shows either SMPTE or

HARD DISK RECORDING MADE EASY

Having been a proponent of dedicated hard disk recording systems, I was excited to get my hands on Mackie's HDR24/96. The HDR24/96 is actually a (don't tell anyone) PC running on Mackie's own streamlined OS. It does only one thing — audio — but does it very well. Such dedicated systems have always had advantages in terms of stability and ease of operation. The HDR24/96 is a great example; I don't believe I've seen a simpler system. The initial configuration consisted of possibly five minutes of work (including unpacking the boxes): plug in the I/O cards and one cable each for the remote, video monitor, and keyboard and mouse (all optional), then, most important, push the Power button. I was running the system instantly. We usually talk about learning curves with a product, but, with the HDR24/96, it's more of a learning *point*.

Starting a new project consists of basically typing a name and clicking Enter. Plug in audio sources, push Record, and *bingo* — you've got a do-it-yourself gold record kit. The dynamics of the transport were very good. Play starts quickly from any mode, rewind and fast forward emulate a tape machine starting slowly and ramping up to 20X play speed, a second and third press of the buttons drastically increase the speed. It didn't take long to get a feel for the transport and be able to accurately judge where I was going. Locate points and loop and auto punch features further enhance the tracking capabilities of the HDR24/96. Metering takes several forms: the 24 LED meters on the face of the unit, the single channel on the remote, and onscreen metering (with an optional video monitor).

Mackie scores high with a product that has both simplicity of use for the novice and depth of capabilities for the pro. Editing is quick and intuitive, and, in almost all instances, nondestructive.

Synchronizing to SMPTE and MMC worked well, as did external word clock sync. Backup is handled with a removable storage drive, but can also be accomplished using the FTP server function to store files on another computer or on backup media. The FTP server also allows transfer of files to and from a PC or Mac for edit importing into a computer-based DAW.

—Michael D. Clute

bars/beats/ticks, traditional analog-like transport controls, and a number of buttons to access the many utility functions of the unit. A 24x4 LCD shows operation information, system prompts, and selection options via paging buttons. Also on the front panel is a floppy drive for system upgrades and a removable hard drive bay for back-up.

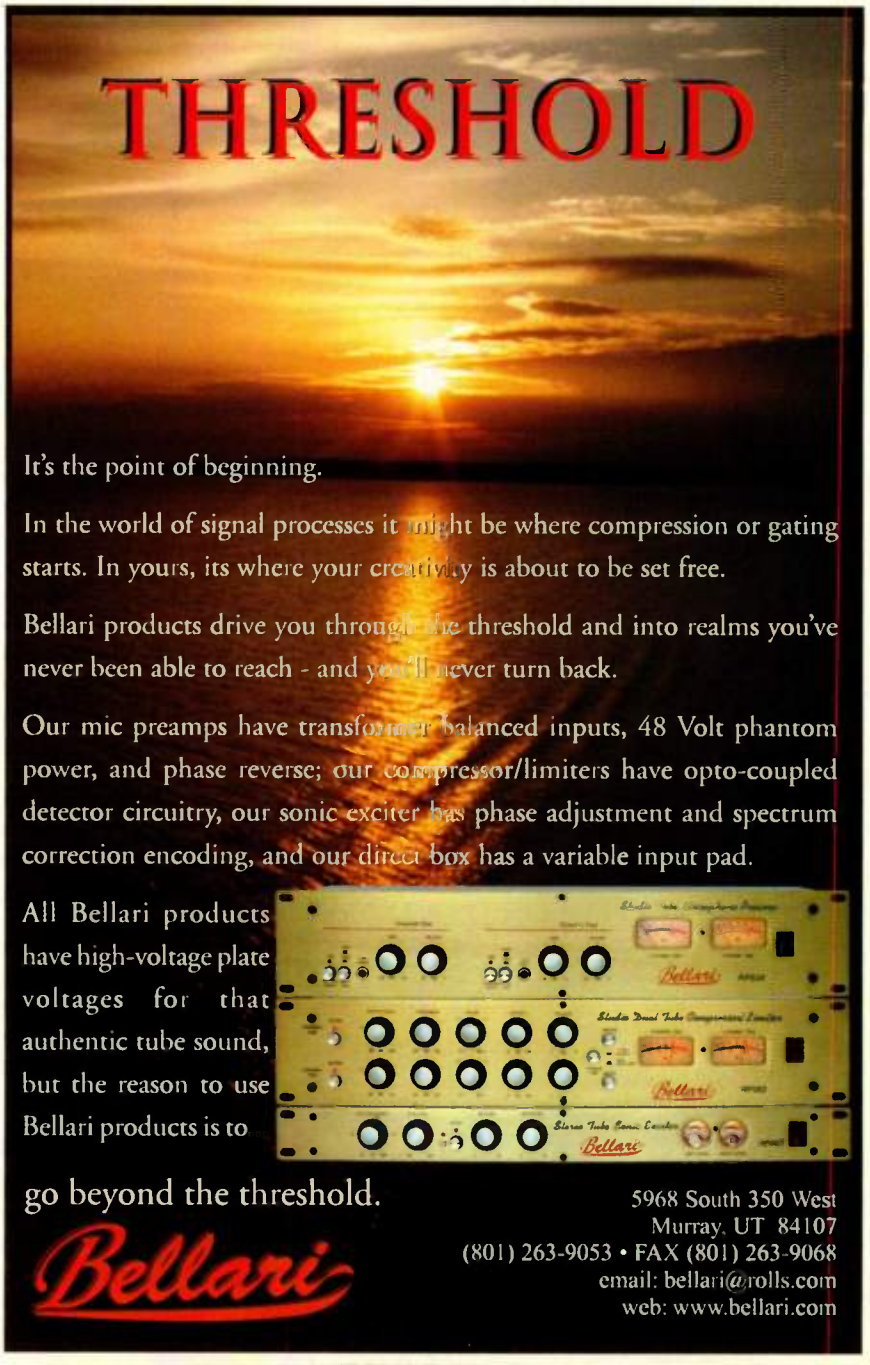
The rear of the HDR contains a quiet cooling fan, a three-slot card cage for the I/O modules, a MIDI port, an SVGA video output, an input for either the Mackie Remote 24 or Remote 48, a jack for a punch-in/punch-out footswitch, and mouse and keyboard ports. There's also sync ports for word clock, SMPTE, and NTSC or PAL video blackburst. Two accessory slots are provided for future additions and upgrades.

All of this is housed in a rugged 4U rack unit that weighs 35 lbs. Peripherals such as keyboard, mouse, or monitor can be standard off-the-shelf units intended for use with a common PC.

BACKUP

Backup for the HDR is in the form of removable 20 GB drives that are relatively inexpensive at $199 each. Twenty gigs should easily be enough to store a full 10-song album of 48 kHz/24-bit material with lots of overdubs. If you're in doubt as to the recording capability of a drive, there's actually a utility built into the HDR that will verify that the drive is sufficiently fast to record to. Another backup method that Mackie offers is what they call Mackie Media Project, which that uses a 2.2 GB Orb cartridge. This has enough memory to hold two 5-minute songs with a good deal of overdubs.

While all this sounds pretty good, hard disk remains the only method of backup that makes me a bit nervous. I've never been a believer in using anything mechanical for long-term archival, and I'd be a lot more comfortable if there was a way to backup directly to CD-R, DVD-R or -RAM, or tape backup such as exabyte or AIT. It actually is possible, however, to indirectly back up to any of the above using the HDR's built in 100BaseT Ethernet connection and transferring the files to a Mac or PC.



CIRCLE 48 ON INFO CARD

CIRCLE 50 ON INFO CARD

MANUALS

While it's possible to run the HDR without ever cracking open the manual, there's plenty of printed help if you need it. In fact, there are three manuals — a Quick Start, an Editing Guide, and a full technical manual. While Mackie manuals used to be laced with gigantic doses of humor (too much for some professional users that I've run in to), their manuals of late have toned it down somewhat. Yes, there's still a bit of that Mackie irreverence, but it's doled out in smaller portions. That being said, there's a tremendous amount of material covered in a very clean, tight presentation that's not only easy to grasp, but easy to navigate as well. Difficult subjects such as synchronization, networking, and, to a lesser degree, editing, are handled with ease.

IN USE

If you have any DAW background at all, then you already know how to use the HDR. Without ever cracking open the manual, I was able to use the machine for most functions with absolutely no problems. One of the things that I liked best was the way that the waveforms were displayed. Now you might think that if you record the same program into different machines that the waveform display will be same, and, well, it should be, but I've found that this isn't the case. The HDR's display was very clean and easy to read as compared to some that seem particularly cluttered and not as precise. Plus, you can get around the display with ease thanks to the Display Resolution buttons conveniently placed at the upper left of the overall display. A right click on the mouse brings a contextual menu with all the editing functions and crossfades. A list of "Hot Keys," or keyboard shortcuts, is also available from a pull-down menu.

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STOP THE PRESSES!

Just as we went to press, Mackie announced a new 24-bit/24-track nonlinear hard disk recorder, the MDR24/96. The MDR is aimed at users who don't require the advanced graphical editing capabilities of the HDR24/96, but would still like to experience the benefits of Mackie's hard disk recording technology.

Fully compatible with the HDR24/96, the MDR24/96 includes an internal 20 GB Ultra-DMA hard disk that delivers over 100 minutes of 24-track recording at 48 kHz and a built-in drive bay for Mackie Media M-90 recording drives and Mackie Media Project backup drives. The unit ships with three 48-kHz/24-bit analog I/O cards as standard, with optional digital I/O cards also available. Sync and clock capabilities include MIDI MMC and MTC, SMPTE, video blackburst, and word clock. A standard 100BaseT Ethernet port for connection to PCs and networks is included.

The MDR24/96 is also compatible with Mackie's Remote 48 Pro remote control, which allows two hard disk recorders to function seamlessly as a 48-track digital recording system with advanced editing capabilities. The MDR24/96 is shipping now at an introductory price of $1,999.

select number two, and record away. You can continue up to a total of eight takes or virtual tracks per channel. But the best part is the way that they're displayed. If you hit the Explode button, you can view the waveform of all eight takes to either choose or edit between them. This is really a time saver, as most other recorder/editors use layers that you have to bounce between, viewing only one at a time. The HDR lets you see all eight virtual track layers at once.

About the only editing function that I really missed on the HDR was the ability to group a number of tracks for editing. If you're editing drum tracks, for instance, it would be a lot easier to group them all together to perform an edit. That being said, you're able to select multiple tracks to edit and basically accomplish the same thing, but it's not as efficient.

I found that the transport became a little sluggish when I had a lot of edits across 24 tracks, but this is pretty normal for most workstations. A nice feature is the fact that fast forward and rewind have three speed levels that are engaged by simply hitting the button multiple times.

Another feature that I like allows you to delete a file immediately if you know a take is bad. Other workstations keep the file no matter what, even though it doesn't appear after you hit Undo, making it necessary to perform a tedious "purge" operation when you need to clear some disk space.

The HDR-24/96 has a lot more functions than we have room to touch on in this article, but the thing to remember is that, even though it does a lot, it's not difficult to learn. Unlike other machines that give you everything but the kitchen sink and make you hunt for each function, the HDR is laid out in a logical manner that allows you to get at what you need when you need it, while keeping it out of the way until that time.

THE SOUND

I found the sound of the HDR to be surprisingly good. While the converters won't exactly compare to those costing ten times as much per channel, they're not that far off, either. If you really want the ultimate, just get the AES I/O cards and plug in a set of your converters of choice.

After having spent a lot of time on other dedicated hard disk recorders (some costing a whole lot more), I can say that I really like the user interface of the HDR. You get a lot for your money, and its efficient layout allows you to get right to the task of making music rather than struggling with a computer. At $4,999 for the basic unit (minus I/O, remotes, and peripherals), this unit is not only a bargain, but a serious piece of gear easily up to any professional task. ■

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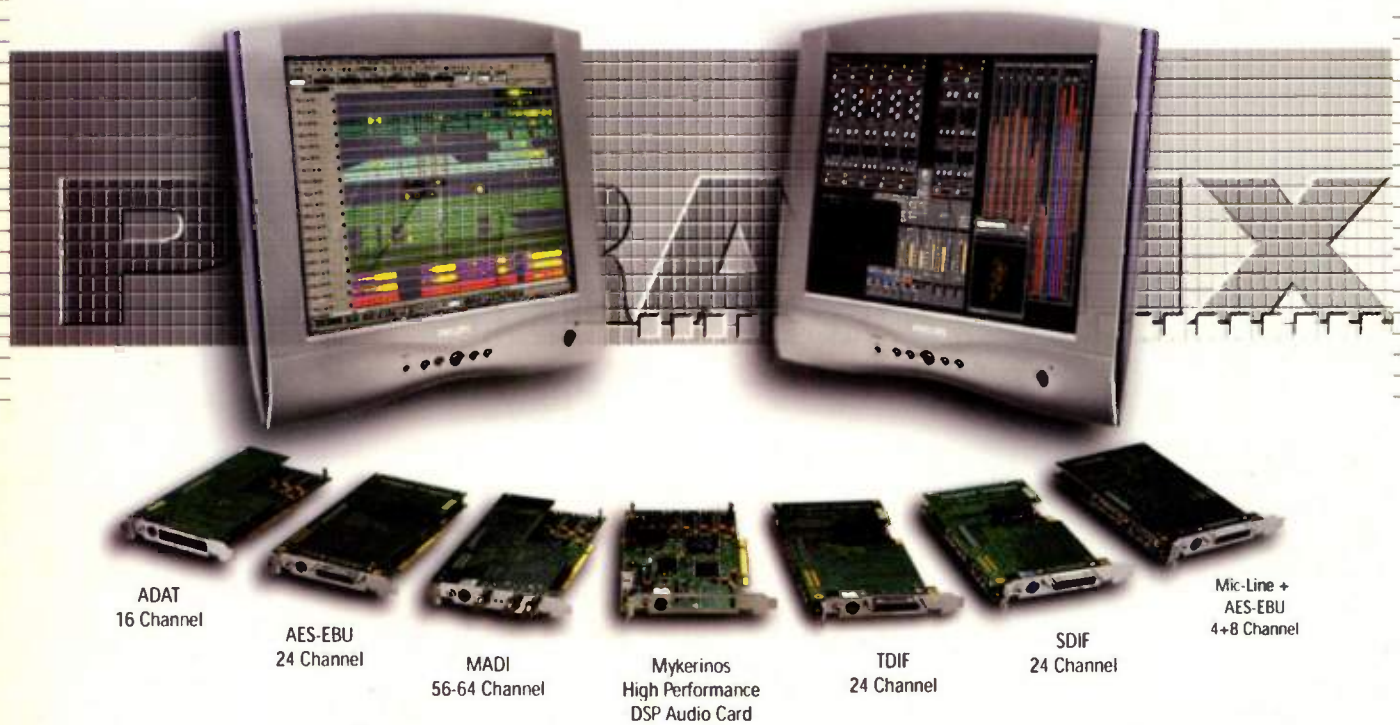

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HITMAKERS JIMMY JAM AND TERRY LEWIS CONTINUE TO FLY HIGH AFTER 18 YEARS AT THE TOP OF THE CHARTS

By Mitch Gallagher

FLYTE CLUB >>

age at the breakpoint, I think. We might be some of the last ones to go over the hump. [*Laughs.*]

Jimmy: I don't think so, because, at mastering, you still see a bunch of half-inch tapes.

Terry: A lot of people go to Pro Tools and then mix down to half-inch, or they take the mixdown over to half-inch just to get that saturation, and then put it back into Pro Tools.

Jimmy: That's true. I remember Mary J. Blige; we have the title track on her new album, and she wanted it on half-inch. That was it — gotta be on half-inch.

Terry: People just want to hear that saturation on there. A lot of people record stuff to 24-track and then put it into Pro Tools, just for that warmth.

Jimmy: We do that.

Terry: I say we're at the breakpoint because I think everything is going to convert to digital. The storage medium is so much better in the digital environment. It's in there forever with the same integrity. As opposed to the tapes that we did years ago that we're having to bake just to play. That's kind of crazy. We want to pull out masters now, and we can't even play them. They'll end up on the heads — you can play them once, that's it — so make sure everything is set! [*Laughs.*]

Jimmy: Exactly. We've been beginning to archive a lot of stuff. We still have stuff from 17, 18 years ago. We loved AGFA tape back when we did *Control* and *Rhythm Nation* just because, when you hit it really hard, the characteristic of the tape was just a great rampant distortion.

We went back and we were putting together the *Design Of A Decade* compilation for Janet, and those tapes were just in horrendous shape. I'm glad that we discovered it at that point and were able to save a lot of that stuff. We have an oven here, and we've been baking tapes.

You mentioned some of the positive things that analog does to the sound quality. Have you found ways to re-create that with digital?

Jimmy: [*Pause.*] Not really. We have some tube compressors that we use sometimes on vocals that gives us a little bit of that characteristic. For the rest of it, I don't know if we're really searching to get an analog sound.

EIGHTEEN YEARS OF SUCCESSFUL RECORDINGS MEANS THAT YOU'LL NEVER HAVE TO BUY WALLPAPER AGAIN.

Terry: Unless you're recording acoustic instruments, you're dealing with the digital world anyway. You pull out a digital keyboard and they sound nowhere near like an analog keyboard. If you pull out an [Oberheim] OB8 and turn that on, and you pull out a digital keyboard and play an OB8 sound, it kind of sounds like it, but there's something that's been lost. You hear that [analog] bass and it tears the speakers up — I did it the other day, I was like, *whoa!*

Jimmy: But you don't know it unless you A-B it.

Terry: Yeah, I never missed it — until I heard it again. So I'll forget again in a week! [*Laughs.*] Everybody's experiencing that. You think you're going to miss something and you go, "Wow, music used to be this." Well, people get used to it. I remember when drum machines came out, and everybody talked about how terrible drum machines were. Then people started to use them, and they became the norm, and that's what you get used to. The sound gets thinner and you get used to that. [*Laughs.*]

Jimmy: You don't know that you miss it if you've never heard it. I mean we know what real drums sound like. So when the drum machine came out, for us, it was like, wow, that's great, it's easy, we can program our own thing, but it still doesn't sound like real drums. But to somebody who's 13 or 14 years old, they've probably never even *heard* real drums.

Terry: Right. And you know, we used it as a treatment. We'd go, "This will be cool on here, more synthetic, and this song needs to have that synthetic feel." So it was a treatment then, but now it's the norm. It's just the way it is.

Do you record the vocals at a stage when the tracks are all finished and everything is laid down?

Jimmy: Generally, with Janet, the tracks aren't complete. After she sings, we add stuff around her.

If the track isn't complete, what kind of pressure does it put on you to get the performance out of the singer?

Terry: I think it's easier for the vocalist. It makes our job easier, because it's easier to hear — less things swirling around in your head. Vocalists — well, *good* vocalists — always fill space. If you leave a space for a vocalist, they'll do a run. If there's a synthesizer or a guitar lick in a place, they won't do a run. So it's better to leave them space and then fill in around them, because, after all, it's their record!

Jimmy: We will ask the artist, "Is this track good enough for you to sing to?" Then, after the vocal is done, we'll add stuff and finish it. That allows the artist to dictate how the track is finished. So we

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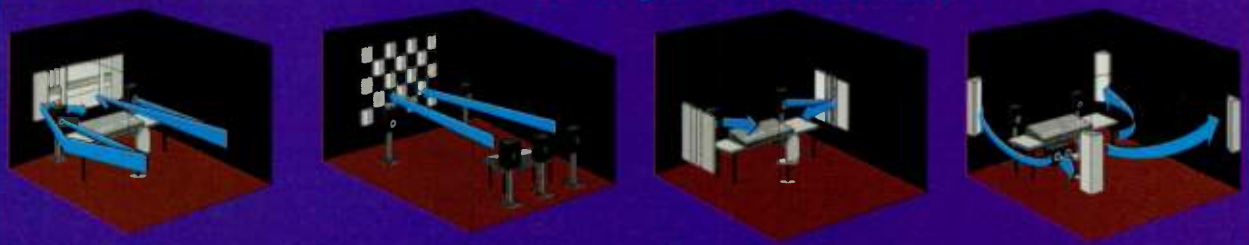

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sort of like the vocal to be the middle thing that happens in the process because it really can affect things. Like on "When We Oooo," by the time Janet got done doing all her oos and ahs, and all that texture-y stuff, there was really nothing to add.

But everyone has different ways they like to work. When we worked with Mary J. Blige, we pretty much had the tracks done, with the exception of "The Love I Never Had," where we added a string arrangement and a horn arrangement. But we waited until we heard her vocal before adding those elements.

What do you do when a vocalist isn't giving you a performance?

Jimmy: It's different for every vocalist; every vocalist responds to different things. The thing to remember with vocalists is that it's not an instrument where you just turn it on and it's always going to be the same. The thing we, as a rule, tend to do, is to record everything. A lot of times the first takes or the warm-up takes are the best takes, before the vocalist really knows what they're doing. We also like to get a vocal when the vocalist has first learned the song. We'll always give them a tape and let them study it overnight, that's fine. But we always make sure that we get at least a couple tracks done on a scratch as the vocalist is sort of learning it — while they're sticking to the melody, before they start sticking a bunch of stuff in there. Usually there's an excitement to going in the studio and singing something for the first time. Nine times out of 10, we end up using that first day.

After 20 years, so many hits, so much success, working with so many artists, how do you stay fresh?

Terry: [*Pause.*] There's always something out in the world that influences you. I walk into Guitar Center and I'll hear a keyboard, or I'll hear a voice, or I'll see my kids — there's always some inspiration to draw from; that part of it is easy. But the major part of the contribution comes from the artist. Some people just inspire you. You hear their voices, you work with them, their personalities, and it's all new — every time is new. That's what makes it easy for me.

Jimmy: Embrace new stuff. And embrace change. You don't run from change, you embrace it. We don't have any of this, "Well, back in the day, when we used to do it..." We just don't think like that. When a new producer comes out, and he's hitting, whether it's Rodney Jerkins, the Neptunes, Timbaland, we're like, man, this is the bomb — this is *it*! And that's inspirational.

Plus the obvious thing is that there's two of us. What he doesn't catch, I catch, and vice-versa. There's certain artists where he totally feels it and I don't get it. But at the end of the day, I get it, because he gets it.

What advice can you offer our readers who want to follow your path?

Jimmy: [*Pause.*] A lot of people tell us, "I'm waiting for my break, I'm waiting for this, and I'm waiting for that." I always tell them to substitute the word "preparing" for "waiting." Every article you read in *EQ*, whoever it is, whether it's us, Walter A [Afanasieff], whoever, I don't care, read that stuff; learn from it. Going to the record store and buying records, listening to the radio, it's all knowledge, it's all preparing you for what it is you want to do.

You draw from that stuff. You draw from your life experience. So be prepared for the break, but don't worry about waiting for it. Just live your life and learn; take in all the knowledge that's out there.

Terry: There was a time when we dreamed of going in the studio and making a record. We couldn't do it. But now, for just a few hundred dollars, you can make a record that has pretty good quality — good enough quality to be a record! [*Laughs.*] So access is available for everyone. Use that access and information to shape your career.

There's no school that gives you the credential "producer," so every producer is either self-proclaimed or somebody else calls them that. Hopefully, if you work hard enough and you do well enough with your work, someone will want to call you a producer. So don't worry about calling yourself that; learn how to do it, and let someone else proclaim you a producer. ■

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AES PREVIEW PART I

Each year, the fall AES **(Audio Engineering Society)** show features the unveiling of a multitude of new products designed to advance the art of professional audio. This time out, the 111th AES conference rolls into New York City's Jacob K. Javits Convention Center on September 21–24. Here's part one of *EQ*'s exclusive preview coverage of what will be new and cool at the show. Tune in next month for continuing preview coverage, and look for further information on these and other new AES releases in upcoming issues. ***—Mitch Gallagher***

AMS NEVE

The AMS Neve's AudioFile SC high-speed editor and StarNet networking system will be shown at AES (with new SC2.10 software). New features and developments include DSP plug-ins and compatibility with ProTools.

The LOGIC 3SC fully networkable post workstation offers high-speed editing and mixing, and ESP menu-free mixing offers users quick access to all the channels, outputs, and automation.

Contact: AMS Neve at **www.ams-neve.com**. Circle *EQ* free lit. #116.

APHEX

The Model 207 dual-channel tube mic pre-amplifier, inspired by the Model 107, features a MicLim peak limiter, XLR and 1/4-inch input and output connectors, and an internal power supply.

Aphex's Model 204 Aural Exciter utilizes "Optical Big Bottom," which provides resonant bass without significant increases in peak output. It features a light-dependent resistor as the primary control element, plus two independent channels, power supply, and balanced XLR.

The Model 1100 discrete Class-A tube mic pre-amplifier features integral 24-bit, 96 kHz A-to-D converters, MicLim peak limiter, and LoCaF (Aphex's Low Frequency Cancellation Filter).

The Model 1788 remote controlled microphone pre-amplifier contains eight pre-amps in two rack spaces, and provides gain control close to the mic source. The 1788 includes continuously variable input gain and MicLim peak limiter.

Contact: Aphex at **www.aphex.com**. Circle *EQ* free lit. #117.

APOGEE

Apogee's new DA-16 offers 16 channels of 24-bit digital-to-analog conversion at sample rates up to 96 kHz. It accepts AES/EBU, ADAT optical, and TDIF sources, syncable to word clock.

Apogee also has a 16-channel 24-bit A/D converter, the AD-16, with sample rates up to 96 kHz. It has ADAT optical output and is syncable to word clock, utilizing LEDs for indicating signal status on each channel.

Contact: Apogee at **www.apogeedigital.com**. Circle *EQ* free lit. #118.

ART

ART's new HQ 15 dual-channel 15-band EQ with FDC (Feedback Detection Circuitry) differentiates band levels and illuminates the hottest bandwidth, signifying the feedback frequency. This allows the user to make changes quickly.

Contact: Calrec at www.calrecaudio.com. Circle *EQ* free lit. #129.

CEDAR AUDIO

The DNS1000 dynamic noise suppressor is a free-standing unit with "nearly zero" latency and 40-bit, multi-band processing for removing annoying sound pollution such as hiss, whistles, and broadband noise.
Contact: Cedar Audio at www.cedaraudio.com. Circle *EQ* free lit. #130.

CLM DYNAMICS

The new CLM Dynamics (distributed by Wave Distribution) DB8000S 8-channel mic pre contains eight independent preamplifiers for use with all types of balanced, low-impedance microphones. Each preamplifier is equipped with a protection circuit with variable threshold to protect recorders or amplifiers from overload and consequent distortion.
Contact: Wave Digital at www.wavedistribution.com. Circle *EQ* free lit. #131.

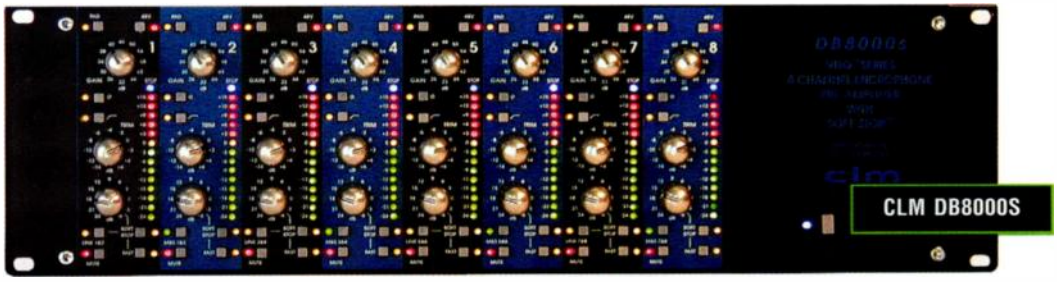
CROWN AUDIO

The XLS Series of power amps (models XLS 202, 402, and 602) feature high-pass filters (30 Hz/15 Hz/Off) on each channel, all-steel 3U chassises, forced-air fans, dual-precision detented level controls, power switches, and four useful LEDs that signal clip for each channel. Rear panel connections include two electronically balanced XLR inputs and touch-proof binding post outputs.
Contact: Crown Audio at www.crownaudio.com. Circle *EQ* free lit. #132.

D.A.S. AUDIO

The D.A.S. Compact 1 is a new self-powered loudspeaker aimed at performance and portability. The Compact 1's three-way, biamplified system can be used as a full-range, stand-alone unit without the need for bass reinforcement. It features a 1,000-watt "Class D" switching amp that uses two 500-watt ICEpower amp modules (which are manufactured by Bang & Olufsen PowerHouse).

D.A.S. will debut their new Sub 118A, which is designed for fixed and portable sound reinforcement applications requiring low frequency reinforcement. It uses a "Class D" switching amp that packs one 500-watt ICEpower amplifier module and houses a D.A.S. P-18 18-inch cone transducer configured as a direct radiator.



Contact: D.A.S. Audio at www.dasaudio.com. Circle *EQ* free lit. #133.

DCS/INDEPENDENT AUDIO

Independent Audio will show the latest version of the dCS992 master clock. It makes the synchronization of multiple sample rate digital audio systems a simple and painless task. The unit provides reference clocks to support systems sampling from 11.025 kS/s to 192 kS/s, or DSD.

The new dCS 974 real-time sample rate and format converter PCM sample rates from 11.025 kS/s to 192 kS/s, and also offers PCM-to-DSD and DSD-to-PCM conversion. Quad AES input and output interfaces for 176.4 kS/s and 192 kS/s are provided, which will be of particular use to users of the latest-generation Sadie high-resolution DAWs.
Contact: Independent Audio at www.independentaudio.com. Circle *EQ* free lit. #134.

DOLBY

Dolby's new DP569 digital encoder hardware unit with Version 2.0 software features an improved menu system, a Dolby Digital Surround EX flag, additional downmixing settings, new presets, automatic data rate selection, a delay word for multiplexers, and improvements in audio coding quality. Existing DP569 users can receive version 2.0 software free by registering online.

The new EX-EU4 Surround EX Encoder is a precision matrix encoder that combines discrete left, back, and right surround inputs into signal pairs known as left surround total (Lst) and right surround total (Rst).
Contact: Dolby at www.dolby.com. Circle *EQ* free lit. #135.

DPA

The new DPA 4066 headband microphone consists of a microphone boom and a brace with adjustability of the brace behind the neck. The DPA 4066 utilizes the same microphone as the 4065 with headband flexibility.

The 3532-S and 3532-T are two new DPA stereo microphone kits. The 3532-S and 3532-T are based on the 4041 mic, and feature either solid-state (S) or tube (T) preamps. The 4041 has an SPL handling capability of 144-dB peak. The 3532-S and 3532-T kits include a two-channel high-voltage mic amp, two 30-foot microphone cables, windscreens, and one stereo boom with holders.

OK, so it's an unfair comparison!

RØDE NT3

Vs.

AKG C1000

3/4" Real Condenser

Microphones shown are to scale.

1/2" Electret

One of these microphones out-performs the other in every way. It's your choice!

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JBC/ROD2959bEQ

Bass Management for Surround Sound

It's common knowledge that effective multi-channel monitoring requires accurate reproduction of low-frequency energy. Traditionally, achieving this goal has been difficult. But with the Model 65 from Studio Technologies, bass management is now available in a simple, yet powerful product.

The Model 65 provides a 5.1 input, along with five main and two subwoofer outputs. Using conservative filter design, the all-analog circuitry redirects bass energy from the main inputs to the desired subwoofer outputs. While you can use the Model 65 right out of the box, we've made certain that you can "tweak" it to meet the needs of your specific application. Want to try 10.2? No problem with the Model 65!

Of course, the Model 65 is directly compatible with Studio Technologies' StudioComm for Surround products, as well as being easily connected with other surround sources. For more information, call us or check out our website.

STUDIO TECHNOLOGIES INC.

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CIRCLE 33 ON INFO CARD

Contact: DPA at www.dpamicrophones.com. Circle *EQ* free lit. #136.

DSP MEDIA

DSP Media's new AVtransfer version 2.2 is a multi-format, multi-standard audio product conversion utility that reads and writes all the common professional audio media formats such as AIFF, WAV, and B/WAV, as well as difficult or obscure OMF files that are version-specific or not properly compliant.
Contact: DSP media at www.dspmedia.com. Circle *EQ* free lit. #137.

EMTEC PRO MEDIA

Emtec's LTO Ultrium Back-up and Archiving Media provides up to 200 GB of compressed storage capability. Utilizing 1/2-inch metal pigment (MP) tape, the LTO Ultrium ups the ante with an embedded chip in a "smart" cartridge that transmits calibration and initialization information directly to your drive to enhance accuracy of data transfer. LTO Ultrium Tape comes in four sizes (compressed/uncompressed): 20/10 GB, 60/30 GB, 100/50 GB, and 200/100 GB.
Contact: Emtec at www.emtec-usa.com. Circle *EQ* free lit. #138.

EQUI=TECH

Equi=tech has updated its ET12.5W hardwired wall cabinet unit with expanded circuit capacity for handling larger studios, more filtered circuits with lower EMI, and a proprietary transformer design for improved bandwidth of noise rejection. Equi=Tech has added four circuits to the unit for a total of ten circuits/125 amps. Now the ET12.5W can outfit from two to eight suites. The ET12.5W is housed in a NEMA 12 industrial control cabinet and weighs 344 lbs.
Contact: Equi=Tech at www.equitech.com. Circle *EQ* free lit. #139.

How does it feel to hold
the future in your hand?
Audix proudly announces the SCX-25, a compact, brass condenser microphone with a revolutionary suspension-mounting system. Featuring a low-noise, high-output preamp and 25 mm gold-sputtered diaphragm, this innovative mic delivers a pure, open-air sound that places it amongst the finest microphones, regardless of size or cost.
The unique suspension-mounting system isolates the capsule from the housing and electronics, which minimizes diffractions and reflections that cause phase distortion. This phenomenal feat of engineering distinguishes the SCX-25 from all competitors—it's the closest thing to hanging the capsule in mid-air! Costly shock-mount clips are unnecessary and, with the mic's compact size, setup time is significantly reduced.
The SCX-25 employs a uniform cardioid pattern and has a stunning frequency response (20 Hz–20 kHz). Ideal for recording a wide variety of acoustic instruments, vocals, and piano, the SCX-25 also thrives as an ambient room and field recording mic. With the SCX-25, you will feel that the microphone of the future has arrived.
With a suggested retail price of only $799, what are you waiting for?
AUDIX
SCX-25
FOR A DEALER NEAR YOU CALL: 800-966-8261
TEL: 503-682-6933 FAX: 503-682-7114 www.audixusa.com
Audix Corporation PO Box 4010, Wilsonville, OR 97070
In Canada, Cableaux Electronics LTD. 604-942-1001 Fax 604-942-1010
See Us At AES – Booth #545
CIRCLE 90 ON INFO CARD
AUDIX
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FOCUSRITE

Focusrite's Platinum Trak Master channel strip provides multiple analog processing elements in a 1U 19-inch rack-mount case. The Trak Master EQ design has the bass and treble bands switchable between two response sets, and offers presence control with a broad Q centered at 1.5 kHz, direct instrument and mic inputs (front panel), and an additional "Tube Sound" feature.

Contact: Focusrite at **www.focusrite.com**. Circle *EQ* free lit. #140.

FOSTEX

Fostex's new Model DV-40 DVD-RAM master recorder provides BWF and SPII formats, as well as an Ethernet port, and records up to four simultaneous, nondestructive tracks (to DVD-RAM in SDII and BWF formats in up to 24-bit/192 kHz resolution).

Contact: Fostex at **www.fostex.com**. Circle *EQ* free lit. #141.

GARWOOD WIRELESS MONITORING SYSTEMS

Garwood's new System 24 is a multiple-frequency in-ear monitoring system that provides 24 frequencies, UHF, and stereo in-ear monitoring with increased dynamic range and a lower noise floor.

Contact: Garwood at **www.sevansaudio.com**. Circle *EQ* free lit. #142.

GEPCO

Gepco's new V37 Series of DT12 connectors features a low-profile, all-metal, universal termination design, and replaces Gepco's VKC series connectors. The V37 features a new universal cable design that enables it to be terminated to either large or small diameter cables (with or without steel mesh cord grips), or XLR fanouts.

Contact: Gepco at **www.gepco.com**. Circle *EQ* free lit. #143.

HHB

HHB's new TL Audio M3 TubeTracker is a compact 8/2 vacuum tube mixer with discrete tube mic preamps, four-band EQ, two aux sends and returns, and a master section with tube stages in the mix bus.

The new HHB's Fat Man 2 combines a tube preamp and a compressor, and has 15 presets and full manual override.

New digital audio technology from HHB includes GXA8 and GXD8 eight-channel converters, which combine 24-bit/192 kHz performance with optional support for DSD and an optional Pro Tools interface.

The new Rosendahl Nanosyncs technology, a way of increasing the sonic performance of computer-based audio production systems, delivers low-jitter reference clock to digital audio converters (plus a range of additional synchronizing facilities).

Contact: HHB at **www.hhb.co.uk**. Circle *EQ* free lit. #144.

HOLLYWOOD EDGE

The Sound Designer's Tool Kit is Hollywood Edge's latest addition to their sound effects library. The six-disc package features various "stingers, rumbles, booms, whooshes, and hits," and will include drum, brass, guitar, and keyboard sounds.

The Edge Edition, Volume II five-disc collection of sound effects has over 1,000 effects. There will also be a sound collection from the Francis Ford Coppola motion picture production company (the American Zoetrope Collection) with sounds from classics like *Apocalypse Now* and more.

Contact: Hollywood Edge at **www.hollywoodedge.com**. Circle *EQ* free lit. #145.

KRK

KRK is shipping the V4 and V88 powered monitors. The V4 comes with separate amplifiers for both woofer and tweeter and video shielding. A Neutrik Combo connector has increased flexibility for both balanced and unbalanced signals. The V88 comes with two 8-inch woofers and (biamped) will pump 160 watts for low frequency and an additional 60 for the tweeter.

Contact: KRK at **www.krksys.com**. Circle *EQ* free lit. #146.

KURZWEIL MUSIC SYSTEMS

Kurzweil's new KSP8 multi-bus effects processor is an 8-channel, rackmount signal processor with real-time control. The 8-channel multieffects processor packs double the processing power of the KDFX system, and features four analog I/O and stereo AES/EBU I/O, for a total of six possible channels. There is also the option of expanding the unit with four additional channels of analog I/O or eight channels of Alesis lightpipe I/O, TASCAM TDIF, or AES/EBU I/O.

Contact: Kurzweil at **www.kurzweilmusicsystems.com**. Circle *EQ* free lit. #147.

LISTEN, INC.

Listen's SCM-1 is a robust, omnidirectional microphone with a 5.4-mm prepolarized condenser cartridge incorporating a gold, vertically mounted diaphragm designed to withstand high humidity and temperature conditions. The SCM-1's frequency response is

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20 Hz to 20 kHz ±2 dB, and its noise floor is 26 dB.

Contact: Listen, Inc. at **www.listen-inc.com**. Circle *EQ* free lit. #148.

MACKIE DESIGNS

Mackie Designs will be showing their first nonlinear, nondestructive 24-track hard disk recorder for under $2,000, the MDR24/96. The 24-bit/24-track hard disk recorder will carry an introductory price of $1,999, and features 24 tracks (192 virtual), 100 minutes of continuous recording, a 20 GB internal disk with pullout bay for extra Mackie removable hard drives, a 100baseT Ethernet port, 3.5-inch drive bay for importing tempo maps and upgrades, and up to 999 steps of undo.

Contact: Mackie at **www.mackie.com**. Circle *EQ* free lit. #149.

MARTIN AUDIO

Martin Audio is launching the Blackline Series of portable loudspeaker systems. This series draws on the design expertise of the company's top touring concert enclosures, enabling musicians and DJs to benefit from Martin's engineering heritage. The Blackline series is centered around the F12, a versatile and compact two-way system with built-in tripod socket. Ergonomically-designed around a 12-inch LF driver and 1-inch compression driver, while mounted on a rotatable 80-degree x 50-degree constant directivity HF horn, the F12 delivers high-output, full-range sound.

Contact: Martin Audio at **www.martin-audio.com**. Circle *EQ* free lit. #150.

MARTINSOUND

The MonitorMax Stereo Monitor Controller is designed to add multiple stereo source monitor selection and talk-back capabilities for studio environments. It has ten stereo sources; eight at +4 dB and two at –10 dB (which are adjustable).

The PanMAX automated surround panner gives the ability to make in-depth repeatable dynamic sound motion and parameter changes in audio production. It comes with eight outputs (standard) and expands to up to 16 input channels.

Contact: Martinsound at **www.martinsound.com**. Circle *EQ* free lit. #151.

MEDIAMATRIX

Peavey's MediaMatrix division will be showing their new Feedback Ferret. It's a software algorithm that comes (free) with the MediaMatrix DSP-based systems. The Feedback Ferret features 16 precision filters, dynamic filter allocation, and "plug-and-play" setup.

Contact: MediaMatrix at **www.peavey.com**. Circle *EQ* free lit. #152.

MERGING TECHNOLOGIES

Merging Technologies will be releasing their Version 4.0 software for the Pyramix Virtual Studio digital audio workstation, which provides higher performance versions of the Mykerinos DSP audio card. Version 4.0 features multi-board support, DSD multi-track capability, DUALAnalog + AES-EBU daughter card, and new plug-ins such as strip tools, bus tools, mastering peak/VU meters, and phase correlator.

Contact: Merging Technologies at **www.merging.com**. Circle *EQ* free lit. #153.

METRIC HALO

Metric Halo will show their

THE 1604-VLZ® PRO

or one of its VLZ® PRO Series siblings with ultra-high headroom XDR™ mic preamps

CAN HELP YOU SOUND BETTER

assuming you practice once in a while and stay somewhat in tune most of the time.

Meet the industry standard for 16-channel mic/line mixers. Low noise. High head room. Superb mic preamps. The best tech support in the industry. And a solid ten-year track record of reliability.

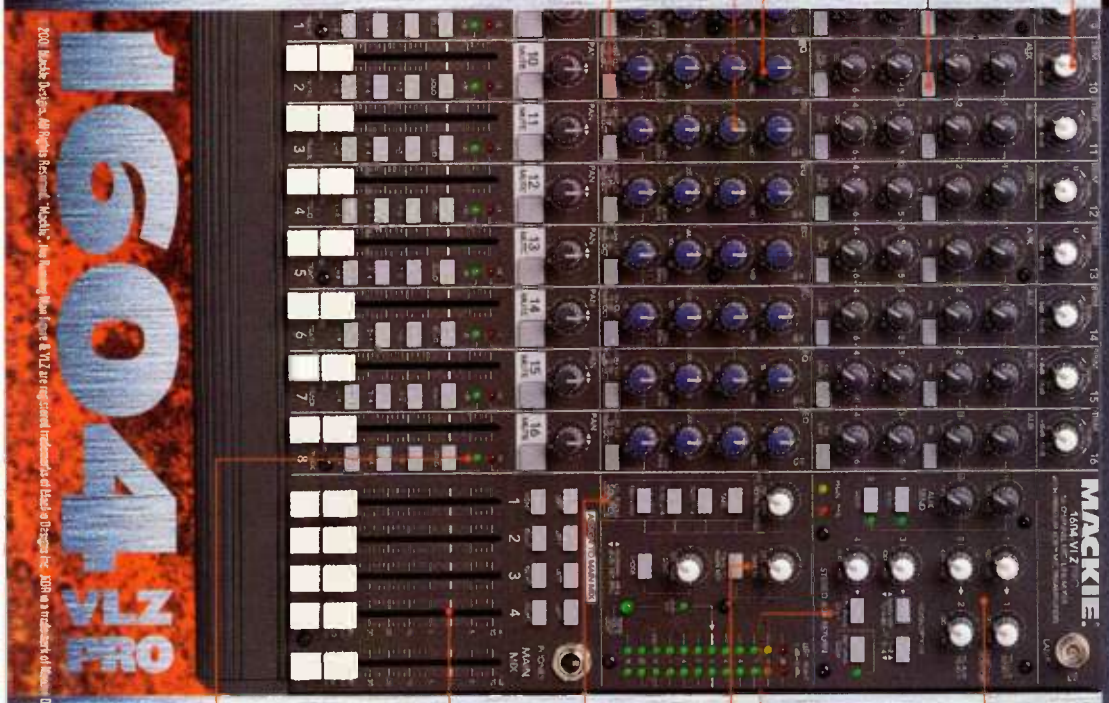
Suh-weet-sounding 3-band EQ on every channel. Swept mid EQ has ultrawide 100Hz-8000Hz range.

Sealed rotary controls resist dirt, smoke and miscellaneous spooge.

Sharp cutoff filters cut stage rumble, mic stand clunks and P-pops without sacrificing bass.

Easy level setting. Maximize headroom and minimize noise quickly via Channel solo and Trim control. Up to 60dB of gain for boosting timid vocalists. -10dB "virtual pad" for toning down drummers.

Six aux sends per channel (four available at any one time). Two auxes are pre/post switchable.



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Ultra-sensitive signal present LED on every channel lets you monitor inputs at a glance. **OL** LEDs, too.

Dust and smoke-resistant **logarithmic-taper 60mm faders** for accurate control and long wear.

Inside: **VLZ® design** minimizes thermal noise at key points in the circuitry. **Negative gain mix amp architecture** prevents overload when feeding all channels with hot inputs.

Control Room/Phones source matrix lets you create monitor mixes or remote feeds with any combination of the main mix, Subs 1 & 2, Subs 3 & 4 and tape inputs routed to separate bal./unbal. stereo outputs.

Separate **Tape to Main Mix switch** with independent level control.

Route Aux Return 3 to main mix, Subs 1 & 2 or Subs 3 & 4. Route Aux Return 4 to main mix or Control Room/Phones matrix only.

EFX to Monitor lets performers on stage hear a different level of effects than is in the main PA mix.

On the back: **sixteen premium XDR™ mic preamps.** Incredible 130dB dynamic headroom, ruler-flat frequency response, lower E.I.N. noise specs at working 0dB to +30dB gain levels and the best Radio Frequency Interference protection of any compact mixer on the market today.

1604-VLZ® PRO

16 total chs.• 4-bus configuration • 16 XDR™ premium mic preamps • 16 mono mic/line channels • 3-band EQ with swept mid, 75Hz low cut filters and inserts on all chs. • 6 aux sends per ch. • 4 stereo aux returns with EFX to Monitor and bus routing options • Control Room/ Phones source matrix • 60mm log-taper faders • 3-way rotatable I/O pod for rack or table use

1642-VLZ® PRO

16 total chs.• 4-bus w/double-bussed outputs • 10 XDR™ mic preamps • 8 mono mic/line level channels • 2 hybrid mono mic and mono/stereo line level channels • 2 mono/stereo line level chs.• 3-band EQ w/swept mid on mono channels & 4-band EQ on stereo channels• 75Hz low cut filters on mono chs. • 4 aux sends per ch. • 4 stereo aux returns with EFX to Monitor • Ctl Rm/ Phones matrix w/level controls • 60mm log-taper faders

1402-VLZ® PRO

14 total channels • 6 XDR™ premium mic preamps • 6 mono mic/line level chs. • 4 mono/stereo line level chs. • Extra ALT 3-4 stereo bus • 3-band EQ • 75Hz low cut filters on mono chs. • 2 aux sends per ch. • 2 master stereo aux returns with EFX to Monitor • Ctl Rm/Phones source matrix • 60mm log-taper faders • Switchable AFL/PFL

1202-VLZ® PRO

12 total channels • 4 XDR™ premium mic preamps • 4 mono mic/line level chs. • 4 mono/stereo line level chs. • Extra ALT 3-4 stereo bus • 3-band equalization • 75Hz low cut filters on mono chs.• 2 aux sends per ch. • 2 master stereo aux returns with EFX to Monitor • Ctl Rm/Phones source matrix • Rotary gain controls • Built-in power supply

Perfect match for the 1604-VLZ PRO: our SRM450 Active 2-way loudspeakers. Extreme output. Astonishing accuracy. Wide dispersion so your whole audience hears the same great sound.

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MACKIE

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CIRCLE 87 ON INFO CARD

new FireWire-based audio interface, the Mobile I/O. It's designed for field or studio use, and features an upgradeable audio engine, 18 simultaneous inputs, and 20 simultaneous outputs (eight mic/line/instrument analog, eight ADAT optical, stereo digital AES/EBU or S/PDIF, and stereo headphone out).
Contact: Metric Halo at www.mhlabs.com. Circle *EQ* free lit. #154.

MIPRO

MIPRO's ACT-707 PC-controllable UHF wireless system is a multipurpose product that features an LCD panel, and uses their "Automatic Channel Targeting" operating frequency selection system. The one-unit mainframes are able to house four individual (hot-swappable) diversity receiver modules, a built-in mixer, an antenna divider, and power supply. Receiver modules are preset with 100 user-selectable frequencies, and are able to access up to 960 computer select frequencies.
Contact: MIPRO at www.mipro.com. Circle *EQ* free lit. #155.

MXL MICS

MXL Mics, a division of Marshall Electronics, has created the new MXL-V69G vacuum tube condenser microphone. The large diaphragm, pressure-gradient mic comes in a 25 mm capsule size with a frequency response of 17 Hz–22 kHz. Output impedance is 200 ohms. The MXL-V69G ships in two colors, black and gold.
Contact: MXL Mics at www.mxlmics.com. Circle *EQ* free lit. #156.

NAGRA USA

Nagra V is a portable hard disk recorder that improves upon the earlier Nagra IV-STC. Offering an option to R-DAT format, this new tapeless hard disk recorder uses Castlewood ORB 2.2 gigabyte removable hard drives to store over two hours of either 24- or 16-bit PCM digital audio at sampling frequencies of 48 kHz and 44.1 kHz with ±0.1% speed variation.
Contact: Nagra at www.nagrausa.com. Circle *EQ* free lit. #157.

Nagra V

NEMAL ELECTRONICS

Nemal Electronics will be offering an upgraded multi-pin connector, the NE3700M male 37-pin. The connector is suitable for use in both indoor and outdoor environments, and features an extremely rugged machined body, military spec black plating, and a completely weatherproof insert. It's part of a complete family that includes both cable and panel-mount versions with either crimp or solder contacts. Nemal offers a large selection of strain relief options to accommodate various cable diameters and applications. Accessories include dust caps, fanouts, and break out boxes to XLR connectors.
Contact: Nemal Electronics at www.nemal.com. Circle *EQ* free lit. #158.

PEAVEY ELECTRONICS

Peavey Electronics' Architectural Acoustics division is introducing the SES 212, a full-range harmonic generator. It creates a bass one octave below the normal bass components. Its subbass amplitude envelope is manipulated by sampling the original bass and producing a control voltage that forces the newly created subbass to track its level. It comes with balanced XLR and modular Euro-type connectors for the left and right inputs and outputs, as well as a balanced subwoofer out. The unit takes up one rack space and has an internal power supply.
Contact: Peavey at www.peavey.com. Circle *EQ* free lit. #159.

PRIMACOUSTIC

Primacoustic is introducing their Australis corner bass trap. It's a 12-inch x 12-inch x 36-inch trap constructed from high-density, open-cell urethane foam. Designed to be an addition to a studio with 2-inch and 3-inch treatment, the Australis corner bass trap works on what Primacoustic describes as the "300 Hz problem whereby 2-inch and 3-inch foam is effective above 500 Hz but causes a spectral imbalance by darkening the high end without taking out bass." The Australis is intended for mounting in corners and at ceiling joints.
Contact: Primacoustic at www.primacoustic.com. Circle *EQ* free lit. #160.

PRIMERA TECHNOLOGY

The latest product from Primera Technology is the SignaturePro CD color printer. It has twice the print resolution, print speed, and ink capacity of their Signature IV unit. It features 2400 x 1200 dpi, and the ability to print full-color 100% coverage in 16 seconds.

Their newest optical disc duplicator is the ComposerPro. It features high-capacity, two-drive performance for duplicating and printing CD-Rs or DVD-Rs in volume.

Serious Players.

The Music Player Network is for serious players. From guitars, bass, keyboards and recording to computer music culture, dance, trance and more. • Our industry-leading magazines, *Guitar Player*, *Keyboard*, *Bass Player*, *Gig*, *MC²*, *Rumble*, *EQ* and *Extreme Groove*, take the art of playing music seriously. And so does our leading portal website, MusicPlayer.com. • Our editors and writers are experienced musicians and engineers with special insights and hands-on experience that only comes from real-time playing. • Get serious about your playing. Check us out at a newsstand near you or visit us on the web at MusicPlayer.com, guitarplayer.com, bassplayer.com, keyboardonline.com, mc2mag.com, gigmag.com, extremegroove.com and eqmag.com.

MPN
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Contact: Primera Technology at www.primeratechnology.com. Circle *EQ* free lit. #161.

PRISM SOUND

Prism Sound's new ADA-8 is a modular analog and digital converter for recording, mastering, and audio post-production. Prism describes it as a "general purpose multichannel converter and processor." The unit features four-module slots that can be configured as an 8-channel A/D-D/A, 16 channels of A/D or D/A, or as a D-D digital format converter.

Prism's dScope Series III system has a comprehensive digital generator-analyzer with both analog and digital interfaces. It is designed to provide "standard and custom signals, including multi-tones, arbitrary waveforms, special sequences, pseudo-random signal, modulated signals, and the Prism Sound J-TEST signal." **Contact:** Prism Sounds at www.prismsound.com. Circle *EQ* free lit. #162.

ROYER LABS

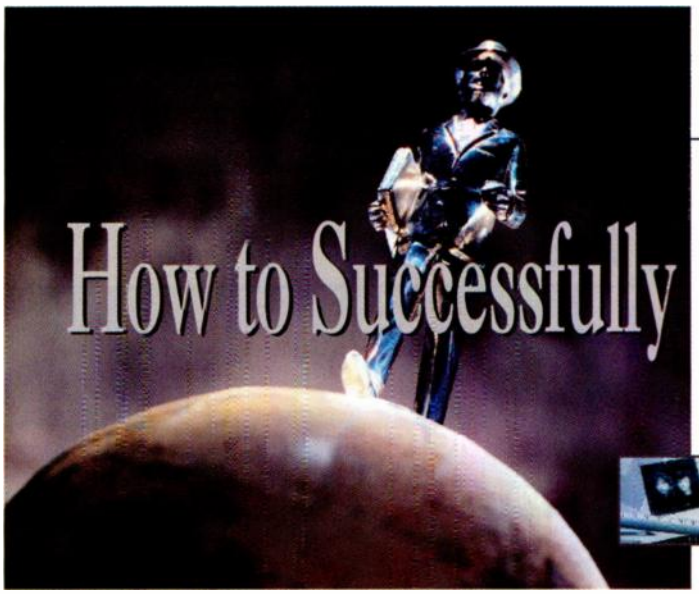
Based on current Royer ribbon mic models, Royer Labs will be introducing the world's first *active* ribbon microphones at AES. The R-121A, SF-12A, and SF-1A models are phantom powered with gain and impedance matching, and contain head amplifiers. The head amplifiers will be fully balanced with low-noise FETs. The new series of mics are designed to "impose optimal load on the ribbon element" — which is a solution for dealing with inconsistency in regards to mic pres. **Contact:** Royer Labs at www.royerlabs.com. Circle *EQ* free lit. #163.

SENNHEISER

Sennheiser has a new transmitter, the SKP 30 miniature plug-on. It's designed to convert traditional "wired" microphones into wireless versions. The plug-on unit is simply "plugged

▶ continued on page 126

CIRCLE 11 ON INFO CARD



Some thoughts from Oasis Duplication:

How to Successfully Duplicate & Promote YOUR CD RELEASE

Here are seven great ideas to improve the success of your next CD release

1. THINK "RETAIL-FRIENDLY" WHEN PACKAGING YOUR CD. Your CD needs to look as good as it sounds. Here are a few tips to help you get your project in the door and onto retail display shelves. **Affix top spine stickers** to your packaging, just like the major labels do. (A top spine sticker is the strip of white tape along the top of a CD package that displays your name, album title and bar code number.) **Order a bar code** for your CD. (Oasis offers free bar codes to our clients.) **Make sure the packaging fits in standard-size CD holders** and displays. (All of Oasis' eco-packaging—except the unique Rough-Look—fits into standard displays. What's more, we give you ten retail-ready counter displays with every CD duplication order.)

2. MAKE THEIR EYES POP! To create the most eye-catching package you've ever seen, substitute Oasis' exclusive **aluminum-coated jewel-box trays** for standard jewel-boxes in your packaging design plans. Your CD will practically pop off the shelf!

3. CONSIDER ALTERNATIVES TO THE JEWEL-BOX. The cardboard packages recently developed by Oasis can give your product a unique and eye-catching appearance. The Oasis **Jewel-Free™ Box** (six graphics panels of cardboard plus a patent-pending tray), the Oasis **Rough-Look™** (funky brown, very-recycled cardboard), and the Oasis **Soft-Spot™** (an unprecedented EIGHT graphics panels of cardboard plus a hexagonal hub to hold the CD securely) are three of the top alternative eco-packages offered in the industry.

4. CONSIDER UPGRADING TO AUDIOPHILE-QUALITY GLASS CUTTING. Glass cutting is a critical step in CD replication, and many experts and "golden ear" listeners believe that using **direct, single-speed glass** produces the highest level of audio integrity and the best fidelity. Oasis offers the standard high-speed glass (which is the only type of glass you can get from any of our major competitors) at no additional charge, but will also—for a modest fee—upgrade your project to direct, single-speed glass. (If you choose single-speed glass, be sure to let people know! Download the **"Single-Speed Glass by Oasis"** logo from our website–the link is at **oasisCD.com/singlespeed.html**–and include it in your traycard art so your customers can see they're buying the very best!)

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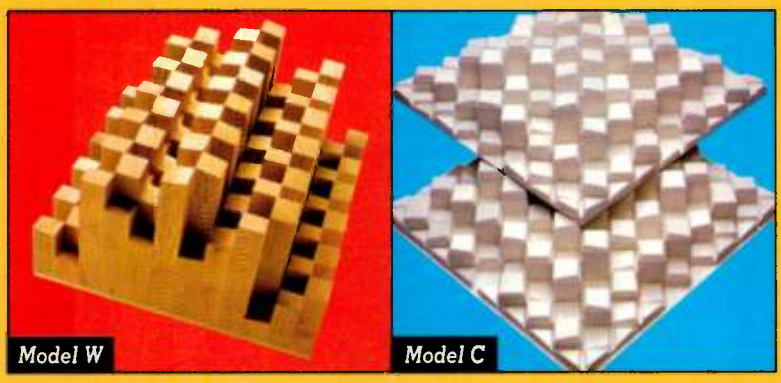

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SPECS AND FEATURES

SIGNAL PATH: Analog.
INPUTS: (2) 1/4-inch TRS balanced, (2) XLR balanced (10k ohms)
OUTPUTS: (2) 1/4-inch TRS balanced, (2) XLR balanced (10 ohms)
MAXIMUM OUTPUT: +28 dBv
REVERB: (2) 6-spring Accutronics tanks, internally mounted
CHANNELS: (2) Short Decay (1.5 seconds); Long Decay (3.5 seconds)
CHANNEL FEATURES: Input, Output, Mix, Phase Reverse, Hi-Pass Filter, overload LED
MODE CONTROLS: Input Stereo/Link switch; Output Stereo/Link switch
DIMENSIONS: Single Rack Space
S/N ratio: >90 dB
FREQUENCY RESPONSE: 20 Hz–20 kHz
THD: >0.1%

relationship between source and reverb. This technique is especially effective when you're using the box in one of the mono output modes. For a recent mix, I used the Real Reverb to enhance a fuzzed guitar riff that sounded somewhat thin. Simply EQing the riff caused other problems (such as conflict with the bass). The nature of the arrangement called for the fuzz guitar to be panned hard left — it sounded cool, but threw the mix out of balance. I sent the guitar to the Demeter's Channel 1 input, linked the two channels, and panned the reverb 75% right. The reverb added dimension and fattened up the sound enough to balance the mix, without burying the riff and taking away its impact.

I also got very good results using the short reverb on bass, which yielded some nice, deep, dub sounds. The short, long, and combined reverb settings were effective on vocals, synth, and sampled instruments such as horn and electric piano. The Real Reverb's decay has the kind of smooth bloom you'd associate with a very nice plate, but without that metallic "clang" that many digitally emulated plates seem to have. There's less of the edge and reflection than you'd get from a room reverb. Think of it like this: Instead of creating space, the Real Reverb creates dimension.

Percussion was the one source that gave away that the Demeter's inside were made of springs. Drums made the

► continued on page 126

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WRH

By Martin Davidson

Vintech X73 Mic Preamp/EQ

Vintech reproduces the classic Neve 1073 in an affordable package

In the audio world, a few select pieces of gear stand out as the standards by which all others are judged. For compressor/limiters, the Teletronix LA-2A and the Urei 1176 should certainly be considered standards, while the redoubtable Fairchild 670 claims the title of most desirable (and most expensive) bus limiter. Microphone aficionados would likely dispute whether the "standard" should be a Neumann U 47, an AKG C-12, or perhaps an ELAM 251. And when great microphone preamps with EQ are discussed, Rupert Neve's 1073 modules (along with modules from Trident "A" range desks) are often held up as the pinnacle of the designer's art. These pieces of equipment share certain bonds — they're all long out of production, all became hideously expensive as the vintage gear craze hit its stride in the mid-'90s, and new versions of each are now being sold.

For most folks who use them regularly, the Neve 1073 is something different from any other preamp available. A wise man (well, Fletcher at Mercenary Audio) once wrote: "The beauty of most Neve modules is that Rupert Neve built modules that couldn't be used to make things sound bad. There are generations of engineers who look like incredible geniuses because Neve wouldn't allow us the tools to screw up our audio." This is part of the magic of the 1073; that almost everything sounds better after passing through one. So when Vintech Audio started manufacturing a microphone preamp based on the 1073, it seemed to be worth checking out.

The Vintech X73 is a one-rack-space unit, with a separate power supply connected via a 4-pin XLR cable. (The PS, by the way, can power up to four X73 modules.) From left to right, the front panel has a 1/4-inch instrument input and controls for gain, high shelving EQ, mid EQ, low shelving EQ, high-pass filter, and output level. The three EQ controls have stacked knobs, with the outer knob determining the frequency and the inner knob the amount of boost or cut. To the left of the output volume are toggle switches for phantom power, phase reverse, and EQ bypass.

VINTECH X73

MANUFACTURER: Vintech Audio, 4905 Reagan Ave., Seffner, FL 33584. Tel: 877-464-2773. Web: www.vintech-audio.com.

SUMMARY: An excellent reproduction of an original Neve 1073 preamp, with a couple of nice extra features.

STRENGTHS: Well built. Superb job of emulating the Neve 1073. Nice price compared to the original.

WEAKNESSES: No XLR jack for line input.

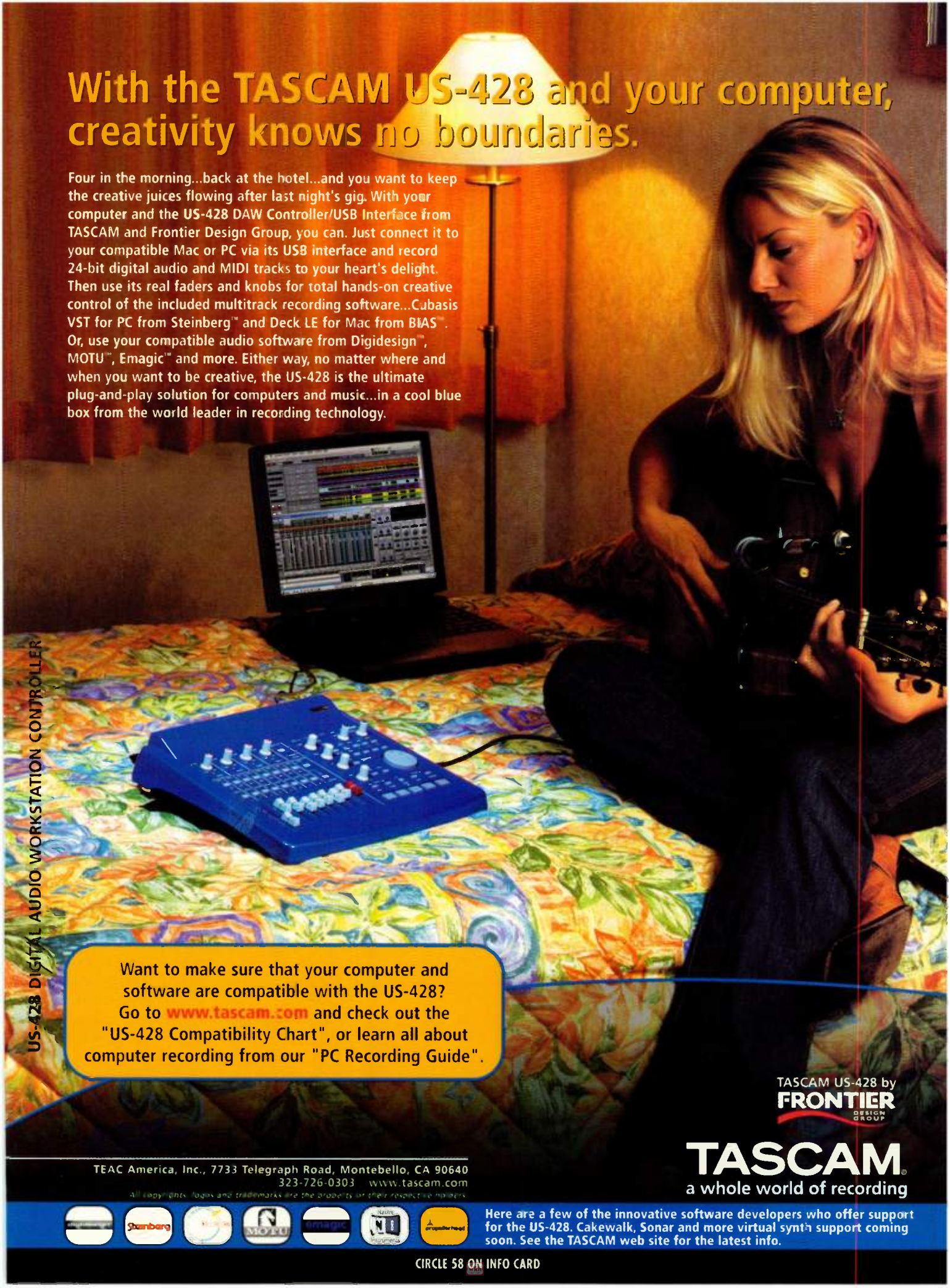
PRICE: $1,995 (power supply $225)

EQ FREE LIT. #: 101

In addition to a power indicator (an on/off switch is located on the power supply), there's also a 5-segment LED meter. The blue-gray color of the X73 and the silk screening are definitely reminiscent of pre-1977 Neve modules, though the Vintech version uses its own milled aluminum control knobs rather than the old Neve knobs.

The main input control will be familiar to those who have worked with one of the original Neve modules — the stepped control starts with line level settings from –20 to +10, then an off position before mic levels begin. The first stage of mic pre settings increments from 20 to 50 dB of gain, where there's another off position before the final stage of 60 to 80 dB of gain. For those who are interested in this sort of thing, the second "off" position is the point at which another preamp stage is added to the circuit — this extra amplification is part of the characteristic sound of the legendary Neve pre (not 1272's or other Neve circuits that have been modified for use with microphones, but true Rupert Neve-designed Neve preamps), and part of the reason that the 1073 can handle such outrageous amounts of gain — 80 dB — where most preamps offer 40 dB or, at most, 60 dB of gain.

Electronically, the Vintech X73 is not an exact clone of an off-the-shelf 1073 in a couple of areas — I hesitate to use either the words "enhanced" or "improved," but Vintech has added a couple of useful mods to the EQ section. First,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the high-band EQ on a 1073 is a 12k shelf; on the X73, the high band is switchable between 10, 12, 14, and 16 kHz. On the mid band, the X73 has added a 10 kHz band to the standard 1073 bands of 360 Hz, 700 Hz, 1.6 kHz, 3.2 kHz, 4.8 kHz, and 7.2 kHz. The low shelving EQ offers 35, 60, 110, and 220 Hz bands, and the high-pass filter can be set to 50, 80, 160, or 300 Hz. All bands (and the high-pass filter) also have an "off" position.

The rear panel of the X73 is quite simple — there are XLR connectors for mic input and the output, a 1/4-inch TRS line input, and the 4-pin power connector.

The interesting bits, of course, are inside the unit. From the stepped resistor pots to the inductors, Vintech appears to have duplicated the design of the Neve 1073. Even the transformers (labeled as Carnhill) appear, except for the label, to be the same as those of inside a vintage unit. The only changes in the circuitry seem to be those where original components are no longer made; in those cases, higher quality components with tighter tolerances have been substituted for the originals.

I compared the Vintech X73 with a vintage Neve 1073 (in a Boutique Audio Design rack) from Gear For Days, a Nashville rental house. Under normal circumstances, the usual comparison caveats would be mentioned — the disparity in the age of the components, possible mods (for better or worse) or hamfisted repairs that may have been done to vintage units, the fact that, with some gear, the power supply can make a difference, etc., but it doesn't matter in this case. The Vintech sounded like the Neve. When comparing the two mic preamp sections without EQ, the differences between the old and new preamps were less than the typical differences between any two old pieces of gear, or between two consecutive performances by a talented singer. I thought that the Neve seemed to have perhaps a wee bit less headroom than the Vintech — it sounded as though its transformers were beginning to saturate a bit earlier than the newer model. This could be due either to the differences between the Neve transformer and the Vintech, or because the some of the components in the Neve have begun to deteriorate after all these years. Even the character of the distortion (when the transformers saturated) was similar between the two preamps.

With both preamps, I found that gain staging is an issue that needs to be watched — both preamps sounded best when the output stage was wide open (or close to it), and the level set with the stepped input control. For a grittier sound, of course, turn the output down and the input up. The DI input on the Vintech is amazing, by the way. Even without EQ, the DI sounds as good as any direct method for recording bass that I've ever used.

The EQ sections of the vintage Neve and the Vintech were just as close to each other as the pre section, if you choose not to use the 10 kHz mid band or the extra high-frequency positions found on the Vintech. If you do choose to experiment with the Vintech modifications, you'll find that those bands are as usable as the original 1073 frequencies.

It's human nature to find something to complain about, and being as human as an engineer can be, I must question a couple of things. The first is that line input is on a TRS jack only — no XLR. This is fine for DI applications, but when using the X73 as an EQ in a professional audio environment, an XLR line input jack would be more appropriate. The other issue concerns the knobs on the front panel. They're well crafted, feel sturdy, and look great. Each knob has an engraved line to show the setting — but I found that line to be a bit difficult to see. However, Vintech tells me that this has been fixed since I received my review unit, so I guess my complaint is for naught.

With a list price of $1,995 (the power supply sells separately for $225), the Vintech X73 isn't an inexpensive box. But if you want the sound of a classic Neve preamp without paying the $3,000–$4,000 per channel premium price that vintage 1073 modules are bringing these days, the X73 is a viable alternative. It's built like a tank and sounds like the product it's built to emulate. I was knocked out by the sound of the box. As a mic pre, as an EQ, and as a DI for bass or synth, the X73 is all that I could ask for. ■

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SPECIFICATIONS

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S/N RATIO:	79 dB, A-weighted (referenced to 1 Pa)
IMPEDANCE:	35 ohms
POWER REQUIREMENTS:	+48-volt DC phantom

MBNM 608 CL for a variety of vocal sessions. With the pickup pattern set to cardioid and the mic placed six to eight inches from the vocalist, the MBNM 608 CL had a sense of immediacy without adding a ton of coloration (if you're looking for some magical vocal "sound," look elsewhere). When set to figure-eight for a backing vocal duo (one singer on either side of the mic), the front of the mic was slightly brighter than the rear, but the effect was very subtle. Set to omni for a group backing vocal, the front was noticeably brighter than the sides; sound at the rear was not so much "dull" as it was less "present," or lacking some "air."

The EA22 shock mount is a very simple, yet effective, device, and includes a small lever that keeps the pivot nut from loosening unintentionally. (I'd like to see this more often on shock mounts.) Securing the MBNM 608 CL into its shock mount is simply a matter of sliding the mic into the tube of the mount and gently tightening two rotating collars on either end of the tube. This presents a problem in terms of changing the pickup pattern of the MBNM 608 CL. The pattern switch is a small, three-position slider recessed into the microphone body. When you slide the mic into the EA22, this switch is covered — so you'll have to loosen the collars and slide the mic out of the mount to change the pattern. You may also need to disconnect the cable, depending on the size of the connector. It's a bit of a pain. The pattern switch slider would benefit from a white dot to indicate its setting, because when you move it to omni or figure-eight, it's not easy to see which pattern has been selected.

If you don't want to pop the bucks for the EA22, you can use any generic clip that holds a mic of 21-mm diameter, but I'd recommend getting the shock mount since it definitely reduces the amount of mechanically transmitted vibration reaching the capsule.

MBHO's MBNM 608 CL is an excellent microphone that should be auditioned by anyone requiring a high-quality, multipurpose mic. Its greatest strength is that it does such a good job of reproducing a wide variety of acoustic sounds. This makes it a smart choice for engineers who can't afford a huge variety of mics. This advantage is amplified (pun intended) by the lack of self-noise, which gives the MBNM 608 CL an edge for recording quiet instruments. Though it may be in a price bracket where the competition is stiff, the MBNM 608 CL is definitely up to the challenge. ■

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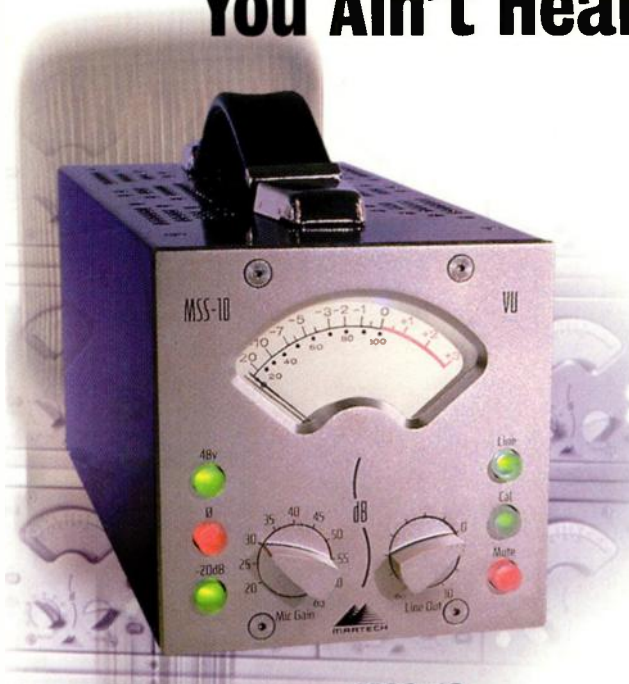

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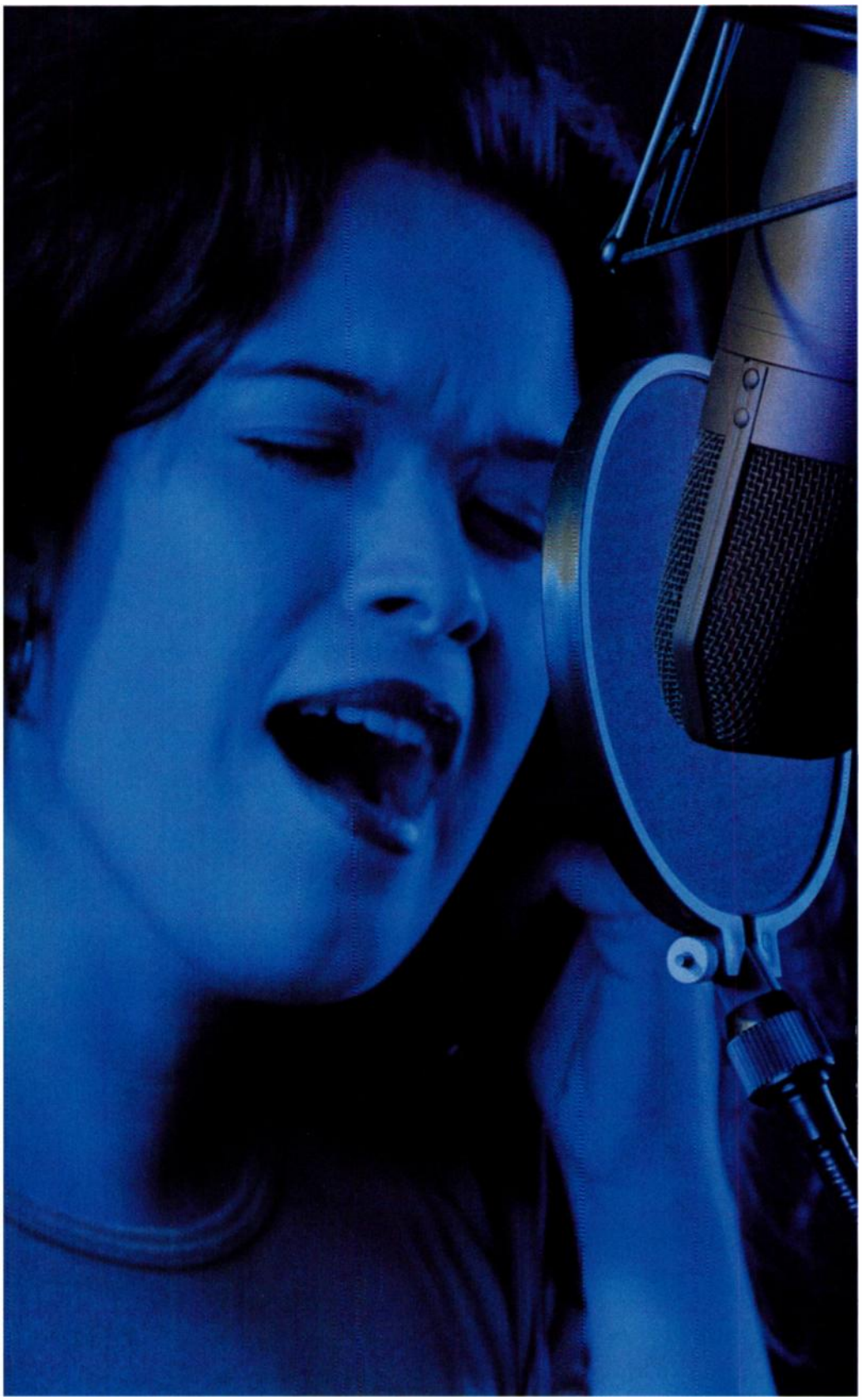

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Breaking the Law

Any experienced engineer can tell you that it's a combination of technical skills and attitude that help you keep a gig. Dealing with a maximum SPL is a perfect example. I'm not one to mix at ear-shattering levels, and there's always some drunken fool near FOH screaming, "Turn it up!" But when there's a steady stream of folks walking up to the mix position complaining that they can't hear the PA, maybe they have a legitimate gripe.

Such was my experience a few weeks ago in Long Beach, CA, where the speed limit was 90 dB — a joke given the nature of the band's stage volume. I figured I'd grin and bear it because [a] Mom would be really upset if I got arrested for something lame like disturbing the peace, and [b] I'm representing my band. When the intro tape rolled, I was already at 92 dB, and the promoter asked me to turn it down — to which I replied, "Sure." When the first few audience members complained they couldn't hear the band, I politely referred them to their local congressman. As complaints continued, the systems engineer explained to the promoter that an unhappy audience would not return to the venue — in which case everyone loses. The promoter realized this and decided to let me open it up a bit (which was about all the system could produce anyway).

Luckily for me I hadn't lost my cool over the situation even though I knew it was absurd from the get-go. The promoter liked the fact that I respected his wishes, which made him trust me when opening up the throttle. The end result was the same as if I had screamed about it, but the good attitude helped make sure we'll be invited back.

—Steve La Cerra
slacerra@uemedia.com

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EQLIVE: NEW PRODUCTS

SUMMER NAMM 2001 EDITION

AUDIO TECHNICA 1400

THE PRODUCT: Audio-Technica 1400 Series
THE BASICS: UHF true diversity wireless microphone systems
THE DETAILS: Audio-Technica has added the ATW-1453 dual transmitter system to their 1400 Series UHF true diversity wireless microphone series. The ATW-1453 covers the bases with this new kit that supplies an ATW-R14 true diversity receiver, an ATW-T51 UniPak transmitter, ATW-T52 handheld dynamic microphone/transmitter, and an AT831 lavalier mic. True diversity reception provides two independent RF sections, interference-resistant UHF band operation, and balanced and unbalanced audio output jacks.
CONTACT: Audio-Technica at www.audio-technica.com. Circle EQ free lit. #175.

CREST AUDIO CPX SERIES

THE PRODUCT: Crest Audio CPX900, CPX1500, and CPX2600
THE BASICS: CPX Series power amplifiers
THE DETAILS: Crest is offering three new power amps. The CPX900 provides 450 watts per channel at 2 ohms, and 900 watts at 4 ohms, bridged mono. The CPX1500 pushes 750 watts per channel at 2 ohms, and 1500 watts at 4 ohms, bridged mono. The CPX2600 pumps 1300 watts per channel at 2 ohms and 2600 watts at 4 ohms, bridged mono. Amps in the series feature a rear-panel defeat switch, built-in crossover, 150 Hz/24 dB per octave Linkwitz-Riley filter, and individual in/out switch for channels A and B.
CONTACT: Crest Audio at www.crestaudio.com. Circle EQ free lit. #176.

ELECTRO-VOICE ELIMINATOR

THE PRODUCT: Electro-Voice Eliminator i Series
THE BASICS: New amplifier and loudspeakers
THE DETAILS: The Eliminator i and ii come with full-range two-way loudspeakers providing 50 to 20,000 Hz frequency response. The i provides 350 watts of continuous power handling, and the ii handles 600 watts. Both feature 60-degree by 40-degree coverage, a 1600 Hz crossover frequency, and 50 Hz enclosure tuning. The Eliminator kW has a frequency response of 35 to 160 Hz, 800 watts of continuous power, 2 DI18MT drivers, and enclosure tuning to 38 Hz.
CONTACT: Electro-Voice at www.electrovoice.com. Circle EQ free lit. #177.

MACPHERSON

THE PRODUCT: MacPherson M12C-Series
THE BASICS: New Loudspeaker series
THE DETAILS: MacPherson is now shipping their new M12C Series of loudspeakers. The M12C is setup for biamplified sound, benefited by internal filters on the HF section to lessen further external processing. The M12CP's internal crossover also adds full-range operation through a single amplifier channel. The crossover (newly redesigned) adds clarity in the critical voice range. Both the M12C and M12CP give high-SPL reproduction in the sturdy package of 13-ply Baltic birch construction.
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BY **STEVE LA CERRA**

3C INNOVATIONS STEALTH MICROPHONES

Miking a drum kit in a live situation can be tricky business. In addition to mic placement and selection, there are concerns such as leakage from other instruments, finding space for a bunch of mic stands, and, of course, the need for the FOH system to have enough processing (*i.e.,* gates) to accommodate the kit. The Stealth line of compact microphones from 3C Innovations is designed to solve some of these problems, while providing a few extras along the way.

Several Stealth microphones are available: the S-1 (designed for snare), P-2 (bottom snare), T-1 (toms), and K-1 (kick). Each utilizes a studio-quality condenser element tailored to its purpose. The S-1 and T-1 are built into high-impact housings that clamp directly to the drum's rim (without modification) using a standard drum-key-operated screw. A Stealth housing contains all the electronics for the mic, yet protrudes over the drum head by only about one inch. Maximum SPL for the S-1 and T-1 is 150 dB SPL. The P-2 is cleverly designed to attach to the S-1 housing using a standard 1/4-inch TRS plug; it reaches underneath the snare drum via gooseneck. When the P-2 is plugged into the S-1 housing, audio from the two elements is internally mixed to a single output, and polarity of the P-2 is reversed to avoid phasing problems. The K-1 kick drum mic is furnished with a housing similar to that of the S-1 and T-1, but includes an 18-inch miniature gooseneck that passes through the drum's breather hole, enabling the mic to be placed inside the kick drum without the need to remove or make a hole in the front head. All Stealth mics are phantom powered and have an XLR output for connection to any standard mic input.

Stealth mics include 3C Innovations' proprietary SmartGate technology as well as their Vari-Q variable EQ circuitry. Two rotary knobs on the top panel of the mic are used for control of the SmartGate's adjustable threshold and decay time. The decay control features a defeat function — turning it completely clockwise removes the gate from the signal path. An LED indicates whether the gate is open or closed.

An 11-position detented switch controls the Vari-Q circuit. Vari-Q allows the user to sweep through three equalization curves specifically developed for each drum type. Four of the eleven positions are marked on the top panel as suggested starting points, and 3C Innovations' user guide/flight manual provides an explanation of the Vari-Q curves.

In addition to SmartGate and Vari-Q, 3C Innovations has included a separate 1/4-inch TRS trigger output. The trigger out can be used with virtually any drum module, and does not require phantom power to operate (though phantom power is always required when using the Stealth's primary features). All Stealth microphones are backed by a two-year warranty from 3C Innovations. ■

3C INNOVATIONS STEALTH MICROPHONES — FIRST LOOK

☐ **WHAT IS IT?**	A series of high-SPL condenser mics with built-in gate, EQ, and drum trigger. Stealth mics clamp on the drum and are phantom powered.
☐ **WHO NEEDS IT?**	Regional and touring sound companies, home studios, gigging drummers, and sound engineers who want to reduce set-up time and increase sonic quality of their drum sound
☐ **WHY IS IT A BIG DEAL?**	Stealth microphones are the first we're aware of with built-in noise gate and trigger outputs. They also include a choice of EQ curves.
☐ **SHIPPING:**	Fall 2001
☐ **PRICE:**	S-1 snare: $199; T-1 tom: $199; K-1 kick: $239; P-2 bottom snare: $59. Master Pak consisting of one S-1, three T-1, one K-1 and one P-2: $1,094
☐ **CONTACT:**	For more information, contact 3C Innovations at 888-241-8813 or visit www.3Cinnovations.com. *EQ* free lit. #179.

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taken from 'Le Génie du Christanisme' (1802)

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CIRCLE 38 ON INFO CARD

BY STEVE LA CERRA

TAYLOR GUITARS VIP PERFORMANCE AREA

TAYLOR MAKES ROOM FOR BETTER TONE

With a history of 28 years manufacturing some of the best solid-wood acoustic instruments available, the folks at Taylor Guitars have learned a few things about how an acoustic guitar should sound in a live performance situation. In fact, Taylor has gone to extremes to ensure that the sound of their instruments is presented accurately and consistently in a live environment by recently constructing the Taylor VIP Performance Area at their facility in El Cajon, CA. In building the VIP Performance Area, Taylor's goal is to allow their customers to hear the company's acoustic instruments in the optimum performance environment (which, of course, helps sell instruments to dealers and musicians), as well as providing an area suitable for the critical evaluation of acoustic guitar amplification. Along the way, Taylor learned a lot about sound reinforcement and acoustic guitar electronics, including a few things of which any live engineer should be aware.

LAMINATED VERSUS SOLID WOOD

TJ Baden, Taylor's senior VP of sales and marketing, explains, "Historically, people have used laminated guitars on the road because they have less acoustic resonance and, as a result, work well in large venues. Laminate is like plywood — you put a thin veneer of very pretty wood on top of some not-so-good-looking wood. It makes for an attractive instrument that doesn't consume all of your resources, but it really doesn't resonate very well. That fact actually helps in a live performance situation because it reduces the chance of feedback. It also means that the tone of the guitar is limited compared to the sound of a solid wood instrument.

"Taylor builds high-end, solid wood instruments that possess excellent resonance, and it's been our quest to make our instruments easy and consistent to use onstage. In the past, feedback has been a problem with solid wood instruments due to the fact that there's so much movement in the body — and artists didn't want to deal with that.

"Even the best of the electronics available today sound better on a solid wood instrument," Baden

> > > > >

I'm proud when someone tells me that they have an Ashly product that's still in service after twenty years, how our customer service people helped with an application, or how our Protea equalizer has changed the way they work.

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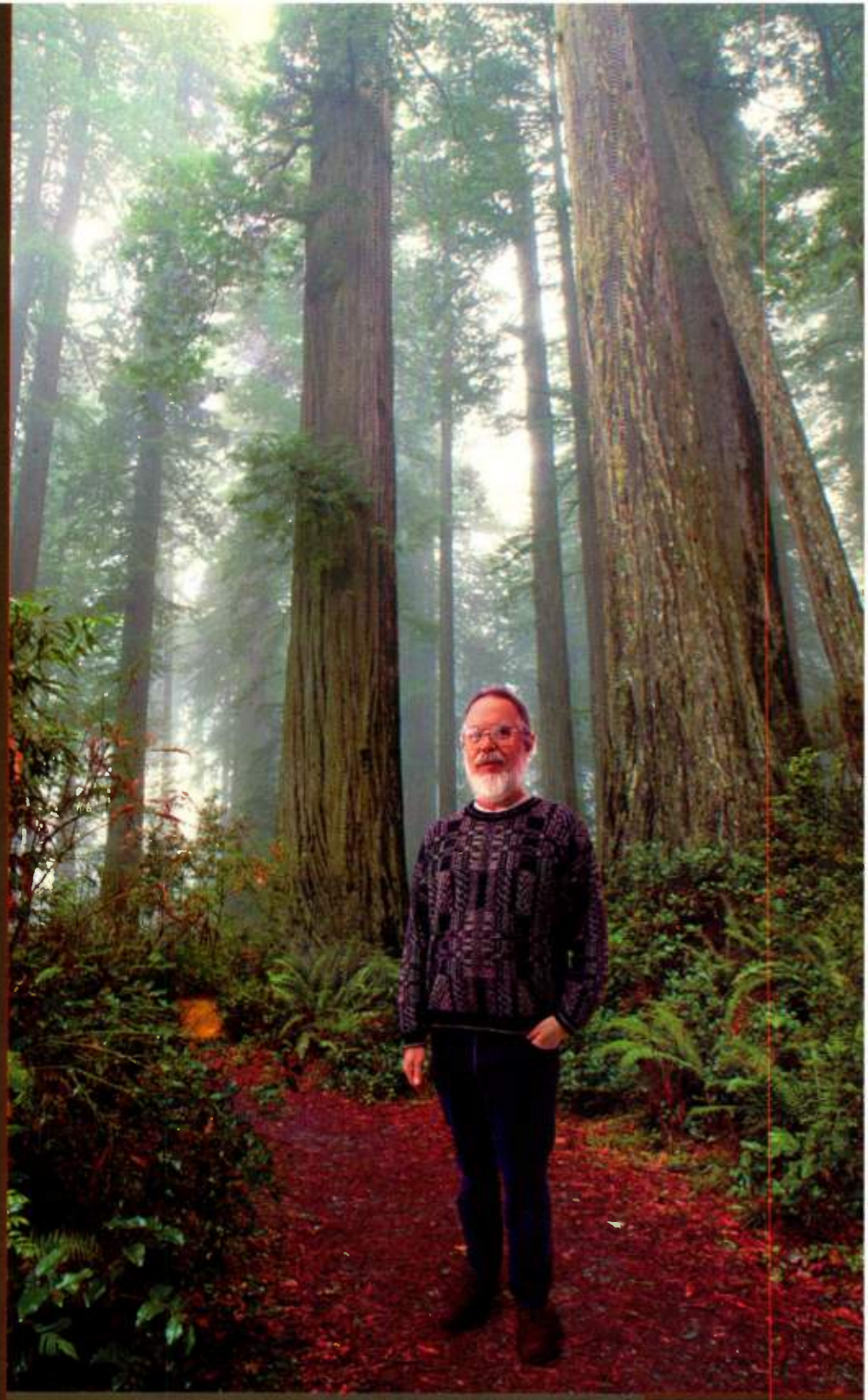
Thanks.

Bill Thompson

President, Ashly Audio, Inc.

(and just for the record, we think the Redwood trees in the picture are the perfect metaphor for Ashly...)



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WRH

TAYLOR VIP PERFORMANCE AREA

continues, "but they do color the sound quite a bit. We're really looking to positively influence the high-end pro audio community and to be able to start offering choices that allow the subtle nuances of our instruments to come through while allowing the player several tonal options as needed per application. In other words, we want to choose the color of our tone and offer additional choices for different environments.

"The concept behind the VIP Performance Area came from realizing that, to take our guitar sound to the next level, we needed to learn more about the various aspects of sound reinforcement and how it applies to acoustic guitar."

SOUND EQUIPMENT LIST

MODEL	DESCRIPTION	QUANTITY
Neumann KMS 105	Vocal mic	5
Neumann KM 184	Guitar and ambience mic	5
Sennheiser MD421	Dynamic mic	3
Meyer Sound CQ-1	Self-powered loudspeaker system	2
Meyer Sound LD-1	Line Driver Array Integration System	2
Meyer Sound LD-2	Compact Line Driver	2
Meyer Sound UPA-1P	Self-powered Ultra Series loudspeaker	2
Meyer Sound CP-10 Hodas Modified	Complimentary Phase Parametric EQ	2
Meyer Sound UMS-1P	Self-powered subwoofer	6
Meyer Sound UPM-1P	Self-powered loudspeaker	4
Meyer Sound UM-100P	Self-powered Ultra Series	4
Meyer Sound H2-1	Monitor	2
Midas Venice	24-input console w/case & Little lights	2
Manley Massive Passive EQ	Equalizer (house)	1
Amek 9098	Equalizer (house)	2
Sabine GRQ 3102	Equalizer (monitors)	1
Summit MPC-100A	Compressor/preamp (monitors & house)	1
Lexicon PCM-91	Reverb (house)	1
TC Electronic M-3000	Reverb (monitors)	1
Avalon AD2044	Compressor (monitors & house)	2
GML 8200	Parametric equalizer	2
Klark Teknik DN-360B	Graphic EQ (monitors)	4

MAKE ROOM

The VIP Performance Area is built in what was originally a 4,000-square-foot-room on the premises of Taylor's headquarters. Structurally, the room had a 30-foot ceiling that had been dropped down to 10 feet using a suspended ceiling (this was prior to the VIP design). According to Baden, the room had "about five seconds of decay — it actually hurt to speak in there, though at that time there were no furnishings inside."

Baden brought in acoustic designer Chris Pelonis to lay out the room and to provide the treatment for it. "For starters, we raised the ceiling to 15 feet," says TJ. "We then treated the extra 15 feet above the suspended ceiling by running eight foot strips of insulation flown from the structural ceiling, every four feet in four-foot rows across the whole 4,000 square feet. This would help absorb any low frequencies that might leak through the dropped ceiling. The result was a very clean industrial look like you might see in a restaurant, with exposed fixtures that are painted over to match.

"Our goal was to achieve the acoustic signature of a forest. Imagine walking through a thick forest — there's some ambience, but nothing comes back at you. We used theater curtains on the stage wall as a backdrop to reduce the amount of reflections, and also used an RPG DigiWave at the opposite end. This is basically a curved wall that looks like several 'S's chained together. The DigiWave is a 'Diffsorber' — it both diffuses and absorbs sound. We used RPG Skyline Diffusers above the stage area, and the floor is covered with standard industrial carpet. To accommodate PA and lighting, we brought in new, dedicated AC services that are isolated from each other as well as from the rest of the facility."

With a properly-designed listening space, Baden spec'd a new, state-of-the-art sound reinforcement system through Henry Austin, P.P.A. Inc. Independent FOH and monitor systems feature Meyer Sound mains and stage monitors, Midas Venice consoles, and an assortment of high-end processing that includes equipment from Klark-Teknik, Massenburg, Avalon, Sony, Manley, Lexicon, and TC Electronic.

Despite the fact that the room is still being tuned, TJ maintains that it's "shocking how pure and uncolored the sound is. It almost throws your senses because you're in a large environment with a high ceiling, yet it gives you the sensation of being in a smaller room. When you hear someone speak through a microphone, it's just the person, louder. Chris did an amazing job."

Building the ultimate live performance venue provided Taylor with a "lab" for testing acoustic-instrument amplification systems. "We've been putting electronics into guitars for forever," muses TJ. "The most common way to reproduce an acoustic instrument is using a piezo pickup. The problem with the piezo is that it's basically an on/off switch triggered by (guitar) top movement, so it tends to sound brittle. It works well in a large stadium or venue because it cuts through the mix. A microphone will give you the breath and warmth, but it's almost impossible to attain optimum mic placement, and then, on top of that, you have feedback

▶ continued on page 126

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CIRCLE 34 ON INFO CARD

Power Struggle:
Is Your AC Power Beating Up Your Sound?

Imagine life without electrical power. Visions of outdoor plumbing, underwear on the clothesline and being denied the pleasures of "Mysteries & Scandals" on the E! Entertainment Network float through your head. Not pretty thoughts, huh? We don't realize how much we depend on power until our taken-for-granted supply is interrupted by fluctuating voltage.

Thankfully, the AC power supplied to us by public utilities is meant for general use and is highly versatile. However, it was not meant for the specific needs of audio or computer systems. Most professional audio equipment will be adversely affected by the many anomalies found in AC line current. Following are some of the more common problems:

Spikes, surges and sags, oh my! A spike is a short pulse of energy with a voltage as high as 6000 volts and a duration of a few milliseconds. A voltage surge is a less intense but longer-lasting event. A sag, which is very frequent but short, is usually caused by a power-greedy electrical device, such as an air conditioner. The susceptibility of your equipment depends on a variety of things. As a general rule, the greater power draw of your device and the more rapid its on/off cycle, the more potential it has for causing a spike, surge or sag. Each month, a typical commercial facility will experience about 60 transients (spikes) and 50 surges of various severity and duration.

Balanced Power Even an AC power source that is virtually free of problems can create an unwanted noise level in audio equipment. The noise-generating characteristics of AC are built-in and inescapable because all 120V AC lines are unbalanced. That's why you need balanced power. The concept is simple: Take the unbalanced AC signal and use a transformer to balance it. This will result in 120V power with equipment that operates normally, but with a dramatic reduction in low-level noise.

Regulation In order to address both overvoltage and undervoltage problems, you need a voltage regulator. There are several different types of these available, but the most important issue to keep in mind is that any regulators used for audio/video applications should use toroidal auto-transformers and solid-state tap switching. These are best for preventing hum in equipment, and are also very compact. So get an AC line Regulator, and your worries — not your equipment — will go up in smoke!

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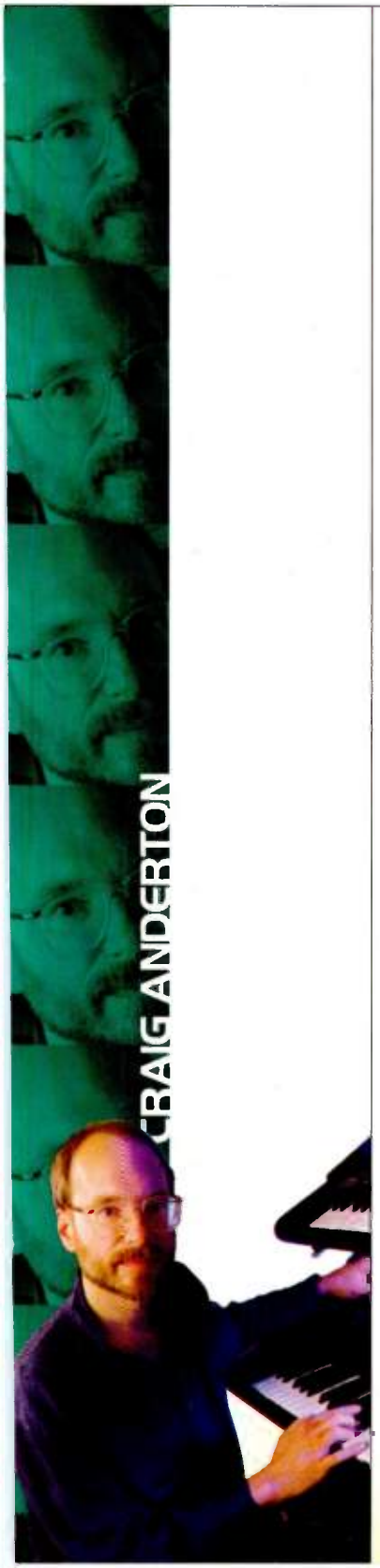

Right now, there's an amazing convergence of technology and tradition for the benefit of guitarists. Nothing made this clearer than the recent NAMM Summer Session in Nashville, TN. The trends evidenced there will affect recording musicians for years to come, and may even mark an exciting new evolution of what it means to be a guitar player.

What's driving this? The relentless march of technology is one factor, of course; engineers just can't resist improving on things. But it is also because the U.S. never got into the dance music phenomenon the same way the rest of the world did. Instead, guitar-oriented bands have continued to evolve, rising from the ashes of grunge to create a potpourri of alternative, classic, punk, and other guitar-oriented musical forms. Let's review some of the top trends, and what they mean to you.

32-BIT FLOATING POINT PROCESSING

Anyone who has heard the Hughes & Kettner Zentara amp or Line 6's striking Vetta amp knows that 16-bits is outta here, replaced by powerful DSP devices such as SHARC chips from Analog Devices that are based on 32-bit arithmetic. I think one of the problems guitarists have had with digital is that it goes against everything we know about sound: normally sound distorts as it gets louder, but, with digital, it distorts more as it gets softer. For an instrument like guitar with a huge dynamic range, this is a problem.

With 32 bits, instead of hearing sounds decay into an ugly mush of distortion, the increased dynamic range means sounds decay smoothly into the (very low) noise floor. I also noticed when listening to this new generation of amps that the high frequency response seems much cleaner and sweeter, although this may have more to do with better-engineered algorithms than increased DSP horsepower.

More powerful DSP means more than better sound, though; it accelerates the trend to make the unpredictable (yet coveted) elements of amps and effects more repeatable. For example, many guitarists like the sound of a tube that's been around for a few months and is starting to get "soft." The Vetta models such amp characteristics as the age of the tube or filter capacitors, bringing a level of detail and sophistication to modeling that simply wasn't available in first-generation modeling amps.

These new amps aren't cheap; the Vetta lists for around $2,400. But, like everything else in digital-land, prices will surely fall as this technology proliferates.

BREAKING THE MOLD

Several companies seem to have been seized by some kind of frenzy of innovation. Amps like the Marshall AVT and Fender Cyber-Twin presaged this trend, but now we're seeing partnerships like Vox teaming up with Korg to create the Valvetronix amp line. These amps feature a modeling preamp, ultra low-power tube/transformer output stage, and a clean solid-state power amp to bring the levels up...simple, but effective. The modeling gives flexibility, the tube stage delivers that real-tube sound, and the output stage amplifies the low-level sound to something useable. It's sort of the reverse of the power soak concept: instead of generating some honking big signal and knocking it down, you generate a cool-sounding low level signal and ratchet it up.

Peavey's Transformer 212 uses an interesting amp design that literally rewires the preamps and power amps on the fly to create different amp sounds; and Fender has taken their traditional "blackface" amps and added a modern-sounding overdrive channel.

We're also seeing some pretty staggering floor boxes, like the DigiTech GeNetx series, Korg AX1500G, and Boss GT-6. The capabilities that these devices offer are nothing short of astonishing, especially given the price. Some boxes even include realistic-sounding "feedback modeling" (don't throw away your E-Bow just yet, but the effect is pretty convincing) and sampling capabilities so you can record yourself, loop what you've recorded, play over it, play it backwards — whatever. And more and more effects include a controller pedal or two, making for a compact, well-integrated setup.

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HIGH-IMPEDANCE INPUTS

Finally, manufacturers are recognizing that guitars with passive pickups need to see high impedance inputs. So the new generation of all-in-one studios (Roland VS series, Korg D series, etc.) often include a special, high-impedance input designed for guitar. This is even showing up in audio interfaces; Aardvark's Q10 lets you convert two inputs to guitar-friendly specs.

13-PIN EFFECTS

Don't want the expense or hassle of a guitar synth? Boss has introduced two "13-pin" effects boxes; one for generating octave signals, the other for doing waveshaping (in fact, it can make your guitar sound just like a vintage GR-300 Roland guitar synth). These take 13-pin inputs from a standard Roland divided pickup (available in guitars from Brian Moore, Fender, Godin, etc.), but deliver standard audio outputs. They're inexpensive, clever, and give you some of the flexibility associated with a box like the VG-88 at a fraction of the price.

ACOUSTIC FUN

In the "Why didn't they think of this before?" category: Yamaha showed the AG Stomp, a processor designed specifically for acoustic guitar. Sure, it has effects — but the centerpiece is mic-simulation circuitry that takes the signal from a piezo pickup and makes it sound like it's being recorded through a variety of close and distant microphones. Furthermore, there's a feedback "seek out and destroy" mode. When feedback occurs, push a button: the AG Stomp locates the frequency and adds a suitable notch. It can do this for up to five frequency peaks, which means you can really increase the guitar's level quite a bit compared to what you could normally do without the feedback killer.

THE TABLETOP PROCESSOR PRICE CRASH

When Behringer came out with the V-Amp for $279, including footswitch and case, they set a new standard in pricing. Now you can pick up the Johnson J-Station for a remarkable $149 and collect rebates on the Line 6 Pod. When I saw the J-Station price, I assumed DigiTech was just blowing the things out to make room on the shelves for their new GeNetx processors. Not so, according to a DigiTech representative; that's just the new price. In fact, processors are getting inexpensive enough that you can now buy two for what it used to cost to buy one. This allows the equivalent of the "two amp" trick: I like to feed my guitar to the J-Station (which does a great job on cleaner sounds and has extensive effects) and the Pod (which excels are raunchier sounds), pan one center-right and the other center-left, and just bask in those luscious guitar tones.

OPTICAL PICKUPS: THE NEXT STEP?

One of the more interesting exhibits was from Hoag, who make an optical pickup for guitar and bass. They're not commercially available; their inventor is looking for an OEM deal with a manufacturer. I don't know how manufacturable or cost-effective these pickups are, but I heard them, and the sound was as hi-fi as I've ever heard. But also consider that hum or dimmer noise can't be induced in your pickups, nor is there any magnetic field to pull on the string. I'll be tracking this development closely.

ACCESSORIZING

The spirit of innovation has even hit the pick industry. The Grip Pick is designed in a subtle S-shape that makes it much easier to hold, even if you bash your strings pretty hard. I use a thumbpick, but the Grip Pick is actually useable for me as a flat pick.

Aspect Design makes some nifty little guitar accessories such as Vbat. It inserts between your power supply and effect, and lets you drop the voltage to simulate what happens with a partially depleted battery (lower voltages can mean an earlier onset of clipping, hence a more distorted sound). Better yet, there's a control that determines how much the voltage "sags" when you start pulling more current from it. They also make true bypass switching systems that prevent inactive effects from loading down active effects.

Take the rich heritage we all know, throw in some high-tech options, and get creative: it's a great time to be a guitarist as well as a great time to be recording guitar. ■

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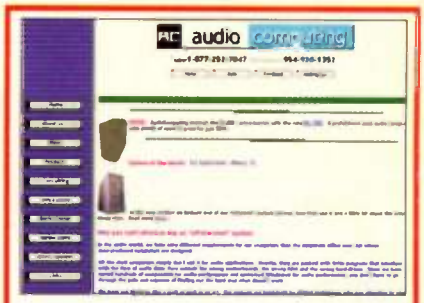

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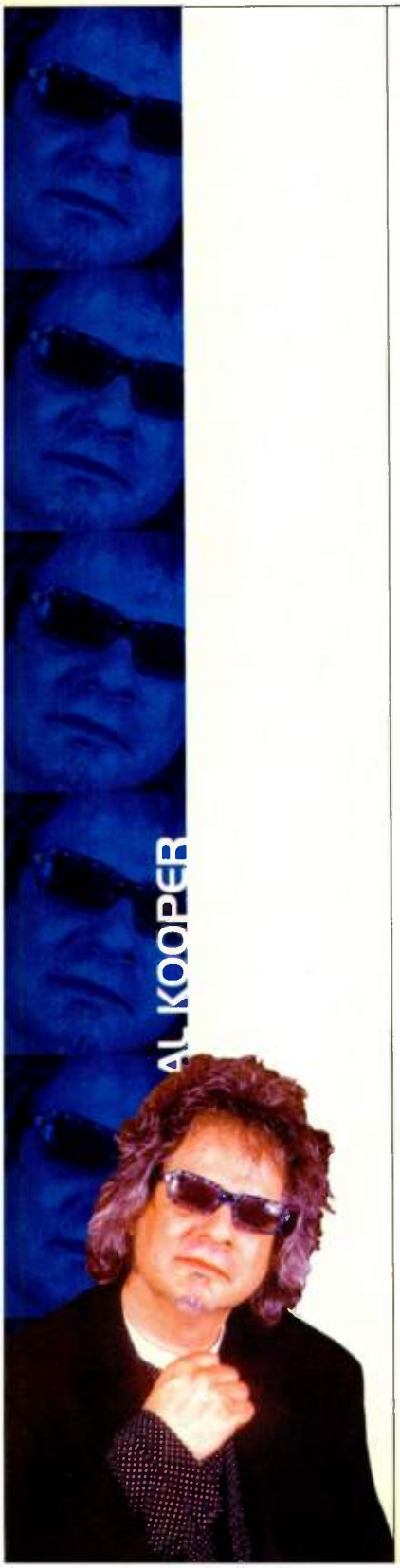
What's new at Summer NAMM 2001

Wassup?



It's time to regale ya with tales of Summer NAMM. There didn't seem to be any one particular trend at this show except downsizing. Many of the large companies forsook their real estate and presentations at the show — definitely a sign of the times/economy.

TASCAM announced the acquisition of NemeSys (manufacturers of GigaStudio and GigaSampler), putting them in the software business. TASCAM also took a firm hold in the DJ stakes with a mixer/double-CD combo that has the potential to knock Pioneer out of the number one slot. Their X-9 mixer has the most features of any pro mixer out there (two built-in DSPs, including reverb, delay, echo, flanger, auto-pan, and low-pass filter with thirty storable EFX settings, a dual sampler, and two assignable footswitch controls). Coupled with their CD-302 V4.0 dual-CD unit (built-in sampler, scratch emulation, onboard memory, tempo matching between decks, and downbeat matching), other companies will be hard-pressed to compete. The trick for TASCAM is to let the DJ community know they're serious about selling in this genre. And why aren't all these manufacturers equipping their mixers with ins and outs for hard drive technology? It seems like a no-brainer to use this major storage unit to keep track of samples and to record sets. Got that guys? Good!

In addition to its impressive Electribe line of DJ processors, Korg has unveiled its KAOS DJ mixer, packed with the popular KAOS pad's 80 effects over two channels. Sampling plus the X-Y factor of the pad can be applied to crossfades and other DJ functions. I didn't have time to give it full scrutiny, but this looks like a great addition to any DJ's arsenal.

Danelectro changed distributors and debuted a new, typically great price-point model line that's their version of Fender's stalwarts, Strats and Teles. These new guitars have various effects built right into the pickguard. Some models come with just one effect, others have four, but their older catalog models are unaffected by these mods. Maybe it's time for a Danelectro Custom Shoppe — the mind boggles.

Bob Moog has finally taken matters into his own hands and revived the Minimoog. Years ago, Studio Electronics in California took the guts out of original models and created a viable, popular rackmount unit. Moog (with his Big Briar logo) hasn't addressed rackmounting, preferring to showcase various wood enclosures instead. Another telling point is the inclusion of two free oscillator tunings included in the sticker price of over $2,000. I can't imagine worrying about the oscillator tuning if I'm paying in excess of $2,000 for a synth today. We'll see in the future how long a voyage it will be for this Minimoog Voyager, as it's now known.

Noticeably missing from the show floor this year were the fifteen-minute, seventeen-dollar chiropractors that previously helped ease the pain of walking miles of concrete flooring. One avant-garde entrepreneur had two coffin-like units set up that promised water-pressure massage to any customer who would climb in the coffin and have their rubber-draped safely dry bodies subjected to water pressure programming that was not unlike a pirated auto car-wash unit. Fortunately, your head remained outside the casket. My head and body remained outside the unit. If rollercoasters can fail at Six Flags, I don't wanna drown at NAMM.

A salesman at a guitar booth who enjoys my column suggested I write a piece about the higher death toll of Fender electric players as opposed to Gibson electric users. He calls it the "single-coil theory." Well, he does have a point: Buddy Holly, Bobby Fuller, Jimi Hendrix, Stevie Ray Vaughn, Kurt Cobain, Richie Blackmore (only dead commercially), Rory Gallagher, Skip Spence, and Carl Wilson are just a few of the deceased Strat superstars that immediately come to mind. For Gibsonites, I can think of Duane Allman, Mike Bloomfield, and Allen Collins, and then I get stumped pretty quickly after that. New ads will proclaim: "Play a Gibson and live longer!" See ya next month. (Maybe not — I play a Jazzmaster.) ■

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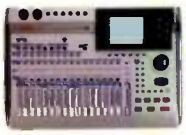

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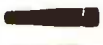

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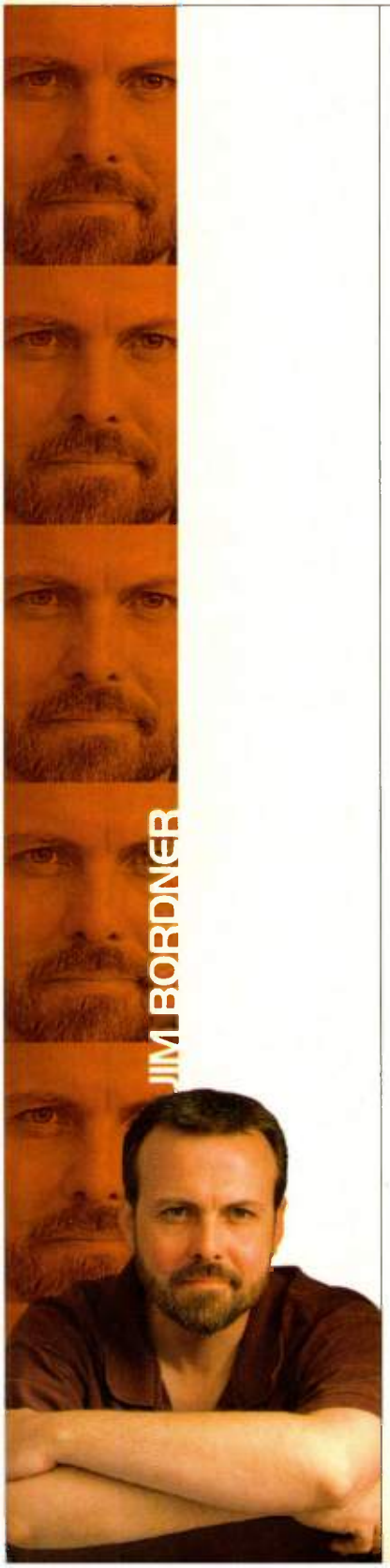
Making intelligent decisions about gear

The Soul of a New Machine



Just a couple of weeks ago, I was saying to the wife that the ol' recordin' studio was pretty well set up — yes sir, we got purty much everything we could ever need around here now. Why, it would just be plumb greedy to wish for more than has been provided. The good Lord willin' and the creek don't rise, we'll be harvesting fine audio productions from this soil for many years to come.

And then I made the mistake of attending Summer NAMM. Suddenly I need three new synths and five new guitars, a RADAR (make that two), a set of drums, and about 17 new microphones. Everything I own is obsolete. Why, it's a miracle we stay in business at all with this pile of junk.

Here lies one of the deepest traps set for the Guest Room Warrior. Most of us started along this path as musicians. We bought new instruments or effects or whatever based on emotional criteria — they sounded good, felt good, were amazingly cool, or looked great hanging in front of our favorite stage shirt. Because we're engaged in a creative enterprise, those are all perfectly good reasons to own something (well, obviously not the shirt thing). But you're in business now, and to paraphrase my grandfather Buckley, "Groovy don't feed the bulldog."

Your gear decision-making now has to follow a new paradigm (I love using big fat corporate-sounding phrases — it makes me feel so...proactive). In short, you need to add some other criteria, and give them equal, if not greater, weight than your old emotional criteria.

And here's why. Any given set of recording gear can be thought of as a single system, one that has it's own sound and it's own method of operation. It's true; when you're working in your own room, take a moment to realize that, while it's made of lots of components, you interact with it as if it was one big machine. And you're going to be buying and selling components of this machine — trying this and trying that — for years to come. As a musician and engineer, you're trying to build a machine that sounds great and interferes with the creative process as little as possible. But, as a business owner, you're trying to build a machine that:

1. **IS EFFICIENT TO USE.**
2. **DOES ALL THE THINGS YOUR CLIENTS NEED IT TO DO.**
3. **COSTS YOU AS LITTLE AS POSSIBLE.**

Imagine for a moment that you're not a member of a glamour profession. Let's say your business is bending sheets of aluminum into useful shapes. You got into it because you love bending aluminum (and, gosh, who wouldn't?), but you stayed in it to make a profit. And you own a huge, modular metal bending machine, one that you can modify and change as your clients' needs change. When you get ready to add a module to that machine, you're not going to buy based on the relative "coolness" of the new feature. You're not going add a module that bends aluminum into abstract shapes that your clients don't need, or one that requires you to stop production and rebuild the unit every time you use it. You're going to expand the machine based on the new module's efficiency, cost, and relevance to your client's demands.

Your studio is no different. Yeah, it's the best toy a kid ever had, but this is business, and if you want to hang around for the long run, you'll spend your gear bucks wisely.

DO Invest In Equipment When:

1. There's an obvious deficiency in the system. Your vocal mic preamp sucks, your MIDI interface can't keep up with the demand anymore, you're running out of tracks, or whatever.
2. You need gear to satisfy customer demand or open a new market. Maybe you need a reliable sync chain so you can score to picture, or a set of mics for recording drums.
3. You need to improve efficiency. If you spend way too much time archiving old projects so you can clean drives for new projects, maybe it's time for more or bigger hard drives.

DON'T Invest In Equipment When:

1. You're bored or depressed. Sigmund

A WARRIOR AT NAMM

I did see some pretty cool stuff at Summer NAMM that wouldn't break the bank. Maybe some of this fits your needs.

I've always been interested in the claims made for Elixer guitar strings — longer life, more consistent tone through the life of the string, less "squeak," etc., but I always figured the heavy coating would kill the tone. Elixer has introduced a new Nanoweb string with 70% less coating. They feel great and sound much brighter than the originals, while radically reducing finger squeak. [www.elixerstrings.com]

Songster 2.0 looked interesting. Created by two Nashville songwriters who lost a deal because they couldn't get their materials together in time, it provides a central database for all the information a songshopper could ever need: who wrote what, who you pitched it to, who bought it, and what your performing rights organization has paid you for it, along with lyrics, charts, and anything associated with the tune. [www.songstersoftware.com]

The final frontier for most project studios is great drum tracks. You can use loops and phrases recorded by great drummers, but the mix is rarely what you're looking for. Check out Discrete Drums — monster drum tracks performed by a well-known studio gun, pristinely recorded, and presented to you on eight discrete tracks so you can process and mix each instrument the way you like, cut and paste individual parts, and generally create real drum parts almost as easily as you create MIDI parts. [www.discretedrums.com]

Got to see the fairly astonishing new Line 6 Vetta amp, which kicks modeling amps up a couple or three notches — I want one. Fender's Zone bass is a radically improved version of the P-Bass Lyte, with an alder body and great electronics (also want one of those). And I had one of the best meals of my life in one of Nashville's best little-out-of-the-way places, "The Midtowne Cafe" on 19th Avenue just off West End Blvd.

Freud used to prescribe shopping sprees for depression, and it works, but it won't help your bottom line.

2. You want a "quick fix." There's no black box that turns a bad mix into a good one, so don't buy stuff that you hope will have this magic wand effect.

3. You can't afford it. Let me say it again — credit card debt is the Devil's crowbar. If you can't afford a short-term note for big-ticket items, wait until you can.

Here's a perfect example of practicing what I preach. At NAMM, I encountered a synth that just blew my mind, an amazing toy that was so inspiring to play that I came straight home and ordered one. Fortunately, it was backordered, and I had some time to think rationally instead of emotionally. Even though the synth had inspired me to play some music I had never played before, was I going to be able to integrate that kind of music into my real-world work? Well, no, not really. If I were going to fix a deficiency in my studio, would I buy a synthesizer? Naw. Would the new instrument provide a service that clients were clamoring for? Well, no, now that you mention it....

It's an amazing instrument. It's just not right for my work. I cancelled the order and started making a more sensible plan for spending our gear budget. We're going to sell some gear we don't use anymore, replace some stuff that doesn't work as well as it should, and, by next month, our audio production machine will be more efficient and more closely geared to our customer's needs. There's a lot of cool stuff that's fun to play, but the way of the Warrior is to make it *pay*. ■

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Everyone knows you can't be a player without the right gear. MusicPlayer.com is the most extensive music gear resource online and anywhere. We specialize in expert product reviews from respected editors such as Craig Anderton and Jon Chappell. We're known for our informative forums with recording experts like George Massenburg and Roger Nichols.

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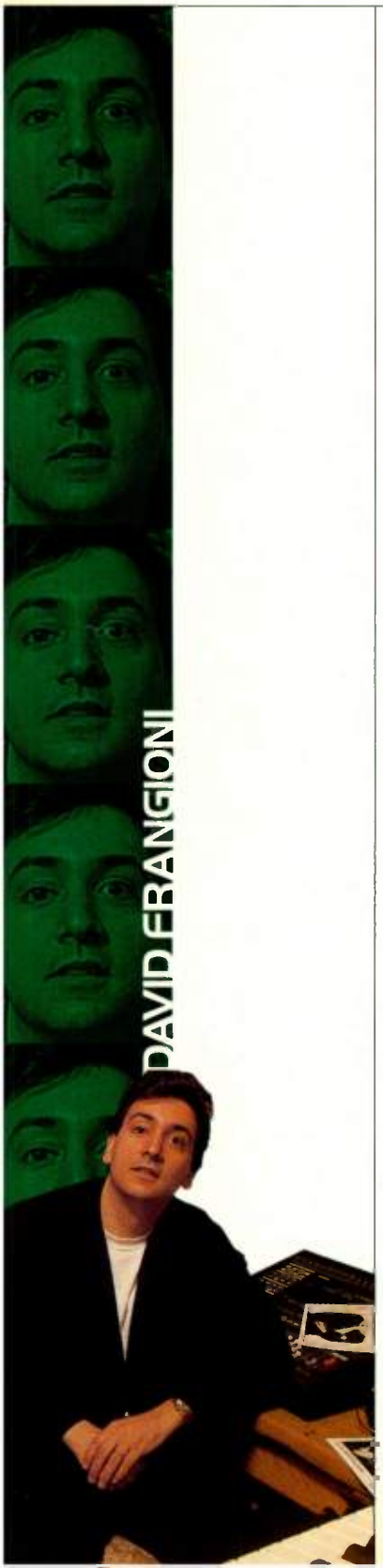
The benefits of investing in a dedicated word clock

Is It Time?



Every day it seems that more and more professionals are discovering the joy of using a high-quality, dedicated "clock" for their studio. No, not the type of clock that tells 24-hour time. The type of clock that generates digital clock, or, as most of us know it, word clock. As I've discussed in the last several Studio Tech columns, any piece of gear that's digital has a word clock signal as part of its data stream. More and more equipment is being developed with dedicated word clock inputs and outputs. This facilitates the slaving or resolving of any such gear to an external word clock.

Three reasons: sound, sound, and stability.

The first reason to use a dedicated word clock is the increased quality of sound you create when using a dedicated generator. Most pieces of digital gear have clock circuitry that can be improved upon by resolving to an external, higher quality clock. In fact, here's a recent quote from Chris L. (on my Studio Tech Web forum) after having just installed a W/C Generator into his studio. (I've edited it down a bit, please check out the Studio Tech Forum to read the entire post):

"I installed the Aardvark [AardSync II] this past weekend. I did some quite major setup adjustments over the weekend, and, when I finally launched Pro Tools on Sunday night, I almost fell from my chair surprised with the results. *What the &%@#* — this couldn't be the clock could it? I ended up changing the word clock situation back as it was; PSX-100 as the master clock with Pro Tools slaved over AES, and then back to the Aardsync II.

"No need to A/B, the difference is so obvious. I thought my sound was already good, but now I'm thinking again. Now I realize why a dedicated word clock is so important. Everything I load into Pro Tools sounds better. I don't think that it's an understatement to say that a good word clock is *at least* as important to achieve a good sound as all the rest, good A/D-D/A, good mic pres, and good outboard. I think I will advise people from now on to get a good master clock *first,* before going into buying all other kinds of goodies."

I do understand that this post is filled with quite a bit of enthusiasm, much of it possibly due to this being his first experience with a dedicated clock. As always, individual results will vary. However, will every person "hear" the same dramatic improvements when using a dedicated word clock generator? Probably, would be my response.

Aside from an improvement in sound quality (do we really need any additional reasons?), the ease of setup when using a dedicated clock is significant. Because the interconnection of digital gear requires all connected devices to be perfectly in sync at all times, the use of a dedicated clock solves a lot of problems. As we've gone over many times, we know that if the digital gear in your studio is not all properly synchronized, you'll hear timecode drifting, muddy-sounding audio, and, in a worst case, clicks and pops. In order to avoid these problems, you connect a master clock. All devices would be set to external sync and receive their "word clock" from the master clock. The digital audio data stream to/from every device would then be perfectly in sync. In fact, when you change the sample rate of the master clock, all connected digital devices will resolve to the new change in sample rate. You can even resolve a CD player to 48 kHz to speed up the playback — all without clicks and pops when connecting it to another digital unit.

I use two master clock generators in my studio so that I can do sample-rate conversion with no loss in quality and with perfect sync. Due to the fact that everything I work on is resolved to timecode, the ability for the master clock to resolve to video is crucial. Therefore, both master clocks resolve to video sync. This means that every analog tape machine (Beta/SP, 24 track, etc.) resolves to video sync as well. This way, every transport and digital device is at the same frame, at the same time, all of the time. In the next column, I'll explain the relationship between analog and digital synchronization, along with more discussion of the importance and benefits of a dedicated clock. ■

FIRST LOOK

▶ continued from page 18

Retro AS-1, and an updated version of Phrazer that supports QuickTime video and Acid 2.0 import, but made no official announcement about OS X support.

So the questions remain: How soon (and to what extent) will the music community adopt OS X? Will the new OS dominate the pro-music community like the previous Mac OS, or will this be the chance for Windows to take over?

"Only time will tell," says André Rocke of BitHeadz, who offers software for both Mac and Windows platforms and is developing native OS X versions of their apps. "Professional music users are typically two years behind the curve [when it comes to adopting new operating systems], especially if they've been relying on a something that works as their bread and butter."

"Porting over to OS X is like porting to Unix — like porting to Windows," explains Mark of the Unicorn's Jim Cooper. "Fortunately, Apple has been good about working with us. They've made music much more of a priority than in the past, and they've got the guy who wrote OMS writing the MIDI kernel.

"I'm really optimistic about OS X," Cooper continues. "It's a challenge to support, but it also offers some potential benefits, like multichannel audio support. It will help compatibility, and, for the first time, Apple is making MIDI and audio a formal part of the OS. That means that they're less likely to break audio and MIDI functions when they update the operating system." ■

RUSS TITELMAN

▶ continued from page 50

How do you handle situations when you and an artist absolutely don't see eye-to-eye on how a record should sound or how an overdub should go?

It's a rare occurrence. When you're working with someone, you're usually in-tune most of the time. You're there to facilitate the artist and to make something great happen — you want them to do their best work, and I also want it to be the best *I've* ever done. That's a matter of having a real atmosphere of give and take, as well as trust.

What are the most important skills that a young person has to develop to be a successful producer?

Record production is a craft as well as an art. When I was starting, I learned by doing, but mainly by listening. If you're going to be a movie director, you've got to watch all the great movies so you know what the masters did, and go from there. So my advice is to listen to the great records of the past and see what inspires you. You have to have an open mind, and you have to have a good ear.

As far as technical stuff goes, you just learn by doing. These days, of course, you can go to schools and learn engineering technique; I don't come from an engineering background, but I know something about it by doing it. Everything that happens gets funneled through your awareness and your experience, so, when things happen in the studio, you're able to make judgements about it and lead things a certain way. That comes from your experience and your taste — and from doing what you love.

Howard Massey's latest book, *Behind The Glass*, is a collection of interviews with record producers, now available from Backbeat (Miller-Freeman) Books.

▶ continued from page 82

on" for full transition to wireless operation through the use of the SKP 30 unit. It uses Sennheiser's HiDyn plus noise reduction system for increased fidelity — which ensures compatibility with Sennheiser's 3000 and 5000 series receivers.

Contact: Sennheiser at **www.sennheiserusa.com**. Circle *EQ* free lit. #164.

SOLID STATE LOGIC

SSL will be showing the MT Production (MTP) digital console, the Avant Plus digital post and film console, and the Aysis Air Plus digital broadcast production console. All of the boards feature SSL's new HS Control Processor and TFT displays with new interface screens and automation features. The company will also show the SL 9000 J Series SuperAnalogue console.

The MTP features snapshot reset, flexible subgroup bussing, and full multi-format surround sound capabilities.

The SL 9000 J Series come with the Version 4.3 software package, which is designed to enhance the interface with Sony 9-pin control protocol.

The HS Control Processor implementation on the Avant Plus postproduction and film dubbing console features Premix Masters where multiple six or eight premix channels can be stacked beneath individual premix master faders. SuperGrouper allows for multiple sets of rotary, switched, and fader-driven controls to be freely grouped across the console.

The Aysis Air Plus, a new version of the Aysis Air digital console, features the HS Control Processor and TFT LCD.

Contact: Solid State Logic at **www.solid-state-logic.com**. Circle *EQ* free lit. #165.

SOUND IDEAS

Sound Ideas is introducing a number of new products at AES. The Crash and Burn 2-CD sound collection brings together 437 effects of natural and man-made disasters such as "twisters, earthquakes, industrial accidents, submarines, and 747 catastrophes." The Thunder Series (also two CDs) focuses on storm, thunder, and rain effects. The Mix VIII Imaging Elements Library, five CDs in all, features more than 500 music beds, loops, segues, tags, licks, hits, and bumpers, covering twelve different music categories.

Sound Ideas' new Mix IX Rhythm Track Library (10 CDs) features 250 full-length alternate tracks specifically designed for production use in voice-overs or as visual support. The alternate tracks are without lead instrument for support production. The new Ear Candy 5 offers working parts such as drones, rewinds, hits, stingers, textures, comedy accents, and special effects.

Contact: Sound Ideas at **www.sound-ideas.com**. Circle *EQ* free lit. #166.

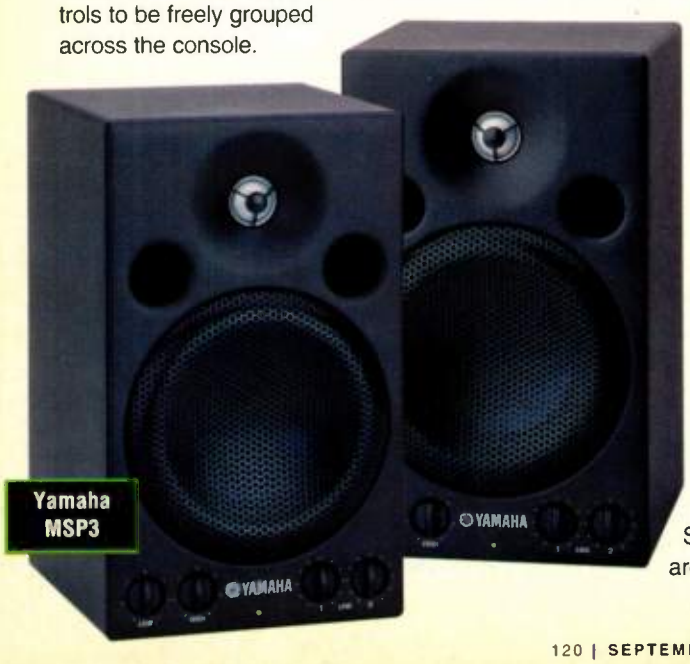
TANNOY

Tannoy's new T8 loudspeaker features an eight-inch dual concentric drive unit with point-source technology, designed to create a conical coverage pattern. High-frequency protection is provided through the Tannoy's halogen protection system.

Tannoy's iQ10 system uses Tannoy's point source PowerDual technology and features 60-degree by 40-degree dispersion.

Tannoy will showcase their new SuperTweeter Monitor, intended for extended high frequency response. SuperTweeter Monitors are designed to operate between the roll-off point of many monitors and 54 kHz.

Contact: Tannoy at **www.tannoy.com**. Circle *EQ* free lit. #167.



Yamaha MSP3

TASCAM

TASCAM has begun shipping their new MX-2424SE hard disk recorder and IF-AN24EH analog interface module. Based on the popular MX-2424 24-track 24-bit hard disk recorder, the new MX-2424S features a removable 18 GB hard drive.

Recently announced is TASCAM's new IF-AN24EH, a special version of their standard analog interface module for the MX-2424, which is designed to accommodate the required –20 dB digital reference level commonly used in postproduction.

TASCAM is also featuring their new SX-1 digital production environment at AES. This unit combines automated digital mixing, hard disk recording, MIDI sequencing, powerful editing, DSP plug-in technology, and multi-format mastering capabilities.

Contact: TASCAM at **www.tascam.com**. Circle *EQ* free lit. #168.

TRUTH AUDIO

Truth Audio has recently released the TA-1A active powered monitor loudspeaker, a follow-up to their TA-1P passive monitor, which will be showcased at AES. The company is also proud to announce that Wave Distribution will be their exclusive worldwide distributor.

The TA-1A consists of two 5-inch woofers and one 1-inch dynamic tweeter offering a frequency response of 40 Hz to 20 kHz, ±3 dB. The power handling capability is rated at 160 watts into four ohms with gold-plated rear panel connectors. The TA-1A and the TA-1P both measure in at 10-inches high, 14.5-inches wide, and 10-inches deep.

The new TA-2P passive midfield studio monitor cabinet consists of two 8-inch, mineral-filled polycone woofers with a 24.6-ounce magnet and one 3-inch tuned chamber cloth dome dynamic tweeter that offers a frequency response of 25 Hz to 20 kHz. An active version, the TA-2A, with an internal 530-watt amplifier, will also be available.

Truth also has the new TA-SW12A active subwoofer, a powered subwoofer,

features a 12-inch driver and 330-watt power amp.
Contact: Wave Distribution at **www.wavedistribution.com**. Circle *EQ* free lit. #169.

UNIVERSAL AUDIO

Universal Audio announced the release of the M610, a mono tube preamplifier based on their popular 2-610 dual tube microphone preamp. The M610 utilizes the 2-610's circuitry, tube set, and transformer design. It also includes direct inputs, phantom power, and selectable boost/cut controls. The M610 is a 19-inch, two-rack unit.

The company also announced the development of its SmartCode Pro line of software encoders for the Mark Of The Unicorn MAS format. There are three versions of SmartCode Pro for MAS users: DTS-DVD for encoding prior to DTS format DVD duplication, DTS-CD for creating 5.1 preview masters using standard CD-burners, and Dolby Digital for creating AC3 DVD masters.
Contact: Universal Audio at **www.uaudio.com**. Circle *EQ* free lit. #170.

WAVE DIGITAL SYSTEMS

Wave Digital Systems' new portable PC, the ultra-portable MicroWave, features four USB ports and two IEEE-1394 FireWire ports as well as Ethernet, Audio I/O, AV and S-Video, modem, parallel, serial, VGA, LAN, and two PS/2 ports for mouse and keyboard.
Contact: Wave Digital at **www.wavedistribution.com**. Circle *EQ* free lit. #171.

YAMAHA

Yamaha's new AW2816 workstation records up to 16 tracks of true 24-bit digital audio with full 32-bit DSP capabilities, 28 fully automated audio inputs, nine motorized faders, and an inclusive 16-track recording system.

Yamaha will also show their MSP3 powered monitor speakers. The MSP3 is a two-way powered speaker system for home studios. It features a 4-inch woofer housed in a bass reflex design cabinet, a 3/4-inch dome tweeter, and 20 watts of output power. Each cabinet contains balanced XLR connectors, 1/4-inch phone jacks, and RCA connectors, plus trim switches and full magnetic shielding.
Contact: Yamaha at **www.yamaha.com**. Circle *EQ* free lit. #172.

Z-SYSTEMS

Z-Systems will unveil the Z-K6 stereo-to-surround audio processor at AES. The unit converts stereo signals to full 5.1-channel surround sound outputs.

They will also show the Z-128.128R Digital Detangler port router. The new system handles up to 128 x 128 24-bit AES/EBU or S/PDIF stereo pairs at sample rates of up to 192 kHz.
Contact: Z-Systems at **www.z-sys.com**. Circle *EQ* free lit. #173.

CIRCLE 85 ON INFO CARD

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➤Analog Recorders

Amp Services.....561 333-0335
THAT Corporation 508 478-9200
Tri-Tech Audio 011 0044 0 1923 249 176

➤CD Players and Recorders

American Audio 323 582-2650
American DJ 323 582-2650
Audio 2000's 800 661-8069
Audio Unlimited 516 520-6200
BAI Distributors Inc. 352 732-7009
BAI Distributors Inc. 352 732-7009
Bertsch Electronics 250 992-9298
BST America 972 353-6464
Burlington A/V Recording Media, Inc. 516 678-4414
ConnectSound 610 359-9488
Creative Marketing Associates 312 829-6569
Dartech, Inc. 800 799-1692
Denon Electronics 973 396-0810
DJ World 203 230-2449
Eastman Kodak Company .....800 CDK-ODAK
Empire Wholesale 213 748-5200
Farralane Lighting, Audio & Video Systems.....631 752-9824
Fixtronix 011 353-1-8402777
Gem Sound Corp. 718 292-5972
Gemini Sound Products....800 476-8633
H&F Technologies, Inc. 800 661-8069
Harbro Corp Lineartech Audio 718 946-4134
HHB Communications USA LLC 310 319-1111
JVC Company of America 973 315-5000
Marantz Professional/ Superscope Technologies ..630 820-4800
Max Optical 610 518-0556
MediaFORM, Inc. 610 458-9200
Musicalement Votre 011 330-134846349
Next!/Tracoman, Inc. 954 929-8999
Numark Industries 401 295-9000
Pacific Supply And Trading Co. 805 527-5900
Paso Sound Products 843 308-9005
Pioneer New Media Technologies 310 952-2111
Primera Technology, Inc...763 475-6676
Pyle Pro.....888 318-PYLE
Rimage Corporation.....952 944-8144
Rolls Corp.....801 263-9053
Sony Electronics, Inc. 201 930-1000
Sony/Philips Super Audio CD 011 31 40 27 38394
Steinigke Showtechnic.....011 499 31 40 61 600
Superscope Technologies, Inc. 630 820-4800
TASCAM.....323 726-0303
Vestax America 954 926-6622
Wadia Digital Corp, Pro Div. 715 426-5900
Yamaha Corporation of America 714 522-9011

➤Compressors/Limiters

Additional Listings under "Processing & Effects" and "Signal Processing"
Crown International, Inc. 219 294-8200
Geoffrey Daking & Co. 302 658-7003
Joemeek.....310 373-9129
Pyle Pro.....888 318-PYLE
Sabine 386 418-2000
Waves 865 546-6115

➤DAT/DAT Products

Alesis Corp. 310 255-3400
Audio Unlimited 516 520-6200
Benchmark Media Systems, Inc.....800 262-4675
Bryco Products 310 640-0007
Burlington A/V Recording Media, Inc. 516 678-4414
CCD 510 352-3202
DIC Digital.....201 692-7700
HHB Communications USA LLC 310 319-1111
Professional Sound Services.....212 586-1033
Sonosax USA.....818 766-3137
Sony Electronics, Inc. 201 930-1000
TAI Audio, Inc. 407 649-6444
TASCAM.....323 726-0303
Total Media, Inc. 201 489-3237

➤Digital Hard Disc Recorders

360 Systems 818 991-0360
Bertsch Electronics 250 992-9298
Burlington A/V Recording Media, Inc. 516 678-4414
Creamware France....011 3301 4806 9796
CreamWare GmbH 011 22-41-59580
CreamWare US Inc. 604 435-0540
Digital Audio Labs 612 559-9098
IZ Technology Corp.....604 430-5818
Level Control Systems 626 836-0446
Nel-Tech Labs 603 641-8844
Sonifex Limited....011 44 (0)1933 650700
Terratec ProAudio U.S., Inc. 407 487-3774

➤Equalizers

AD Gear 011 813-5952-6711
Alesis Corp. 310 255-3400
Altec Lansing 616 695-6831
Amplified Design Intl.....916 783-7800
Apogee Sound International LLC 707 778-8887
Applied Research and Technology 716 436-2720
ARX Systems North America 818 225-1809
Ashly Audio, Inc. 716 872-0010
Audio 2000's 800 661-8069
Audio Centron 314 727-4512
BAA Audio 615 360-0277
Biamp Systems Corp. 503 641-7287
BSS Audio, USA.....615 360-0277
Burtek U.S.A. 640 291-1839
Carvin Guitars & Pro Sound 800 854-2235
Clarity.....540 427-3505
dbx.....801 568-7660
DOD Electronics.....801 566-8800
Drawmer Distribution Ltd. 011 44 (0) 1924 378669
Dynacord/EV 800 685-6386
Electro-Voice, Inc. 952 884-4051
Esoteric Sound.....630 960-9137
Furman Sound, Inc. 707 763-1010
Gem Sound Corp. 718 292-5972
Geoffrey Daking & Co. 302 658-7003
Gold Line 203 938-2588
Groove Tubes.....818 361-4500
H&F Technologies, Inc. 800 661-8069
Hartman Audio.....513 451-5000
Hot House/Trident/Oram 845 691-6077
Hyup Seung Musical Products Co. 011 82 2 468-3361
Inter-M (Burtek).....903 455-2001
IRP Professional Sound Products.....630 860-1993
Joemeek.....310 373-9129
Klark-Teknik Electronics, Inc. 616 695-6831
Meyer Sound Laboratories, Inc 510 486-1166
Micro Audio, Inc. 630 860-1993
Millennia Media 530 647-0750
Next!/Tracoman, Inc. 954 929-8999
Nightpro International 801 375-9288
Orban Assoc. Inc.....510 957-1067
Phoenix Audio International 011 44 1438 360016
Phonic Corp. 718 324-0011
PowerFactor Research 954 424-9722
Precision Systems Integrated 215 949-8300
Pyle Pro.....888 318-PYLE
Rane Corporation.....425 355-6000
Sabine 386 418-2000
SCV London 011 44-20-7923-1892
Sekaku Electron Industry Co., Ltd.....011 886-4-2313737
Shep Associates.....011 1763 261686
Shure Incorporated 847 866-2200
SigTech 617 491-8890
SLD Lighting 212 245-4155
Speck Electronics.....760 723-4281
TC Electronic Inc., USA 805 373-1828
Washburn International 847 949-0444
Waves 865 546-6115
Yamaha Corporation of America 714 522-9011
Z-Systems Inc.....352 371-0990

➤Headphones & Headphone Amplifiers

Adam International.....843 763-0220
AKG Acoustics GmbH 011 43-1-866540
AKG Acoustics U.S. 615 360-0499
American Pro.2 Co. 909 591-5868
Antique Electronic Supply 480 820-5411
APA Audio Group.....320 238-2554
AR Musical Enterprises 317 577-6999
Audio 2000's 800 661-8069
Audio Advisor 616 656-9587
Audio-Technica U.S., Inc. 330 686-2600
Avid 401 846-1300
B&J Music Ltd. 905 896-3001
Beyerdynamic 631 293-3200
Bruno, CT/Kaman.....860 243-8353
Bruno, TX/Kaman.....210 226-6353
Burlington A/V Recording Media, Inc. 516 678-4414
Cabletek Electronics Ltd. ..604 942-1001
CCD 510 352-3202
Coast Wholesale Music 310 537-1712
Communications Co. Inc...858 560-4162
Dacs Ltd. 207 773-2424
DAS Enterprises, Ltd.....818 769-5654
David Clark Company Incorporated 508 751-5800
Davitt & Hanser Music Co. ..513 451-5000
Denon Electronics 973 396-0810
Electro-Voice, Inc. 952 884-4051
European-American Music Distributors Corporation (EAMDC) 610 648-0506
Full Compass 608 831-7330
Future Sonics, Inc.....215 598-8828
Gold Line 203 938-2588
Gorden, Inc.....610 273-9910
H&F Technologies, Inc. 800 661-8069
IMP Systems Inc.....305 438-9475
Kawai America Corp. 310 631-1771
Lake Technology Corporation 916 624-7500
MBT Lighting and Sound ..843 763-0220
Musicorp 843 763-0220
Numark Industries 401 295-9000
On Stage Visuals.....800 373-LIVE
Precision Laboratories 407 774-8022
Roland Corporation US 323 890-3700
Sennheiser Electronic Corp...860 434-9190
STAX 310 327-3913
Technical Projects, Inc./ Production Intercom 847 381-5350
Telex Communications, Inc...952 884-4051
TV Equipment Associates..845 278-0960

➤Mixers/Consoles - Live Performance Consoles

Allen & Heath.....801 568-7660
Amek 818 973-1618
API Audio Products, Inc. ..410 381-7879
ATI (Audio Technologies Inc.) 215 443-0330
ATI (Audio Toys, Inc.) 410 381-7879
Audio Unlimited 516 520-6200
Auditronics, Inc.....252 638-7000
AVC Sound Productions ..631 968-9359
Avlex 913 906-9216
Broadcast Electronics, Inc.....217 224-9600
Broadcast Equipment Sales & Engineering, Inc. 601 857-8573
BST America 972 353-6464
Burtek U.S.A. 640 291-1839
Cadac Electronics plc. 011 44 0 1582 404 202
Carvin Guitars & Pro Sound 800 854-2235
ConnectSound 610 359-9488
Cooper Sound Systems 805 782-9750
Crest Audio Inc. 201 909-8700
Dan Dugan Sound Design 415 821-9776
Dawn 513 347-2196
DDA 616 695-6831
East-West AT&T Inc. 011 82-32-575-4800
Edcor Electronics 505 887-6790
Electro-Voice, Inc. 952 884-4051
Electro-Voice, Inc. 952 884-4051
Etek/Music Industries.....516 794-1888
Euphonix 650 855-0400
FBT - North America 860 829-0434
Fender Musical Instruments 480 596-9690
Fidelipac Corp. 609 235-3900
Gentner Communications Corp. 801 975-7200
Harrison by GLW, Inc. 615 986-7700
HTICS/High Tech International Consignment Services 610 865-9151
Innova-Son 860 434-9190
Innovative Electronic Designs, Inc. 502 267-7436
Intelix 608 831-0880
Inter-M (Burtek).....903 455-2001
Ivie Technologies Inc. 801 766-7600
Kustom Music 513 451-5000
Leem Electronics 513 451-5000
Leem Products Co., Ltd. 011 8232-816-7100
Level Control Systems 626 836-0446
Mackie Designs 800 258-6883
Magtrax 207 773-2424
Mainline Lighting and Sound 718 359-4848
Mark IV Pro Audio Group 616 695-4750
Midas 800 695-1010
Neotek, A Division of Martin Sound.....626 281-3555
Novatec Group Inc. 905 672-8811
Oram Pro 011 01474 815300
PAG, USA, A Div. of EVI Audio 616 695-4750
Panasonic/Ramsa 714 373-7277
Peavey Electronics Corp. ..601 483-5365
Penny and Giles, Inc. 847 995-0840

Phonic Corp. 718 324-0011
Professional Stage Lighting 800 894-5061
Protech Audio Corp.....631 584-5855
Ramko Research, Inc. 916 672-7933
Samson Technologies Corp. 516 364-2244
SLD Lighting 212 245-4155
Soh Electronics Co. Ltd. 011 0086-020-8388-2278
Sound Designer Studio 212 757-5679
Soundcraft 888 251-8352
Soundtracs PLC.....011 44-81 388-5000
Soundtracs USA.....631 393-8520
Spirit by Soundcraft, Inc...800 255-4363
Studiomaster, Inc. 714 998-2102
TGI North America 519 745-1158
THX Division, Lucasfilm LTD. 818 729-7171
Tim Edwards Marketing 805 641-9852
TOA Electronics, Inc. 650 588-2538
Yamaha Corporation of America 714 522-9011
Yorkville Sound, Inc. 716 297-2920

➤Mixers/Consoles - Miscellaneous

Adam International.....843 763-0220
American Pro.2 Co. 909 591-5868
Aphex Systems 818 767-2929
Ashly Audio, Inc. 716 872-0010
Audio 2000's 800 661-8069
Audio Centron 314 727-4512
Audio-Technica U.S., Inc. 330 686-2600
B&J Music Ltd. 905 896-3001
Boss.....213 685-5141
BST America 972 353-6464
Carvin Guitars & Pro Sound 800 854-2235
Crate Pro Audio 800 727-4512
Crest Audio Inc. 201 909-8700
Crown International, Inc. ..219 294-8200
D.T.S. di Latteo Dante & C. snc 011 39 0541 611131
Dawn Pro Audio 800 4-GIBSON
Electro-Voice, Inc. 952 884-4051
Electronic Resources, Ltd. 619 578-3200
Equipson.....011 3496-179-5915
FBT - North America 860 829-0434
Fiber-Tec 610 859-9300
Fidek Audio Corp 714 739-0518
Fishman Transducers, Inc. ..978 988-9199
Gaines Audio 716 266-0780
Gem Sound Corp. 718 292-5972
Gemini Sound Products....800 476-8633
GLF Custom Shop 612 428-8818
Gold Line 203 938-2588
Gorden, Inc.....610 273-9910
H&F Technologies, Inc. 800 661-8069
Harrison by GLW, Inc. 615 986-7700
Impact Industries.....715 842-1651
IRP Professional Sound Products.....630 860-1993
JBL Professional 818 894-8850
Le Cover Co., The.....847 985-4475
Lectrosonics, Inc.....505 892-4501
Mackie Designs 800 258-6883
MBT Lighting and Sound ..843 763-0220
Miami Parts Import 305 594-3908
Midiman / M Audio 626 445-2842
Miles Technology.....800 280-8572
Miles Technology.....800 280-8572
Modern Case Company 906 667-0342
Musicorp 843 763-0220
On Stage Visuals.....800 373-LIVE
Peavey Electronics Corp. ..601 483-5365
Phonic Corp. 718 324-0011
Pro Audio Marketing 011 49-6965-8011
Professional Sound Corporation 805 295-9395
Rapco International 573 243-1433
RDL Radio Design Labs....805 684-5415
Roland Corporation US 323 890-3700
Rolls Corp.....801 263-9053
Shure Incorporated 847 866-2200
Soluciones Integrales Hernan 011 34 1 4593070
SoundTech.....847 949-0444
Speck Electronics.....760 723-4281
SSI Manufacturing, Inc. 513 761-7757
Stewart Audio 209 588-8111
STK Professional Audio 011 82-31-981-1788
Studiomaster, Inc. 714 998-2102
Target Technology, Inc. 916 639-2102
Tosh Pro Audio 419 353-1381
Tsunami Technologies 415 776-9705
Tube Works 602 941-0705
US Audio, Inc. 716 663-8820
Vestax Corp. 011 81-334-1270-11
Wheatstone Corporation 252 638-7000
Whirlwind.....716 663-8820

➤Mixers/Consoles - Recording & Mixing Consoles

3G Ltd.....011 44-1702-420645
AD Gear 011 813-5952-6711
Alesis Corp. 310 255-3400
Allen & Heath.....801 568-7660
Amek 818 973-1618
AMS Neve PLC.....212 965-1400
Anatech System Ltd. 011 44-176 326-2656
Audient.....608 831-8700
B-K Enterprise Co.....011 82-547-6895
Baldwin Sound & Light 765 668-8888
BST America 972 353-6464
Calrec Audio, Ltd. 011 14-2284-2159
Calrec U.S.A. 615 871-0094
Carvin Guitars & Pro Sound 800 854-2235
Cooper Sound Systems 805 782-9750
CreamWare US Inc. 604 435-0540
Crookwood 011 44-162 852-8026
D&R North America 903 485-2344
Dale Pro Audio.....212 475-1124
Dawn Pro Audio 800 4-GIBSON
DDA 616 695-6831
DSP North America 630 653-1940
Euphonix 650 855-0400
F.M. Productions 813 353-4016
Fairlight USA 212 819-1289
FBT - North America 860 829-0434
Harrison by GLW, Inc. 615 986-7700
Hot House/Trident/Oram 845 691-6077
Logitek Electronic Systems, Inc.....713 664-4470
Mackie Designs 800 258-6883
Mark IV Pro Audio Group....616 695-4750
Martinsound.....626 281-3555
Melhart Intelligible Audio Systems 956 682-6147
Miles Technology.....800 280-8572
Miles Technology.....800 280-8572
MTA America Inc. 716 589-2100
Musicians Shopper 330 699-7261
Neotek, A Division of Martin Sound 626 281-3555
On Stage Visuals.....800 373-LIVE
Otari Corp. 818 598-1200
Pacific Research & Engineering Corp. 760 438-3911
Panasonic/Ramsa 714 373-7277
Penny and Giles, Inc. 847 995-0840
Phoenix Audio International 011 44 1438 360016
Phonic Corp. 718 324-0011
Professional Stage Lighting 800 894-5061
Radio Systems Inc. 856 467-8000
Raven Labs 818 368-2400
Rock-N-Rhythm 219 251-3500
Rolls Corp.....801 263-9053
Samson Technologies Corp. 516 364-2244
Scarab Technology.....562 983-8888
Shep Associates.....011 1763 261686
Solid State Logic Inc.....212 315-1111
Solidyne.....011 54 11 4702-0080
Sonosax USA 818 766-3137
SONY Broadcast Export Corporation 305 593-1537
SONY Business & Professional Group 800 635-7669
SONY Education Systems Division 800 472-SONY
Soundcraft 888 251-8352
Soundtracs USA.....631 393-8520
Speck Electronics.....760 723-4281
Spirit by Soundcraft, Inc.....800 255-4363
Studer North America 615 824-1814
Studiomaster, Inc. 714 998-2102
TASCAM.....323 726-0303
TecNec 845 246-0428
THX Division, Lucasfilm LTD. 818 729-7171
TL Audio/Tony Larking Professional Sales Ltd. 011 44-1462-490600
Troisi Design LTD. 508 692-7768
Yamaha Corporation of America 714 522-9011

➤Patch Bays/Patch Pannels

Additional listings under "Cabels/Wires/Jacks/Connectors"
Ace Products Enterprises 415 492-9600
Advanced Sonic Concepts, Inc. 609 726-9202
AVP Mfg. & Supply 519 740-7966
Digital Music Corporation 707 782-0600
H.L. Dalis, Inc. 718 361-1100
Hot House Professional Audio 845 691-6077
Neutrik USA 732 901-9488
Redco Audio Inc. 203 384-0834
Signal Transport 949 859-9615

➤Recording Equipment & Miscellaneous Recording Equipment

Advanced Sonic Concepts, Inc.....609 726-9202
Akai Music Instrument Corp. 817 831-9203
Alarmco Message Repeaters 203 458-2646
Alcorn McBride, Inc. 407 296-5800
Apogee Electronics Corp...310 915-1000
ATR Service Company 717 852-7700
Audio 2000's 800 661-8069
Auralex Acoustics, Inc.....317 842-2600
Behringer USA 425 744-0816
BSW.....800 426-8434
Burlington A/V Recording Media, Inc.....516 678-4414
C.B.I. 315 337-8540
Carvin Guitars & Pro Sound 800 854-2235
Conquest Sound, Inc.....708 534-0390
CreamWare US Inc. 604 435-0540
Crookwood 011 44-162 852-8026
Custom Acoustic Specialties 888 833-1554
D.W. Fearn 610 793-2526
Dale Pro Audio.....212 475-1124
DaviSound 803 276-0639
Davitt & Hanser Music Co.513 451-5000
Demeter Amplification 818 994-7658
Digital Audio Denmark 011 45 72 20 35 55
Earthworks Audio Products, Inc. 603 654-6427
Eastman Kodak Company .....800 CDK-ODAK
Edirol 360 594-4275
Focusrite Audio Engineering 631 249-1399
Fostex America.....562 921-1112
H&F Technologies, Inc. 800 661-8069
HHB Communications USA LLC 310 319-1111
Hot House Professional Audio 845 691-6077
Hush Systems 810 853-3055
Integrated Music Systems.....801 966-7148
Island Cases.....631 563-0633
ITW Switches.....708 667-3409
JewelSleeve 973 667-7603
JLCooper Electronics 310 322-9990
John Hardy Company.....847 864-8060
JRF Magnetic Sciences, Inc. 973 579-5773
Mackie Designs 800 258-6883
Martech, A Division of MartinSound 626 281-3555
Martin Sound Products, Inc. 440 442-2286
Martinsound.....626 281-3555
Mercury Recording Equipment 510 581-3817
Miles Technology.....800 280-8572
Monster Cable Products, Inc. 415 840-2000
MUSICAM USA 732 739-5600
Musicians Shopper 330 699-7261
Otari Corp. 818 598-1200
Pacific Pro Audio 206 264-9386
PMI Audio Group 310 373-9129
Power Technology 415 467-7886
Presonus Audio Electronics.....225 216-7887
Prism Media Products, Inc. 973 983-9577
Rapco International 573 243-1433
Requisite Audio Engineering 818 247-2047
Rock-N-Rhythm 219 251-3500
Rolls Corp.....801 263-9053
RSP Technologies 248 853-3055
Saki Magnetics, Inc.....818 880-4054
Sam Ash Music Stores.....888 615-5904
SamAsh.com 800 472-6274
Sascom Marketing Group 905 469-8080
Sennheiser Electronic Corp.....860 434-9190
Sonosax USA.....818 766-3137
Sony Electronics, Inc. 201 930-1000
SoundSuckers.com 888 833-1554
Spectral, Inc. 206 487-2931
Spirit by Soundcraft, Inc...800 255-4363
Sunset Skies Studios and Productions 818 783-2760
Swissonic America.....707 360-3329
TAI Audio, Inc. 407 649-6444
TC Electronic Inc., USA 805 373-1828
TDK Electronics Corporation 516 625-0100
Trident Audio Developments 310 373-9129
TUBEtronix.....905 570-1474
Valley Audio 316 263-2852
VIntage Studio Rentals .....818 VINTAGE
Wave Distribution.....973 728-2425
Whirlwind.....716 663-8820
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KORG

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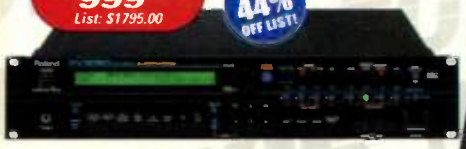

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DEMETER REVERB

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reverb go "boing," though you could mitigate this by patching a gate with a slow attack between the drums and the reverb's inputs, taking the edge away from the attack. The high-pass filter is effective at tuning out some of the rumble that can characterize a typical spring reverb, while the phase reverse switch adds another dimension to the sound — it's especially effective when the two reverbs are summed.

CONSTRUCTION

Demeter is known for building high-end gear, and the Real Reverb has the feel of quality. It's housed in a rugged metal chassis; it offers both XLR and 1/4-inch TRS balanced inputs and outputs, and the components, from the custom-built transformer to the high-quality amplifiers, are designed for maximum headroom, frequency response, and noise rejection.

However, there are a couple of things worth noting. While the Real Reverb can be extremely quiet, you should be careful where you place it in your studio. In my tests, unbalanced connections resulted in noise; mounting the Real Reverb near a computer monitor is also a no-no, as the unit is susceptible to EMF interference. Finally, the test unit had a slightly loose connection on the input to the Channel 1 reverb tank that caused occasional cutouts in the signal [*Demeter tells us they've improved the transducer wiring to correct these problems —Ed.*]. The tanks housed inside the chassis are moving parts that are connected to wire — treat the unit with care.

Overall, the Real Reverb's claim to fame is its unique sound. It's tempting to call this unit a vintage throwback, but that would be misleading. Spring reverb technology may be old school, but the Demeter's flexibility and rich tone make it relevant for any number of musical styles, and useful both in the studio and as part of a live rig. If you're looking for an alternative to digital reverb, you owe it to yourself to give the Real Reverb an audition.

Emile Menasché still gets a kick out of making thunder noises with the spring reverb in his guitar amp.

TAYLOR GUITARS

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issues. As a result, many people use a mic to put some breath and bottom end into the sound, and the piezo to get all the gain."

Taylor has been manufacturing about 85% of their guitars with Fishman transducers installed. Baden feels "the ultimate way to amplify one of our instruments is by using the Fishman Onboard Blender. This is a guitar-mounted preamp that combines a saddle pickup and an electret condenser microphone. The mic is mounted on the underside of the preamp chassis inside the guitar body and captures the resonance. The saddle pickup captures the attack and definition. There's an upgrade that allows the mic to be moved around for optimum placement. The on-board electronics are split via a stereo cable. I suggest using only the pickup (not the mic signal) onstage in the monitors so you won't get feedback. Then use the mic signal along with the pickup in the mains to get some breath and percussion — almost so you can hear a foot tapping on the stage.

"If you wanted to augment the Onboard Blender with a microphone, I'd suggest a really good mic like a Neumann placed somewhere between the 12th and 15th fret, pointing toward the sound hole. A tube DI is nice to fatten the sound a bit. A lot of players are using 'acoustic' amps on stage, but I'd much rather use a high-quality non-wedge monitor, like the Meyers we have in the VIP room.

"You have to be real careful about using a mic onstage," Baden warns, "because, with acoustic guitars, you're dealing with two things — the ultimate in tone and the confidence of the guitarist. There have been cool products requiring a lot of fine-tuning on stage to get to the tone. I believe the real responsibility is the performance. Can the performer be comfortable in front of the mic? If you go after the tone and they can't sell a performance to the audience, what's the point? Ninety percent of the audience can't tell the difference between the piezo pickup and the incredible tone. But they can tell if an artist is uncomfortable. The goal is to find the tone that lets the artist 'go' onstage." ■

ADINDEX

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ACROSS THE BOARD

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1980, we were just finishing up the Steely Dan *Gaucho* album and decided to listen to the SoundStream recorder as a potential mix medium. We dumped a rough mix onto the machine and then Donald Fagen did a vocal overdub on it. The sound of the vocal was to be the deciding factor in choosing the format. When we played it back, there were strange high-frequency artifacts that didn't quite meet the Steely Dan level of acceptance, but it was pretty damn good. We decided, "Not for this album, but we're sure going to be looking at the digital format for the next album."

VIDEO-BASED DIGITAL AUDIO

Sony, at about the same time, was developing a digital format using videotape as the storage medium. The first Sony recorder to offer digital audio recording was the PCM-10. It recorded 14-bit stereo on 3/4-inch videotape. There was a stereo store in New York called Crazy Eddie's that had one. I was in there often drooling over the machine, but the $7,000 price was a little steep in 1980.

In Japan, the EIAJ adopted a standard for video-based digital audio. The first consumer machine to enter the market was made by Technics. It recorded 14-bit stereo digital audio on VHS tape. The machine looked like a giant front-loading cassette machine that used VHS-size cassettes. Some record companies actually sold prerecorded tapes in this format. You could only find them at the hi-fi stores that sold the machine. Sony, Sansui, Mitsubishi, Nakamichi, and other Japanese companies started producing stand-alone encoder/decoder boxes that could be used with existing videotape machines to record digital audio. All of them were 14 bits (the EIAJ format), but Sony upped the ante.

Some of the data recorded on the videotape was for error correction, which compensated for dropouts on the videotape. Video machines had their own dropout compensation that would substitute the previous line of video if a dropout occurred. For video applications this is good. You can't see one doubled-up video line when 30 frames per second are screaming by on the TV, but when using the format for digital audio, too much data is lost when the whole line is repeated. You needed enough error correction to get the lost data back, so 14 bits was all that would fit. Sony put a switch on all of their Beta decks labeled "PCM" that you switched when using the deck for digital audio. The switch turned off the video dropout compensator and let the digital audio encoder/decoder perform any error correction. Now the decoder only had to recover from small errors, and not a whole line's worth of errors. You didn't need as much error correction, so you had room for 16 bits of audio. The Sony (and Nakamichi, made by Sony) PCM encoders had a switch that let you choose between 14 bits and 16 bits when recording digital audio. I got the first Sony PCM-F1 in the U.S. in February 1982. We used it to record some location party sounds for the song "Ruby" on Donald Fagen's *Nightfly* album.

Digital audio was now portable. The Sony PCM-F1 worked on 12 volts DC. There was a portable Betamax that also ran on 12 volts DC. With these two machines and 4,375 car batteries, you could record digital audio anywhere. The Sony F1 format was the only portable digital audio format until the DAT machine showed up in 1989. I used the F1 and a Sony portable console to record five John Denver concerts in the Soviet Union in 1986. Until DAT, I used the F1 as one of my mix formats.

3M DIGITAL MASTERING SYSTEM

The 1979 Ry Cooder *Bop Till You Drop* album was the first digitally recorded pop album. It was recorded on the 3M 32-track digital recorder at Amigo studios in North Hollywood, CA. We booked the Village Recorder in 1981 to cut tracks for *Nightfly* and decided to try the 3M digital machine. We ran a Studer A-80 24-track analog machine in parallel with the 3M for the test. After the band laid down a take, we performed an a-b-c listening test. The analog and digital machines were played back in sync while the band played along live. We could compare the analog machine, the digital machine, and the live band. The closest sound to the live band was the 3M digital machine. We re-aligned the Studer and gave it one more chance. The 3M was the clear winner. We rolled the Studer out into the street (just kidding), and did the rest of the recording on the 3M 32-track machine. When it came time to mix, we mixed to the 3M four-track machine.

The 3M 32-track used one-inch digital tape and the four-track used 1/2-inch digital tape. They both ran at 45 ips. I guess 3M wanted to sell you lots of tape. The digital audio was recorded at 50 kHz, 16-bit. There were no 16-bit converters in 1981, so the 3M system used a 12-bit Burr-Brown converter and four bits of an eight-bit converter as gain-ranging to produce the 16-bit results. The "brick wall" analog filters on the 3M machine used hand-wound coils and took up most of a circuit board. They sounded good.

The biggest drawback to the 3M system was the minimal error correction. After a couple months working on the same piece of tape, the error count started to rise above the correctable level. There were adjustments on the front of the machine to fine-tune the decoding of the data recorded on tape. You could adjust each track for the least amount of correctable errors and then transfer the tape digitally to another 3M machine. You now had a clean error-free tape to work on for a couple of months.

ENOUGH FOR NOW

Digital audio was on the scene for good. Mitsubishi, Sony, Studer, Otari, and TASCAM would soon jump into the pro digital multitrack market. CDs were coming, and there was no stopping digital audio. Next time we will continue our little format saga, so stay tuned.

Stop by and see Roger Nichols at the 111th AES show, to be held at Jacob Javits Center in New York City. Roger will be a panelist with the P&E wing of NARAS at 5:30 PM on Saturday, Sept 22. He'll be discussing Pro Tools session documentation and archiving of project audio.

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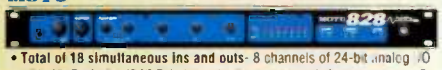

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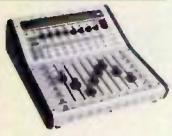

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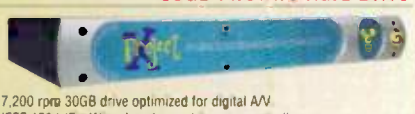

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- Also includes **SPARK LE** Mastering Software • One complete set of TC TOOLS Plug-Ins (MegaReverb, Chorus/Delay and EQ) only requires one DSP to run • Optional TC MASTER X 3+5 multiband mastering processor
- Open processing platform allows future Plug-In compatibility by 3rd party developers

WAVES Version 3.0 — Native & TDM Plug-In Bundles

Waves Bundles feature some of the hottest software processing plugins for tracking, mixing, remixing, mastering and sound design. Choose from the precision dynamics and spatial processing capabilities of the **Native Power Pack (TDM Bundle** for ProTools), the vintage processing characteristics of the **Renaissance Collection** and the extreme sound shaping capabilities of the **Pro-FX Plus Bundle**. Also available is the **C4 Multiband Parametric Processor** which provides 4 discrete bands of dynamics and EQ. The **Waves Gold Bundle** features all of Waves processors in one affordable package.

M-Audio USB Audiosport Quattro — 4 in/4 out Audio Interface w/ USB and MIDI

- 24-bit/96kHz compatible • Multitrack recording and mixing without PCI card installation • Zero-latency direct monitoring
- Balanced 1/4" TRS connectors
- Selectable input and output levels provide compatibility with both pro and consumer equipment • 1x1 USB MIDI interface
- Ships with ASIO drivers for Mac & PC - more drivers are on the way
- Add even more professional connectivity with the optional **Omni I/o** which provides 2 mic preamps with phantom power and independent gain and pad, 8 additional inputs, 2 headphones sends, an FX send and return, dedicated monitor and record outputs, and more

serato intelligent sound Pitch 'N Time — Intelligent Sound Algorithm (AudioSuite)

- Performs a sophisticated auditory scene analysis based on the human auditory system and uses a patented mathematical algorithm to speed up or slow down music without artifacts - works on solo instruments, voice and complete mixes
- Completely cross-platform code works with both Motorola and Intel architectures
- Preserves sample accurate timing
- Works with all bit depths, and sample rates
- Multi-channel phase accurate processing works with 5.1 and 7.1 surround stems without loss to the surround image

ANTARES Auto-Tune 3 — Pitch Correction Plug-In

- Realtime pitch correction without distortion or artifacts • Preserves all of the expressive nuance of the original performance

New features in Auto-Tune 3

- "Source Specific" pitch detection and correction algorithms including Soprano Voice, Instrument, Bass Instrument, and more
- Phase-coherent pitch correction of stereo tracks • Bass Mode lowers the lowest detectable frequency to 25Hz • Set target pitches in real-time via MIDI from a keyboard or sequencer track • Make Scale From MIDI function allows you construct a custom scale from a MIDI keyboard or sequencer
- Sample rates of 88.2kHz and 96kHz are now supported • Available for TDM, RTAS, MAS, VST and DirectX compatible digital audio applications

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12-Track Hard Disk Recording System

- 6-track simultaneous record • 250 virtual tracks • 24-bit A/D/A converters
- 14-channel mixer • 3-band EQ
- Dual effects processor • 10 scene memories per song • S/PDIF digital out • (4) 1/4" TRS mic/line ins • RCA main and monitor outs
- (2) 1/4" aux sends and returns
- 1/4" headphone output • MIDI in/out • Optional CD burning kit
- **Non-destructive editing** with 999 levels of undo
- Jog scrubbing and Shuttle with real sound • Dedicated locate and editing buttons • Wave form display • Title edit functions
- ±6% pitch control • Built-in metronome

KORG D-12
12-Track Hard Disk Recording System

- 12-tracks of uncompressed 16-bit playback or 6-tracks at 24-bit • 16 track mixer with 3-bands of EQ per channel
- Comprehensive editing and DSP functions with 99 levels of undo • 20-bit A/D/A converters • 4 analog inputs including a dedicated guitar input • 24-bit optical S/PDIF I/O • 106 REMS effects types
- 11 simultaneous realtime effects — 8 insert, 2 master and 1 master bus effects • Powerful scene memory and realtime automation capabilities
- Internal 6GB hard drive allows up to 18.6 hours of 16 bit recording
- Optional internal CD-RW drive • 50-pin SCSI-2 connector
- Built-in auto-chromatic tuner and metronome

KORG D-1600
16-Track Hard Disk Recording System

- Korg's top-of-the-line fully integrated hard disk recording system
- 16 tracks of 16-bit or eight tracks of better than CD quality 24-bit recording
- 24x8 mixer • 3 bands EQ with a sweepable mid per channel
- 24-bit A/D/A converters • 8 analog inputs including a dedicated guitar input
- 24-bit optical S/PDIF I/O
- 106 REMS effects • 11 simultaneous realtime effects — 8 insert, 2 master and 1 master bus effects • Massive 20GB internal hard drive provides 31 hours of 24 bit/44.1 kHz • Optional internal CD-RW drive
- 50-pin SCSI-2 connector • Editing functions are controllable using the 240 x 64 pixel TouchView waveform display

AKAI DPS-16
16-Track Hard Disk Music Production System

- True 24-bit/96kHz recording capability provides up to 144db dynamic range
- Record up to 10 tracks simultaneously
- Coaxial S/PDIF Digital I/O
- 56-bit internal processing
- 8 analog inputs including 2 XLR mic inputs with phantom power • 10GB IDE internal hard drive • 16 track faders with pan, 3-band EQ, 4 aux sends and mute per channel • Optional E34M 4 bus EFX card can assigned to any of the 4 aux sends or inserted on any channel. • Large flip-up graphic display and user-friendly interface makes editing and navigation a breeze • Built-in scene memory as well as dynamic automation capabilities via MIDI

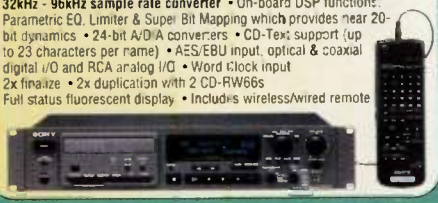
YAMAHA AW4416HDCD
16-Track Digital Audio Workstation

- Record, edit, mix and master to CD all in one machine • 16 tracks of 16 or 24-bit recording with 8 virtual tracks each
- 32-bit internal signal processing
- 44 input mixer with 20 mix buses
- 16 motorized faders and full mix automation • 4-band fully parametric EQ and dynamics per channel
- 2 built-in effects processors • Optional I/O interface cards provide connectivity with all types of digital and analog gear • 8 sampling pads provide real-time playback of samples • Internal 10GB IDE hard drive • Built-in CD-RW drive for creating audio CDs and archiving • Word Clock I/O

E-MU XL7 Command Station
Tabletop Groove Station

- Combines the synth engine of E-MU's Proteus 2000 and XL-1 sound modules with a new multi track sequencer • Designed for Electronica/High Energy Dance styles • Equipped with a one octave velocity sensitive key pad with aftertouch, a touch strip along with numerous knobs, buttons and switches • Easily expandable with 3 additional ROM slots • Easily rack mounted into a 6-space rack • 512 presets, 128 voices and 128 Factory Sequences with hundreds of user locations • Dual effects processor.
- Compatible with external MIDI devices via its Sequencer, Arpeggiators, Controller Knobs, Trigger button section and Key Pad.

SONY CD-RW66
Standalone CD Recorder



- Supports Standard CD-R, CD-RW & consumer audio discs • **Built-in 32kHz - 96kHz sample rate converter** • On-board DSP functions: Parametric EQ, Limiter & Super Bit Mapping which provides near 20-bit dynamics • 24-bit A/D/A converters • CD-Text support (up to 23 characters per name) • AES/EBU input, optical & coaxial digital I/O and RCA analog I/O • Word Clock input
- 2x finalize • 2x duplication with 2 CD-RW66s
- Full status fluorescent display • Includes wireless/wired remote

marantz CDR-500
Standalone CD Recorder / Duplicator

- (2x) CD duplication from the internal CD player • Pro and consumer CD-R and CD-RW compatible • CD-TEXT editing • Memory buffer
- Menu selectable SCMS copy protection • Digital and analog record level/balance control • XLR-Balanced and RCA unbalanced analog ins
- Coaxial and Optical digital ins • Unbalanced (RCA) analog and Coaxial digital outs including Coaxial loop-out for unprocessed connection to other digital equipment • IR remote control included

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CD Duplicators

- 16X record speed
- Compact footprint
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- Disc to disc, or disc to multiple discs for higher volume requirements.
- Caching image files is done on-the-fly, to multiple writers simultaneously
- LED error detection prevents bad disc duplication
- **Available With One To Eight Recorders**
- Supported Formats: CD ROM Mode 1 and 2, Form 1 and 2, CD DA (Red Book Audio), CD 1, Mix Mode, Multisession & Video CD.

DSR160
DSR1603

Panasonic WR-DA7 MKII
Digital Mixer

Streamlined Version 2.5 operating system with more than 70 new or improved features including new shortcut control features, advanced MIDI faders, new panels for LCD and LED areas, and enhanced software features, such as improved visuals and navigational controls.

FEATURES-
- 32 fully featured inputs and 8 auxiliary send/returns
- 8 buses (sub-groups) can be digitally routed using a built-in patchbay for a total of 24 digital and analog I/O's
- 32-bit internal processing and 24 bit A/D/A converters yield a dynamic range 110 db
- 21-100mm Motorized Faders, Jog-Dial, Cursor keys and 10 key Keypad
- Moving fader dynamic and scene automation with instantaneous recall
- Multi-layer fader layout for controlling input channels, Aux sends and returns and buses as well as a fourth layer that acts user-assignable MIDI faders
- Built-in 16-bit dithering to 23 outputs.

Connectivity
- 16 balanced XLR and 1/4" TRS Mic/line analog inputs with 16 pre A/D analog inserts
- AES/S/PDIF (2 Ch.) digital I/O. Word Clock In/Out, MIDI, IN/OUT, MIDI Machine Control (MMC) RS-422/485 standard
- Expandable with up to (3) 8-ch I/O cards
- Optional SMPTE/Video-sync card
- Optional Tandem card allows dual-console operation providing a total of 76 inputs

EQ & Dynamics-
- Four true parametric bands of EQ on every channel and 2 bands of parametric EQ on the Aux returns
- 42 full function Compressor/Gate/Limiter or Expander
- Delays up to 300 ms on every channel

Automation and Control-
- 50 independent EQ, dynamics and channel libraries plus 50 snapshots of the entire console can be stored for instant recall.
- Four up/down/left/right cursor keys can output MIDI Machine Control commands to MDMs, sequencers and DAWs
- Dedicated undo/redo button and a built-in Talk Back mic.
- Large backlit LCD screen displays all channel parameters
- **Optional** High resolution Meter Bridge and Automation software for Mac and PC

Built-in Surround Mixing-
- Equipped to mix 5.1 surround through its buses (doesn't tie up auxes) with full dynamic control of panning.

OPTIONS-
- **WR-ADAT** 8-channel ADAT digital I/O card
- **WR-TDIF** 8-channel TDIF digital I/O card
- **WR-AESS** 8-channel AES/EBU and S/PDIF digital I/O card
- **WR-ADDA** 8-channel A-to-D, D-to-A card
- **WR-TNDM** Tandem (dual-console) connection card
- **WR-SMPT** SMPTE and V-sync card
- **WR-MTBR** Meter bridge (Included)
- **WR-WRRC** Remote control software

TASCAM MX-2424
24-Track Hard Disk Recorder

- Records 24 tracks of 24-bit audio at 44.1 or 48 kHz, or 12 tracks at 88.2 or 96 kHz • Up to 24 tracks can be recorded simultaneously using any combination of digital and analog I/O • 999 virtual tracks per project
- Includes an internal 9GB hard drive • Wide LVD compatible SCSI port on the back and a front 5-1/2" bay available supports an additional drive, or an approved DVD-RAM drive for back-up. • Record to Mac (SDII) or PC (.WAV) formatted drives • Open TL format allows compatible software to recognize virtual tracks without having to load, reposition and trim each digital file. • Jog/scrub wheel • MIDI In, Out, and Thru for MMC & MTC
- Built-in editing capabilities include cut, copy, paste, split and ripple or overwrite • 100 levels of undo • Supports destructive loop recording and non-destructive loop recording which continuously records new takes without erasing the previous version. • TBUS protocol can sample accurately lock up to 32 machines together • Can generate or chase SMPTE timecode or MTC. • Word Clock In, Out, and Thru ports
- Includes ViewNet Java-based Graphic User Interface software

I/O Options-
- Optional analog and digital cards provide 24 channels of I/O each. There is one analog slot and one digital.
- IF-TD24- TDIF module
- IF-AD24- ADAT Lightpipe module
- IF-AE24- AES/EBU module
- IF- AN24- A-D, D-A I/O module with DB 25 connectors

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- EQ enhance, Pad and Phantom Power on every channel
- Instr. inputs on channels 1 & 2 • Phase reverse on channels 1 & 2
- Eight 24 bit ADC converters • 24-bit Light Pipe and S/PDIF digital outputs • AES/EBU digital outputs are available as an option
- External clock sync input and Master clock output
- 1/4" thick, milled aluminum panel with blue anodized knobs

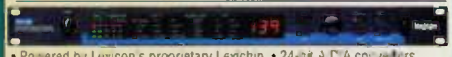
AVALON DESIGN AD2022
Dual Mono Pure Class A Preamplifier

- 4th generation fully discrete, symmetrical Pure Class A mic preamp
- Mic and hi-Z instrument inputs • Selectable mic source loading for optimized cable/mic matching • Gain switched in 4dB steps with ± 3dB fine output trim • Regulated +48v phantom power supply • Phase reverse
- Variable-passive HPF • 20dB pad • Large illuminated analog VU meters and twin peak LEDs • High headroom +36dB input before overload
- Fully discrete Class A regulated audio power supplies • Teflon/silver wiring and doubled plated circuit boards for superior low level signal transfer

Focusrite ISA 110
Channel Strip

- Reissue of a single channel strip from the legendary Focusrite Studio Series recording console
- Ultra high-end transformer-based Class A mic/line preamplification and EQ circuitry design originated by Rupert Neve, provides a warm, yet transparent sound
- Line input included in preamp section with +/-18dB gain control
- High and Low shelving and two separate bands of parametric EQ
- High and Low pass filters remove unwanted high or low frequency content

lexicon MPX-200
24-Bit True Stereo Dual Effects Processor



- Powered by Lexicon's proprietary Lexichip • 24-bit A/D/A converters
- 1/4" analog I/O • S/PDIF digital inputs and outputs • A newly designed digital compressor is built-in to all presets • 19" rack, 1U high processor
- 240 presets and 64 user locations with classic Lexicon reverb programs including Ambience, Plate, Chamber and Inverse as well as Tremolo, Rotary, Chorus, Flange, Pitch, Detune, 5.5 second Delay and Echo
- Dual-channel processing provides two independent effects in a variety of configurations — Dual Stereo (Parallel), Cascade, Mono Split and Dual Mono • Up to 4 adjustable parameters are available in each program
- Full controllable over MIDI • Delay times and modulation rates can lock to Tap tempo or MIDI Clock

ANTARES ATR-1a
Auto-Tune Intonation Processor

- Automatically corrects pitch in realtime while preserving the integrity of the original performance
- Includes factory programmed chromatic and standard diatonic scales and has the ability to create custom scales
- Bass Mode detects pitch down to 25Hz
- Make Scale From MIDI function allows you to construct a custom scale using a MIDI keyboard or sequencer
- 20-bit data path, 56-bit internal processing and balanced I/O

TC-HELICON Voice Prism
Vocal Formant Pitch Processor

- Built-in mic preamp with 48V phantom power • 24 bit digital converters
- 4 voice backing -vocal harmony with independent gender- and humanizing controls • Lead-voice double tracking • Complete vocal processing including Compression, EQ, Delay, Tape Delay, Chorus, Flange and Reverb with Pre-delay • Ultra-easy interface • XLR mic input, 1/4" unbalanced/TRS balanced I/O and S/PDIF stereo digital outs
- Optional Voice Craft card adds **human voice modelling** DSP algorithms as well as AES/EBU and S/PDIF digital I/O

audio-technica AT3035
Cardioid Condenser Microphone

- Large diaphragm provides exceptional detail
- 148dB max SPL
- 136dB dynamic range @ max SPL
- 12 dB/octave bass roll-off @ 80Hz
- 10 dB pad
- Requires 11 - 52v phantom power
- Custom shock mount provides superior isolation
- **20Hz - 20kHz frequency response**
- Includes shockmount and protective pouch

RØDE NT1000
Cardioid Condenser Microphone

- Externally polarised 1" pressure gradient condenser
- Ultra low noise transformerless circuitry
- > 134dB Dynamic Range
- > 140dB SPL Max SPL
- Requires 35 - 53v phantom power
- Internally shock mounted capsule
- **20Hz - 20kHz frequency response ±6dB**
- Includes zippered pouch, M2 Stand Mount, 3/8"-5/8" Thread Adaptor
- Optional SM2 shockmount

SHURE KSM-44SL
Multi-Pattern Condenser Mic

Premium Vocal And Instrument Microphone Built Without Compromise

- Dual 1-inch gold-layered, Mylar diaphragms
- Class A, discrete, transformerless preamplifier
- Cardioid, omni and bidirectional polar patterns
- Includes ShureLock elastic-suspension shock mount and swivel mount, protective pouch and locking aluminum carrying case
- **20 Hz - 20 kHz frequency response**

Hafler TRM-6 & TRM-10
Complete 5.1 Surround Monitoring Solution

TRM-6 Bi-Amplified Studio Monitors

Offering honest, consistent sound from top to bottom, the TRM-6 bi-amplified studio monitors are the ideal reference monitors for any recording environment whether tracking, mixing and mastering. Supported by Hafler's legendary amplifier technology providing a more accurate sound field, in width, height and also depth.

- 1" Tweeter, 6" Woofer
- Biamplified (50 W Lf, 33 W Hf) w/Crossover
- 55Hz - 21kHz frequency response
- Electronically and Acoustically Matched
- Magnetically shielded

TRM-10S Active Subwoofer

Combining Hafler's legendary amplifier technology with a proprietary woofer design, the TRM10 active subwoofer provides superb bass definition required in today's studio and surround sound environments.

- 10-inch cellulose fibre cone down firing woofer
- 200 watt low frequency amplifier
- 30Hz to 110Hz frequency response ±2dB
- 24dB/octave Linkwitz-Riley crossover variable (40Hz to 110Hz)

JBL LSR Series
Linear Spatial Reference Monitors

Ideal For Surround Sound Applications

LSR28P Near-Field Monitors
- Bi-amplified design— 250 watts for the low frequency and 120 watts for high frequency
- 8" woofer and 1" tweeter
- XLR/1/4" combo input connectors can accommodate balanced and unbalanced signals
- **50 Hz - 20 kHz frequency response**

LSR25P Near-Field Monitors
- Bi-amplified design— 100 watts for the low frequency and 50 watts for high frequency
- 5.25" woofer and 1" tweeter • Shielded
- XLR balanced and RCA unbalanced inputs
- Front Panel Volume and Power Controls
- Built in 80 Hz HPF for use with optional subwoofer
- **70 Hz - 20 kHz frequency response**

LSR12P Powered Subwoofer
- Incorporates the 252F low-frequency transducer and the LSR12P Amplifier which provides 250-watts of continuous power
- Designed to be compatible for both the LSR28P self-powered speaker system
- Multiformat compatibility with Dolby AC-3, DTS and other surround audio systems

YAMAHA MSP-10
Bi-Amplified Monitor Speakers

- 40 - 40k Hz frequency response (-10dB)
- 120-watt power amplifier for the low/mid driver and a 60-watt power amplifier for the tweeter
- 8" woofer and 1" titanium-dome waveguide tweeter
- Balanced XLR inputs
- Magnetically-shielded enclosures
- Green power on and red clipping LEDs
- Master volume control for each speaker
- 3-position low and high trim switches
- Switchable low-cut filter optimizes performance when used with a subwoofer system
- Available in Black (MSP10) and Maple Sunburst (MSP10M)
- **SW10 powered sub-woofer also available**

MACKIE HR-824
Bi-Amplified Studio Monitors

- 150W LF amp, 100W HF amp
- 8.75" mineral-filled polypropylene cone woofer
- 1" aluminum dome tweeter with ferrofluid-cooled voice coil
- Every set is a "true" matched-pair with a signed certificate from Mackie designs to prove it
- Full space, half space and quarter space placement compensation
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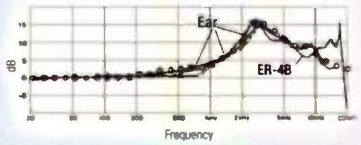

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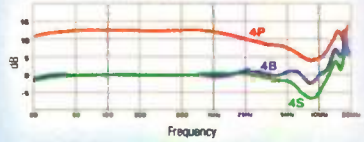

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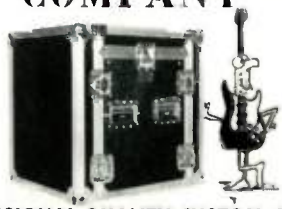

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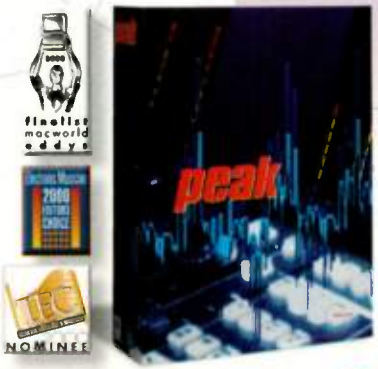

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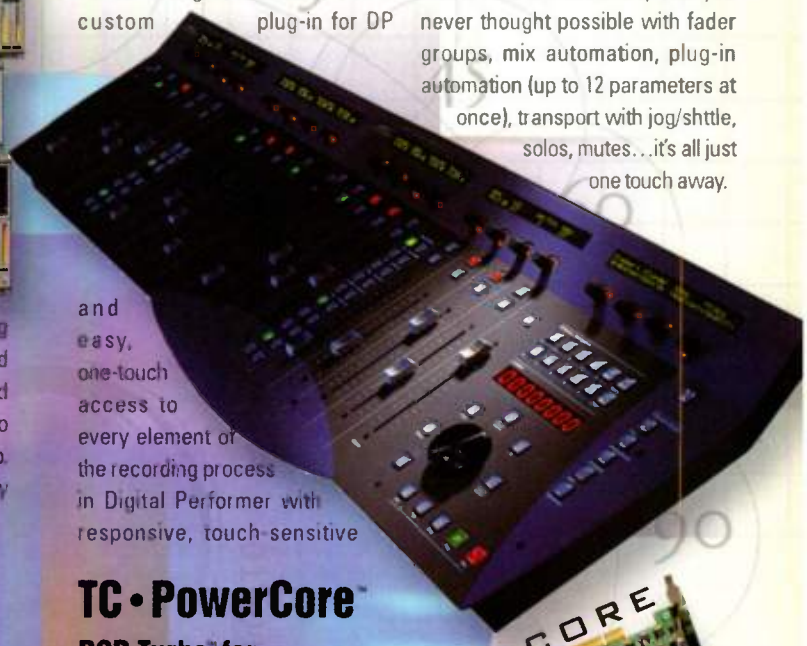

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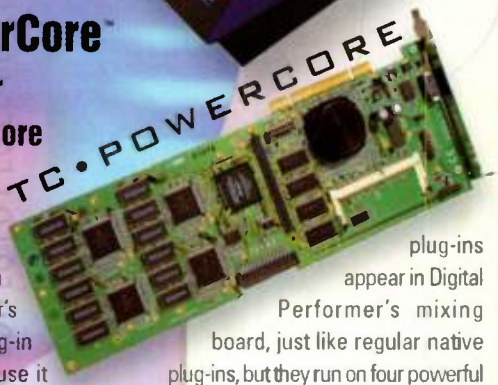

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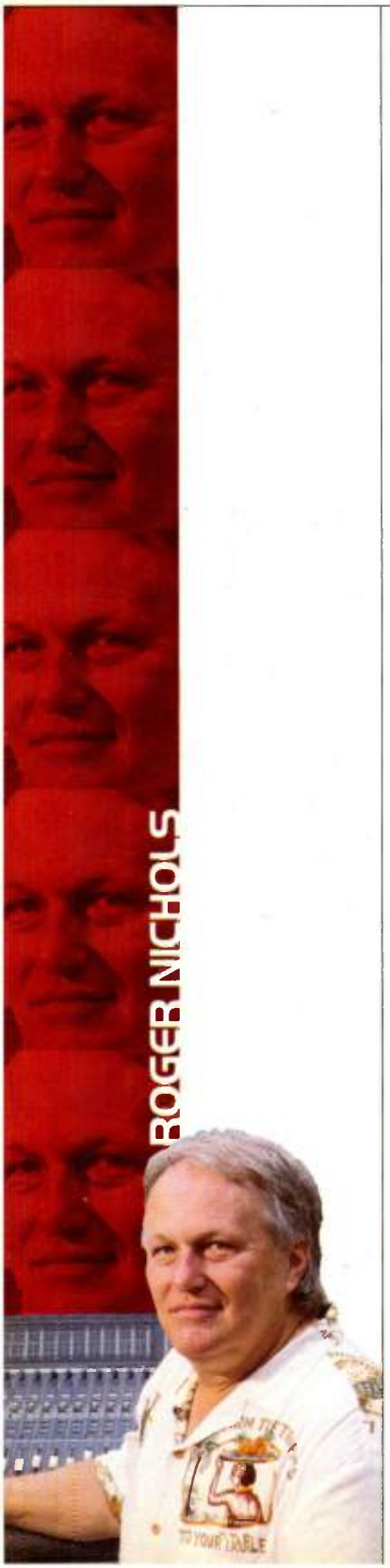
ROGERNICHOLS@EARTHLINK.NET

How many audio formats are too many?

Format Overload (Part II)



The formats we've yet to cover include cassette, multitrack cassette, eight-track, EL-cassette, PCM-F1, DAT, DBX, 3M, CD, PD, DASH, Akai, MP-3, DSD, DTS, AC-3, MLP, MPEG-2, DVD, DV, DV-PRO, DSD, DVD-A, SD II, WAV, AIFF, Digital Radio, and, by the time this reaches the newsstand, probably a few more.

EIGHT-TRACK TAPES

I really don't want to talk about eight-track tapes very much. Lear introduced an endless-loop eight-track tape playback system that used 1/4-inch tape in a plastic cartridge. Four stereo programs ran in the same direction. At the end of the loop there was a piece of metal foil that moved the stereo playback head to the next pair of tracks. It therefore took four passes through the loop to play an entire album. At the end of the fourth pass the tape head moved back up to the first pair and started the album over. As of 1999, I still saw eight-track tapes for sale in a truck stop in Arkansas. I don't stop there anymore.

CASSETTES

"Portable" was the key word in the '70s. Sony had developed the 3/4-inch videotape cassette and was about to introduce the Betamax 1/2-inch videocassette to the consumer video market. Philips came up with a format called the audiocassette. It housed 1/8-inch reel-to-reel tape running 1-7/8 ips in a closed plastic shell. Drop the cassette into a player and press Play. No tape threading, no muss, no fuss. The heads didn't move and go out of alignment as easily as they did in the eight-track format. The audiocassette was an instant success. To top it all off, the cassette was recordable. You could now take your music with you.

There were actually four tracks on the cassette. Two channels played in each direction. Some cassette players had an "auto-reverse" feature that would play side two of the tape without turning it over. New tape formulations were developed with smaller particles to help with the high-frequency response at such slow tape speeds. A Japanese company named Nakamichi produced a cassette deck that would record at 3-3/4 ips for higher fidelity, but Philips sued to make them stop. A Philips suit also stopped another format called EL-cassette. The EL-cassette used a larger cassette (almost the size of a Betamax tape) with 1/4-inch tape recorded at a higher speed.

FOUR-TRACK CASSETTE

Since the cassette tape had four tracks on it, why not record them all in the same direction and have a four-track studio at home? Because the cassette wasn't used for a consumer format, Philips finally let the multitrack cassette machine manufacturers raise the speed limit to 3-3/4 ips. Some manufacturers even came out with eight-track cassettes. There wasn't a musician on the planet that didn't own at least one incarnation of these machines.

DIGITAL AUDIO

Digital audio was alive and well in the telephone and airline industries. Hundreds of phone calls could be digitized and combined onto one wire, and then split apart at the receiving end. All 12 music channels offered to you at your seat on an airline were digitized, multiplexed, and sent down one wire to all of the seats. You selected the channel, and that segment was picked out of the data stream and converted to analog right at your seat. The quality was low, but the method worked well.

SOUNDSTREAM

In the late '70s, a company named SoundStream started dabbling in digital audio. They used a reel-to-reel data recorder to put eight channels of audio data on tape. Classical recordings were the first to embrace the format. Its low noise floor and wide dynamic range were perfect for the classical productions. In

▶ continued on page 128

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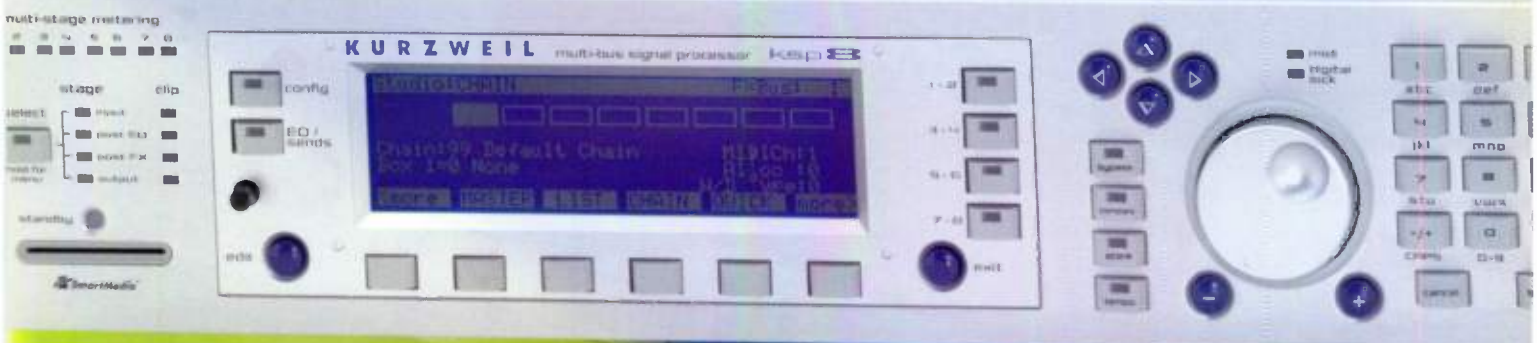

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