

GUITAR RECORDING *Special*

EQ

THE PROJECT
RECORDING &
SOUND
MAGAZINE

APRIL • 1998

EXCLUSIVE REVIEW

Inside the Tascam DA-98
Digital Multitrack

REVIEWS

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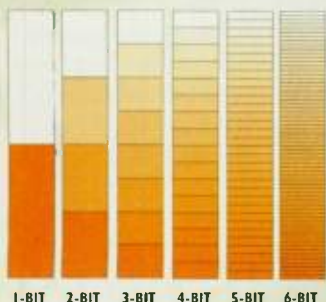
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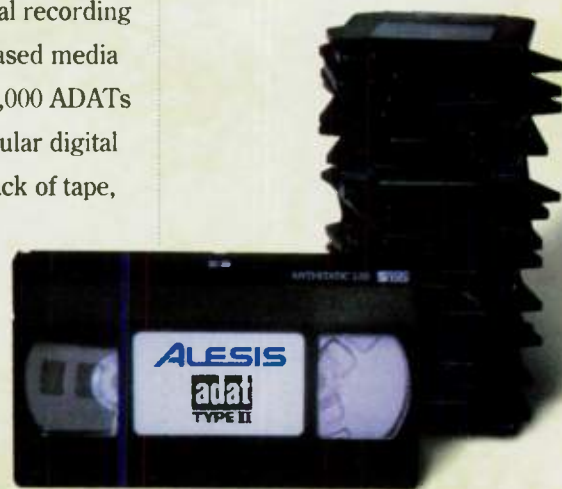
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World Radio History

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THE HR824 ACTIVE NEAR

■ UNFLINCHING ACCURACY.

If you've never experienced an active monitor before, you're going to love discovering the unflinching accuracy of Mackie Designs' HR824. Possibly, for the first time, you'll be hearing exactly what was recorded—from microphones right through to your mix down deck. You'll suddenly discern fine nuances of timbre.

very fine shades of tonal color and to establish subtle timbral and harmonic relationships between sounds. When the mixes were played on other monitors, including some that cost more than twice as much, they translated very well. The overall imaging was extraordinarily clear and detailed."

■ EXTREMELY WIDE SWEET SPOT.

If you can "unlock" yourself from the traditional, narrow "sweet spot" directly between the monitors, you'll discover that the HR824 really DOES live up to our claim of super-wide dispersion. They maintain a wide, coherent, stereo panorama. You can actually trust what you are hearing—no matter where you sit.

Again, *Mix* magazine...

"They also have a wide off-axis listening range, due to the high-frequency dispersion of the waveguide... the mids and highs were tightly focused, and the stereo image well defined."

■ EXTENDED LOW FREQUENCY RESPONSE.

(Sub Woofer included.)* Next, you'll discover low frequency output so accurate that you might look around for the hidden sub woofer (some of the world's most experienced recording engineers have done this, so don't be embarrassed). The HR824 really IS capable of flat, accurate, articulated response below 39 Hz and usable response to 30Hz—low

frequency accuracy that simply can't be achieved with passive speakers. Bass notes start and stop instantly, without overhang, distortion or "tubbiness."

*A large piston mounted on the back of the cabinet instead of a long, tuned port, acts as a sub woofer.

And *Mix* further states...

"The HR824s handled the ultra-low bass remarkably well... Mackie asserts that the HR824s are smooth from 39 to 20k Hz (± 1.5 dB), and our tests corroborated the claim. This is no mean feat for monitors this size, and at this price."

Because the HR824 is active, we can precisely match each transducer's actual output. During final assem-

bly, each HR824 is carefully hand-trimmed to ± 1.5 dB, 39 Hz-20kHz. As proof, each monitor comes certified with its own serialized, guaranteed frequency response printout.

■ Here's what real-world power-users Mick Guzauski and Simon Franglen have to say...

A self-professed 'gear guy,' Mick Guzauski's newly-added pair of HR824s have been a welcome addition to his arsenal at his Barking Doctor Studio outside New York City. "Anyone who knows me knows I've been a 'the-other-guys' user since the early '80s. But I think the Mackies, especially for the price, are very accurate,

have very good stereo image, and a very wide frequency response. I would say the Mackie monitor could be used in any professional mixing situation. The technical quality of this speaker



HR824

harmonics, equalization and stereo perspective that were sonically invisible before. Some tracks you've recorded will amaze you; others may send you back for an immediate remix.

Check out what *Mix* magazine had to say in their recent field test of the HR824 Active Near Field Monitor...

"The Mackie monitor measurements were outstanding. Frequency response was the flattest we have measured so far... there can be no question... they speak the truth."

"The HR824s performed admirably, allowing us to distinguish



AC power and input connectors (1/4" & XLR) extend directly from the bottom of the amplifier down, allowing the cabinet to fit flush against any surface.



■ One person who has taken Mackie to heart is British-born synth player/producer Simon Franglen. You may not know his name, but you most certainly know his work. Simon Franglen's curriculum vitae includes work with Grammy winners Eric Clapton, Madonna, and Celine Dion (including a new single from the blockbuster movie *Titanic*), rockers Yes and Crash Test Dummies, and legendary performers such as Michael Jackson and Barbra Streisand. Simon's done work in the movies, too, including *Titanic*, *The Client*, *Dances With Wolves*, *Mission Impossible*, *Seven*, and *Contact*. He's won seven Clio

Awards for his work in television commercials—his clients have included Nike and Lee Jeans. His talents as a session synth player and programmer, as well as producer, are well-known throughout the entertainment world. With such credits, you'd think the guy was using incredibly esoteric, expensive gear. How else could he get such award-winning results? Well, Simon will be the first to say: you don't have to spend wads of money to get tough, quality sound gear. Not with Mackie.

FIELD MONITOR—WORTHY OF DISCOVERY

is up to where I think it's a major-league player. It's definitely not a semi-pro speaker. It's fully professional."

Simon Franglen and his cohorts worked on the blockbuster hit *Titanic* at Castle Oaks Studio in Calabasas, CA. The studio was equipped

with expensive studio monitors (one each for left, center and right) and a matched sub woofer. Still, Simon was quite excited the day he received three Mackie HR824 active studio monitors. He immediately took down the studio's main monitors and hooked up the HR824s.

"The difference was so pronounced," explains Simon. "Three HR824s gave us better bass response than the larger monitors with a sub woofer. They were louder, had more dynamic response, and the imaging throughout the room [was incredible]." Simon says the HR824's sweet spot is much larger, which made listening to things easier "when

you were off to the side of the room." Having used much more expensive fare, Simon found the HR824s to be extremely well-thought-out. "Apart from very expensive speakers," says Simon, "I've not come across any other speakers that sound as good. They absolutely tell me what I'm putting on tape."

■ The Mackie HR824 is a serious studio owner's dream come true.

When you compare the HR824 to the competition, you're going to discover some dramatic differences. But all you have to do to become a believer is to simply visit your nearest Mackie dealer and discover the HR824 for yourself.



Mick Guzauski's credits

read like a 'Who's Who' of pop luminar-

ies—from album projects with Chuck Mangione, Earth

Wind & Fire, and All For One, and more recently, singles mixed

for Babyface, Toni Braxton ("Unbreak My Heart"), Eric Clapton

("My Father's Eyes"), LeAnne Rimes ("How Do I Live"), and a

new Celine Dion single.



Mix Magazine quotes from Mix Magazine Field Test By Barry Cleveland April 1998
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PROJECT RECORDING
& SOUND TECHNIQUES
VOLUME 9, ISSUE 4
APRIL 1998



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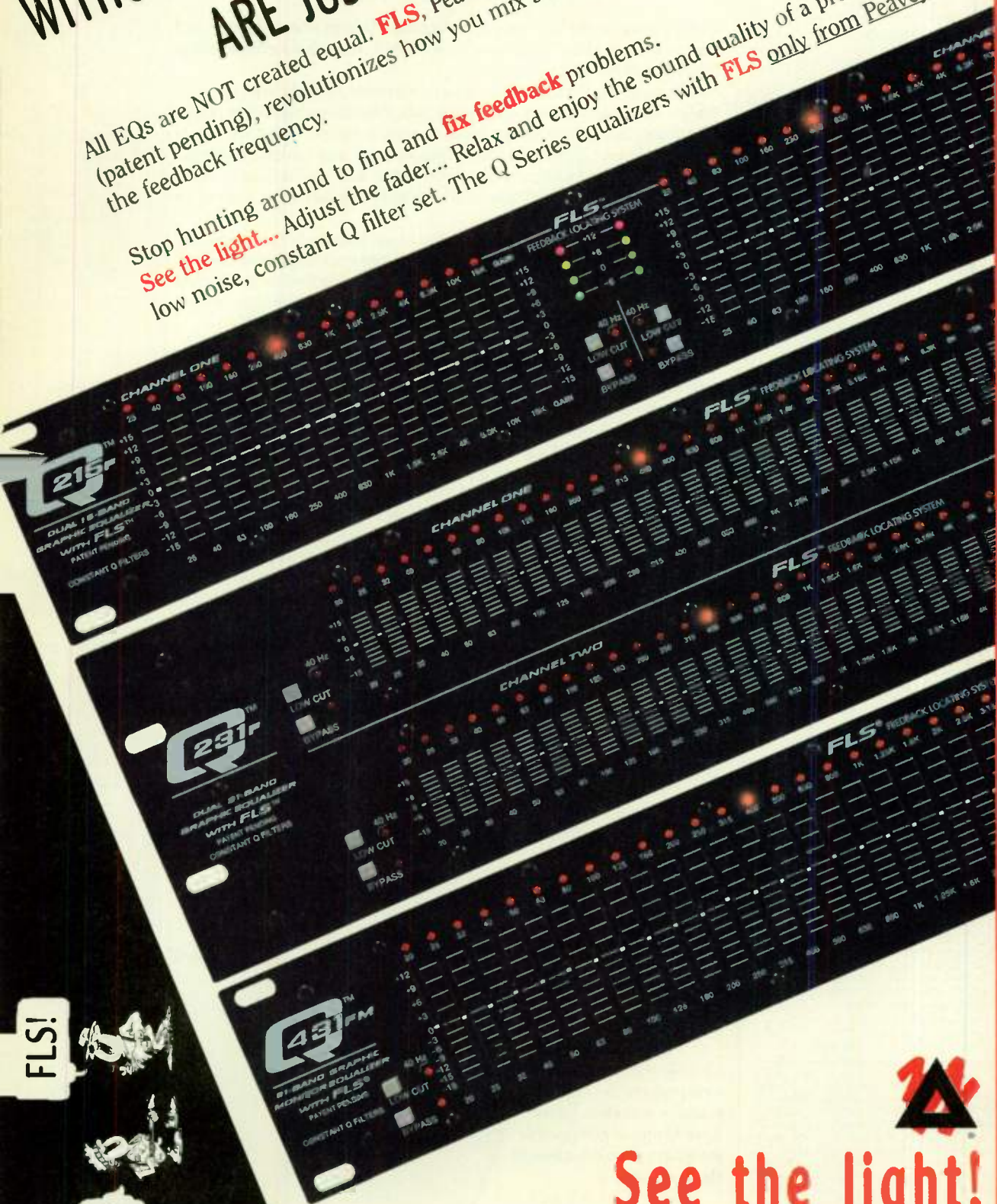
Jack Joseph Puig at
Ocean Way Recording.
Photo by Adam DeLuca.

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EQ EDITORIAL

Are Guitars Still Cool?

As the "Seattle sound" recedes into the gray drizzle from whence it came, and electronica — with its "no guitars" ethic — starts to wash over these shores in earnest, does guitar still matter?

Although high-tech guitar might not be the flavor *du jour* right now, just wait. While the alternative crowd was getting back to basics, technology kept quietly moving forward. Landmark advances such as Roland's VG-8, the steady improvements in guitar synths from Roland, Axon, and Yamaha, hard-disk recording designed with guitar players in mind, and the dramatic increase in sound quality of multieffects have all been biding their time, waiting for fashions to change.

That change may be just around the corner. Twenty-five years ago, guitar players were the experimenters who were always searching for new sounds, while many keyboard players were still lugging Fender Rhodes pianos and B3 organs from gig to gig. Somewhere along the line, it was the keyboard players who cast off the past, and the guitarists who started to cling to it.

But pendulums swing, and now that keyboardists are getting comfortable with synth and sampling technology, it's time for guitar players to catch up on what's been happening while they were visiting retroland. Fact is, now more than ever there's an opportunity for guitarists to create sounds that no one has heard before. Electronica-driven groups are getting less rigid as well, recognizing that the warm, organic textures associated with the guitar complement, rather than compete with, the clinical accuracy of digital synthetic sound. Listen to groups like Prodigy or Cirrus, and you'll hear the roar of six distorted strings insinuating its way into a new type of music.

EQ magazine, always in the forefront of what's happening in the art of recording, invites you to step into the brave new world of electronic guitar. There are more ways to bend, fold, staple, spindle, mutilate, and, yes, *beautify* guitars than ever before. With this issue featuring articles on everything from multieffects tips to creative cut and paste with computer-based editors, there should be plenty of brain food for recording enthusiasts who want to take guitar to the next level.

The next step, of course, is an attitude adjustment. The guitar has evolved dramatically since the days when Segovia was a newbie on nylon strings; it has been reinvented by artists as diverse as Charlie Christian, Django Reinhardt, Les Paul, Scotty Moore, Joao Gilberto, Roger McGuinn, Jimi Hendrix, David Torn, Eddie Van Halen, Vernon Reid, and Joe Satriani.

The next name on that list will be someone who takes today's technology and effortlessly melds it with a sense of adventurous musicianship. And odds are that whatever that person does with the guitar will involve recording.

There are always new horizons to explore, new peaks to be climbed, and new sounds to be created. All of us at EQ hope this issue takes you a little closer to those goals.

Craig Anderton
Technology Editor (and resident string-basher)



APRIL 1998

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C1000S



POWER TO THE PRO

I am in complete agreement with Steve La Cerra's views on home studios passing themselves off as project studios [Editorial, March 1998]. But the problem is a lot worse than that. At least it is in Pittsburgh, PA. I doubt if there's another town in the U.S. with so many bad studios. I'll start from the top and work my way down. The two "big" rooms (with the highest rates) also happen to be the two worst sounding rooms. One has a decently designed studio and control room, but it is plagued by an old console that is so dirty that it can degrade the quality of your tapes just by leaving them in the same room. The other one has a decent console and tape machine (Amek Rembrandt/Studer 827), but the room is bad beyond words to describe. The mix is done on big speakers in a room that is paneled and has absolutely no diffusion or really any acoustical treatment, period.

I don't complain about it too much because I've made a great living fixing projects that were started and mangled at these two "big" rooms as well as the crap spewed forth from 90 percent of the other studios. If I went into all the stupid, unprofessional practices going on you could fill two issues with it. I get tapes in with everything from distorted (unintentional) kick drums, drum comps with sloppy triggers and way too much effects to one where you could hear the death of a Coles ribbon mic.

This "project studio," run by a local band with some national success, is a home studio that they charge way too much for. They used a ribbon mic in close to a high-gain Marshall rig. At first you can hear the ribbon crapping out every time the guitar starts chunking. Then you hear it start to rip and then it's dead. It's amazing.

Anyone with a small Mackie and one ADAT is a studio. The thing that really ticks me off is that although I get a lot of business fixing botched projects, the bands usually have blown most, if not all, of the recording budget and I'm stuck with bad drum tracks because they can't afford to start from scratch. And they wouldn't have had any of the problems and could have saved themselves a lot of money if they started the project with us.

I've learned from some of the bands that come to us for "turd polishing" that the reason they didn't give us a look in the first place was because of the vicious rumors spread by other studios. This area is very cut-throat. The quali-

ty of the studios with the highest rates is less than most home studios, and in between there are way too many hack facilities run by clueless virtual engineers. Welcome to audio hell.

Don Cameron
the Audio Loft
PGH PA

HOME IS WHERE THE PRO IS

Thank you, EQ, for allowing Woody to post his rant against home studio owners in your March, 1998 issue.

Now we project studio owners who for some reason don't live up to his self-serving definition know that he is more interested in excluding people who are not just like him than he is in including and empowering people who share our love of music and interest in technology.

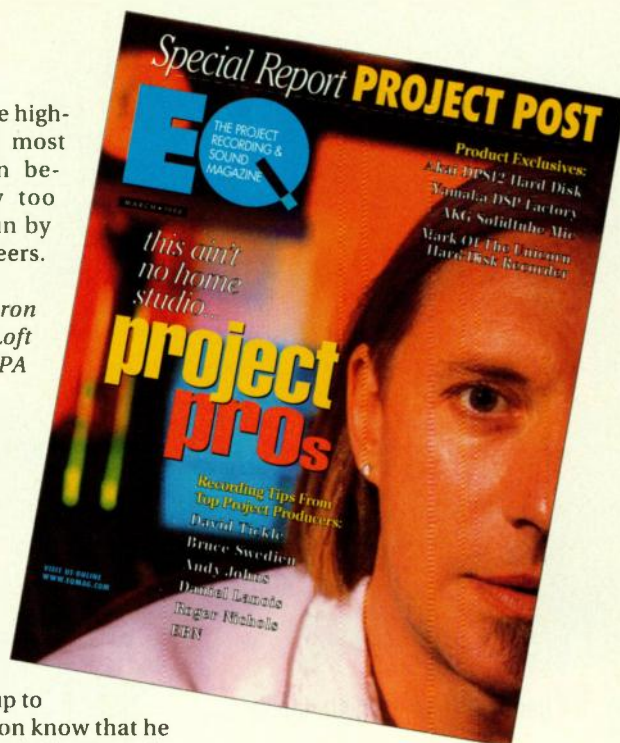
If you think I am stating that a little harshly, look at the article again. Woody implies that self-proclaimed "project studio owners" who aren't professional engineers:

- Are likely beer-guzzling wannabees;
- Seldom learn how to set up, connect, or use the gear they own;
- Don't make money from their studios;
- Don't soundproof their studios;
- Are ill-equipped to handle the full range of potential recording situations;
- Practice the kind of irresponsible engineering that got "commercial studio owners" ticked off "in the first place," and
- Insult "professionals" who do "practice their craft."

According to Woody, "professional" project studio owners:

- Do "serious" work such as records, commercials, and instructional tapes;
- Spend too much on gear, but can justify it because it's for "tools";
- Spend too much time tweaking their gear, because they're so conscientious, and
- Soundproof their studios.

Woody neglects to mention that many home-studio owners today have low-maintenance tools that outperform those of the "commercial studios" of the '70s or even the "project studios" of the early '90s. Or that for the many kinds of work done in project studios today, a



couple of decent microphones are more than sufficient, factory settings provide a phenomenal range of options, and soundproofing is irrelevant. And who cares if home studios aren't equipped to handle the full range of recording situations, unless their owners are palming their studios off as "commercial studios," a stone the "professional project studio" owners are in no position to cast?

Most astounding is Woody's overall implication that only technophiles who constantly tweak their tools/toys and make money directly from their studios can really claim to own project studios. This excludes:

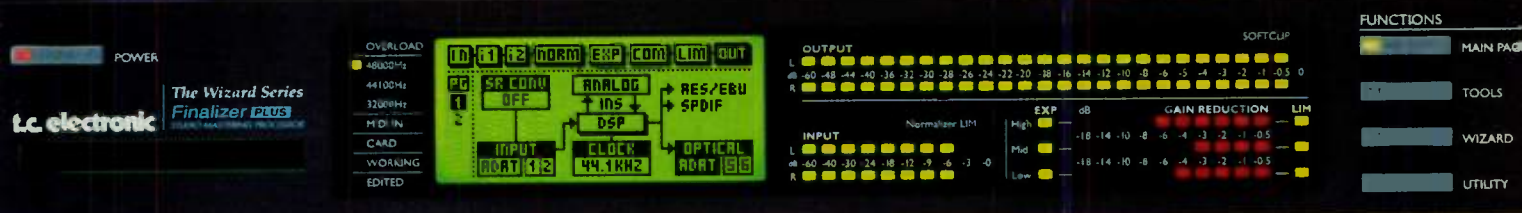
- Songwriters who record their own demos to pitch to publishers;
- Broadcasters and advertising firms who have mini-studios for producing their own radio spots;
- Composers who use their PCs and multichannels to "scratchpad" arrangements they will later score for band or orchestra;
- Recording artists who record sample versions of their songs to demonstrate to their producers the kind of sound they want to get when they go into the "real" studio, and
- Musicians without a recording contract who put together "roll-your-own" projects to sell at gigs.

A "project" studio is, by definition, one that meets the needs of the person trying to complete a particular project.

continued on page 146

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will stop intermittently. It seems to be a temperature-related problem, although I have it rackmounted and there seems to be plenty of ventilation. Would you suggest a fan?

Also, sometimes the tape comes out unwound when it is ejected. If you have any part numbers on idler or transport updates, could you please give them to me?

Wes Homner
via Internet

A Your problem could be due to the back-tension felt. Panasonic at one point switched production of the 3700 and newer models to another factory. The length, manufacture, and adjustment of the tension felt changed during this time (and not on purpose).

Serial numbers give a clue to date of manufacture: "AA5," for example; the first three characters indicate the unit was built in 1995 (the year of transition). If your machine is older, there was a problem with some machines concerning the discharge of a capacitor during power down. That was not a "thermal" problem.

What I think is happening is that the heat elongates the tension band, causing the back-tension arm to get caught as the loading guides retract.

For additional information, visit my Web site: www.tangible-technology.com. If you don't find what you want, just ask.

P.S.: It is sometimes difficult to reach Panasonic's parts department via voice (800-833-9626); faxing is easier (800-237-9080).

Eddie Ciletti
Contributing editor
EQ magazine

FEELING USED

Q *I recently posted a question to you a few weeks ago regarding whether I should buy a low-hour ADAT or a DA-88 with 428 hours of use. I decided to purchase the DA-88, as it also came with a remote and an MMC-88 unit. Now for a few questions:*

1. What differences are there between the MMC-88 unit and the TASCAM SY-88 card?

2. The software version is 3.01 and the chip version is 1.01. I know the chip is an old one, but is it worth getting the

newer version? Is it expensive? What are the features of the updated chip?

3. I've read on various postings that heads stamped with "22" or higher are the newer head designs; however, when I checked the stamp on the top of the heads it read "93 4 10." The serial number is very low (around the 30000 mark). Do you think it is the older head design? If it is, should I take any precautions (it has been upgraded with the tape path cleaner) to extend its life?

4. I've read that switching brands of tapes can lead to problems. The previous owner used Sony ME tapes (I believe TASCAM recommended these early on). More recently, however, I've read that these are not the best choice. The previous owner had no problem with these tapes. Should I stick with them or switch to the MP tapes?

Josh Latour
Ottawa, Ontario CANADA

A So many questions, way too much time. OK, let's get started.

1. JLCoooper makes the MMC-88. It connects to the 15-pin D-sub connector and converts Absolute timecode to SMPTE. I just repaired one and I don't believe it outputs SMPTE. Be careful you don't overflex the 15-pin connector, as this could cause a short inside the MMC-88. The TASCAM SY-88 card reads and writes its own separate track of timecode.

2. There are two versions of software: 3.10 and 4.0. The latter is specifically tailored for audio post and interfacing an edit controller via RS-422 (Sony 9-pin).
3. Starting with LOT 28 (serial number 280000), the drum assembly changed and can be identified with a 21 or later stamped on top. The tape cleaning kit is covered by warranty, so when you do bring the machine in for service, it will not add to your cost. Head life is greatly affected by environment. You should reverse the fan direction and install a filter to bring clean air into the deck. In EQ's February '98 issue, I discussed how to check the tape tension. Visit my Web site — www.tangible-technology.com — or request back issues.

4. I'm not sure you'll see an improvement with ME tapes — though any tape manufacturer is welcome to send me some of their tape for evaluation.... Any tape carrying the DTRS logo is good.

Eddie Ciletti
Manhattan Sound Technicians
NYC, NY

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	VS-840	Digital Tape	Mini Disk	Analog Tape
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Cut and Paste Song Editing	Yes	No	Limited	No
Digital Mixer	Yes	No	No	No
Digital Effects & EQ	Yes	No	No	No
Waveform Editing	Yes	No	No	No
999 Levels of Undo	Yes	No	No	No

Duh.

The fact that digital recording is the wave of the future is no longer a secret. Unfortunately, which format to go with can be. But not for long. Introducing the affordable VS-840, a complete 64 virtual track digital recording studio and the first to record directly to a built-in Zip drive.

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EQ PRODUCT VIEWS

SOUND OF SILENCE

WhisperRoom, Inc. has revealed its new "SE Series" Sound Isolation Enclosures. Various sizes are available and each unit includes a stationary floor, door window, fan powered ventilation system, interior acoustical package, and cable passages. The SE Series offers a choice of two levels of isolation, Standard or Enhanced. A Standard model can be later upgraded to an Enhanced model by installing an Isolation Enhancement Package (IEP). An IEP consist of a full set of secondary isolation components that increase the overall noise reduction capability. For more information contact: WhisperRoom, Inc., 116 S. Sugar Hollow Rd., Morristown, TN 37813. Tel: 423-585-5827. Web: www.whisperroom.com. E-mail: whisper@lcs.net. Circle EQ free lit. #101.

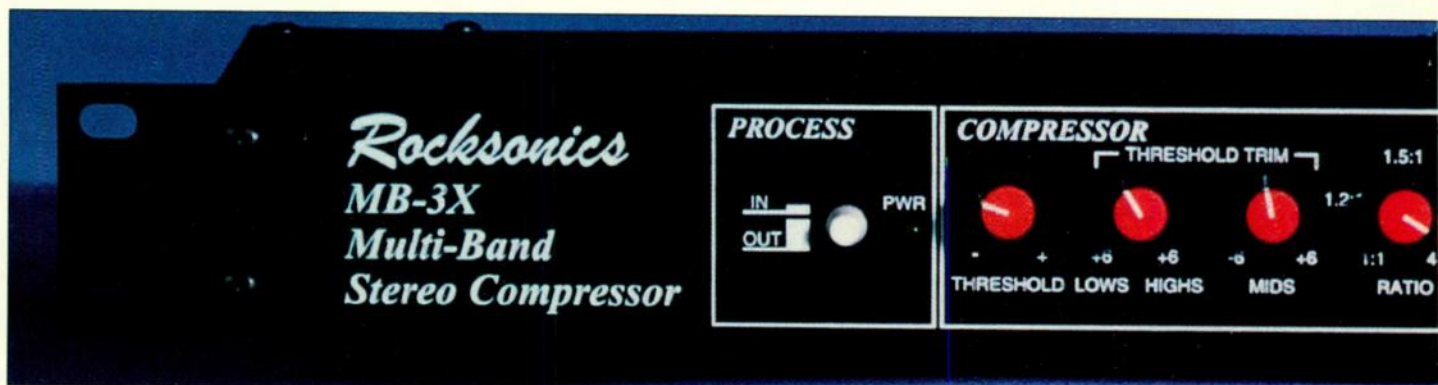


THE BIG 5-0

New from MARCAN is the MediaFORM CD-2701 for caddyless, automated copying of up to 50 discs in one run. Priced at under \$7000, the standalone copier features automatic format recognition, copy and verification on the same machine, and simple push-button operation. In addition, the CD-2701 uses a batch recording mode to make copies from multiple masters all in one run. Formats supported, and automatically recognized, include ISO 9660, Mixed Mode, CD-I, Hybrid, Single Session, DAO, TAO, CD-Enhanced, CD-ROM Mode 1 and Mode 2, CD-ROM XA Mode Form 1 and Form 2, Video CD, ISO HFS and UFS, Multisession, CD Audio, and Photo CD. For more information contact, MARCAN, Inc., 1020 108th Ave., NE Suite 209, Bellevue, WA 98004. Tel: 800-635-7477. Web: www.marcan.com. E-mail: marving@marcan.com. Circle EQ free lit. #102.

THE BIG SQUEEZE

The Rocksonics MB-3X Type II multiband stereo compressor offers analog, 3-band stereo compression; postcompression 3-band EQ; a postcompressor peak limiter; and a new "soft ratio" noise suppression circuit. The MB-3X has separately selectable +4/-10 balanced/unbalanced inputs and outputs on 1/4-inch TRS (tip/ring/sleeve) phone jacks, allowing interface with both professional and semi-pro gear. The MB-3X allows mixed program material to be compressed without the typical "pumping" and "ducking" side effects common to mono-band compressors. An additional benefit of the MB-3X is its ability to dynamically equalize the audio while compressing it, thereby producing a more consistent program. The MB-3X post compressor peak limiter offers true "brick wall" operation to ensure the maximum possible "loudness" without overshoot in critical digital mastering and broadcast applications. The MB-3X's suggested list price is \$599. For more information, contact Rocksonics, 10621 Bloomfield Street, Suite #11, Los Alamitos, CA 90720. Tel: 562-431-9590. E-mail: rocksonics@aol.com. Web: www.rocksonics.com. Circle EQ free lit. #103.



TOTE-A-2-TRACK

Not so many years ago we recall something rather larger than the new TASCAM Porta 02

and very much more expensive coming on the market and revolutionizing everything.

Now, like hand calculators, it's everyone's tool at everyone's price. And at only \$199, you'll never have to lose a musical idea again.

The Porta 02 features

two Mic/Line input channels

each with a dedicated linear fader, a 4-

channel mixer with Level and Pan controls for

each channel, a 4-track cassette recorder with 2-track simulta-

neous record capability, a headphone monitor output with level

control, a Mono switch, and a Master L-R Line output. With its 2-track simulta-

neous record capability, this new recorder is a good tool for capturing live performances

in addition to multitrack recording. With its mono capability, the headphone monitor output makes

it easy to check for phase discrepancies. For more information, contact TASCAM, 7733 Telegraph Road, Montebello, CA 90640. Tel: 213-726-0303. Circle EQ free lit. #104.



MEET THE MUTATOR

Independent Audio has introduced the Mutronics Mutator (midi), which is a stereo analog-filter and envelope follower with full control facilities. It contains two independent voltage controlled filters similar to those found in analog synthesizers that can be used to treat any external sound source. Each filter can be controlled from its own associated low frequency oscillator (LFO) and/or its own envelope follower section, which extracts the envelope contour of an input signal and applies it to control the cut-off frequency of the filter. Each envelope follower can be switched to track either the envelope of the sound that is being treated by the filter or that of an independent external control signal. For more information on the Mutronics Mutator (midi), contact Independent Audio, 43 Deerfield Road, Portland, ME 04101-1805. Tel: 207-773-2424. E-mail: ia@gwi.net. Circle EQ free lit. #105.



EQ PRODUCT VIEWS



MAX YOUR MIC

In Martinsound's Neotek MicMAX microphone preamplifier, fully-balanced circuitry is based on the same stereo mic preamplifier used in the Neotek Elite console series. Features include a Subsonic Filter that switches to a conventional high pass; a front-panel Bargraph Meter for checking proper gain from across the room; a Polarity Inversion switch; Switchable Input Impedance with 500 ohms, 1-5 kohms and 10 kohms settings to interface with ribbon or condenser mics, with or without transformers; an Output Ground Lift Switch; and a Phantom Power Supply. The new MAX Series retails for \$1200. For more details, contact: Martinsound, 1151 West Valley Blvd., Alhambra, CA 91803-2493. Tel: 626-281-3555. Web: www.martinsound.com. Circle EQ free lit. #106.

FLEX SOME MUSCLE

Line 6's new Flextone Series brings TubeTone software modeling technology to three combo models that join the AxSys 212, to create the world's first and only line of fully software driven digital guitar amplifier systems. Each TubeTone Amp Model uses an exclusive physical modeling process to emulate the sound of classic amplifiers. The selected sound combinations can be stored in one of four user programmable bank locations. The Flextone Series line up includes the Flextone 60-watt 1x12 (\$799), the Flextone Duo 100-watt stereo 2x10 (\$949), and the Flextone Plus (\$899), a 1x12 combo that can be run in 60-watt mono or a 50x2 stereo mode when used in conjunction with the single 12inch Flextone Cab (\$299). Flextone's stored sound locations are accessible with the FB4 foot controller (\$79). And, the Flextone Series is fully compatible with the Floor Board (\$299), which adds wah, volume pedal, tap tempo, and tuner functions plus 12 additional programmable sound bank locations. Line 6, 11260 Playa CT, Culver City, CA 90230, 310-390-5956. Circle EQ free lit. #107.



LOOK! UP IN THE SKY...

MIDIMAN's new Flying Calf A/D, a professional quality external S/PDIF Analog-to-Digital converter box converts any stereo audio line level signal into an S/PDIF digital audio signal. If you have an S/PDIF-capable sound card or DAT, the Flying Calf A/D delivers S/PDIF encoding from its 20-bit A/D converter with 128x oversampling and a dynamic range of nearly 100 dB (A-weighted), all in a small 6.3" x 3.6" x 1.2" desktop unit. It has an RCA S/PDIF digital output and dual 1/4-inch unbalanced audio inputs. Price is \$199.95. For more info, contact MIDIMAN, 45 East St. Joseph St., Arcadia, CA 91006. Tel: 626-445-2842. E-mail: info@midiman.net. Circle EQ free lit. #108.



THE EQ 4 U

Symetrix, Inc. has released the 552E Dual Five Band Parametric EQ. The 552E houses a dual-channel parametric EQ in a 2U chassis. The 552E incorporates five fully overlapping bands per channel, each allowing for a frequency control range of 10 Hz to 20 kHz. Independent knobs adjust frequency, bandwidth, and up to 12 dB of boost and 20 dB of cut. Proprietary topology in the 552E delivers THD+Noise of less than 0.002%. Other features include high and low cut filters, a bypass relay, and 1/4-inch TRS and gold-plated XLR connectors. The suggested retail price is \$749. For more details, contact Symetrix at 14926 35th Avenue West, Lynnwood, WA 98037. Tel: 425-787-3222. Web: www.symetrixaudio.com. Circle EQ free lit. #109.



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EQ PRODUCT VIEWS

RAX YOUR BRAIN

When you've got to find a place to put all that stuff so you can get at it all at once, OmniRax has all kinds of ways to stow it within easy reach. Its wide variety of gear workstations features ergonomic design with ample leg room, clear sightlines, and comfortable working height, as well as functional features such as easy-to-reach rack placement, adjustable sliding shelves, properly positioned cable grommets, and heavy duty casters. For more information, contact OmniRax, P.O. Box 1792, Sausalito, CA 94966. Tel: 800-332-3393. Circle EQ free lit. #110.



PATCH WORK

Fostex's DP-8 Digital Audio Patchbay addresses the increasingly complex interfaces between digital audio recording, editing, and mixing systems by providing users with a cost-effective digital patchbay. The DP-8 offers six optical I/Os, which can accommodate Alesis ADAT and related systems and any S/PDIF system. There are also two coaxial I/Os (S/PDIF). Inside the DP-8, each input signal is wave-resampled at a sampling frequency up to 48 kHz output to each channel. Thus, any S/PDIF signal can be converted from optical to coaxial or from coaxial to optical. For temporary patches, the DP-8 is also fitted with a front-panel optical I/O. The retail price \$359. For more details contact Fostex, 15431 Blackburn Ave., Norwalk, CA

90650. Tel: 310-921-1112. Web: www.fostex.com. E-mail: info@fostex.com. Circle EQ free lit. #111.



INTRODUCING THE 48



SHALL WE TANGO

Frontier Design Group's Tango is a 20-bit professional external digital audio conversion system in a 1 U rackmount enclosure, providing high-resolution A/D and D/A converters and ADAT optical digital I/O. Tango has 8 balanced outputs on professional 1/4-inch TRS jacks, and is available with 0, 4, or 8 balanced inputs. Upgrade kits are available, so Tango users can add input modules themselves, 4 inputs at a time. All inputs and outputs can be individually set to +4 dBu (professional) or -10 dBV (consumer) signal levels. Combining Tango with Frontier Design Group's WaveCenter (or any other ADAT-compatible card such as the Sonorus Studio, Korg 1212, or Alesis PCR) creates a complete hard-disk recording system for Windows-based PCs. Tango's ADAT optical interface also provides immediate compatibility with a wide range of equipment, including digital mixers and effects boxes as well as digital I/O cards like WaveCenter. Tango can be located in a rack away from the computer using optical cables up to 10 meters (33 feet) long. Tango features 128x oversampling delta-sigma A/D and D/A converters with 20-bit resolution. Tango's signal-to-noise ratio is >98 dB, and distortion is rated at just



0.002% THD+N. Its

frequency response is 20 Hz–20 kHz, ± 0.1 dB. Retail price is \$698 (0 in, 8 out configuration), \$798 (4 in, 8 out configuration), or \$898 (8 in, 8 out configuration). For more information, call Frontier Design Group, 199 Heater Road, Lebanon, NH 03766. Tel: 800-928-3236. Web: www.FrontierDesign.com. E-mail: info@FrontierDesign.com. Circle EQ free lit. #112.

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Acoustic Sciences Corp.'s Studio Trap is the building block for its M.A.S.S. System (Modular Acoustic Sub Space). The ATTACK Wall will give anyone a world-class mixing environment in a basement, garage, or spare bedroom. The real beauty of this system is that it is completely modular. Just put the traps up around the mic when you are tracking, and set the wall back up when it is time to mix. For more information, contact Acoustic Sciences Corp., P.O. Box 1189, Eugene, OR 97440. Tel: 800-ASC-TUBE. E-mail: studio@tubetrap.com. Web: www.tubetrap.com. Circle EQ free lit. #113.

HOUR DAY



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If you've been asking for more hours in the day, TASCAM's DA-302 Dual DAT Recorder makes your time count double. Finally, you can dub at twice normal speed with ABS time, subcode and PCM data intact. Make two masters at a time, even dub from any location on the source tape — no more rewinding! And the DA-302 costs hundreds of dollars less than you'll pay for two single units — only \$1999 (MSRP). See your TASCAM dealer or call TASCAM FaxBack at 800•827•2268 and request document #2330. The DA-302 Dual DAT Recorder. Put it to work in your studio 48 hours a day, 7 days a week.

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Digital meters show both peak and average levels

High resolution gain reduction metering

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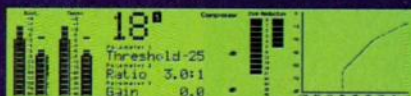


Gate



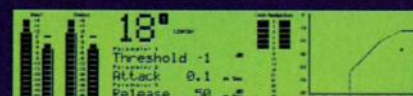
Start with the gate. Set parameters for threshold, ratio, attack, hold, release, and output gain. See the effect of your settings on the graphical display, as well as on the gain reduction and audio level meters, they all interact in real time with your manipulation of the parameters. Start with a threshold setting of about -60dB to clean off the noise in between the vocal takes. You can save your final gate settings as a "gate preset" building block and recall it into any other setup you do.

Compressor



Then move to the compressor. The effects of the gate settings are still visible on the graphic display, so let that help you determine where to set your compressor threshold. The parameters you change here will also effect the curve on the graphical display in real time. Move through all the regular parameters, like threshold, ratio, attack, release, and output gain. For vocals use a threshold of about -25dB, a ratio of about 3:1 or 4:1, and a slow attack and fast release for the most natural sounding effect. Your compressor settings can also be saved off as a building block to be called up into any other preset.

Limiter



On to the limiter. Changes you make to the limiter settings are also seen on the graphical display. Adjust the level up or down to suit your needs. The flat top line of the display moves up and down as you adjust the level. You can also set the speed at which the limiter lets go of the signal as it goes below the threshold. This is truly smooth limiting, with patented dbx PeakPlus™ algorithms, so rest assured that where ever you set your threshold level, your tape will not distort, and your signal will not get butchered as it goes across the threshold. And like the other parts of the processor, your limiter settings can be named and saved for later recall.

Save The Planet



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Compression controls: threshold, ratio, gain, Over-Easy®, auto, attack, hold, and release

Variable Transient Capture Mode™.

Hi-res graph shows composite output vs. input plot of audio signal

Gate controls: threshold, ratio, attack, hold, release

Ultra-smooth contours Auto mode.

Limiting from -60dB to 0dB, with gain, attack and release.



Precision control over every parameter

De-ess from 800Hz to 8kHz, vary the amount.

Utils: sample rate, A/D input and output, Midi functions, Sysex functions.

XLR and 1/4" balanced ins and outs.

Sidechain functions for advanced filtering applications. Sidechain monitor included

EQ offers 20Hz to 20kHz, Q, ± 12 dB, and SC Monitor.

Midi bypassable via midi program changes.



De-esser



De-essing works the same way; one the effects of your settings displayed on the graph. Parameters here are the common ones: threshold in frequency, 800Hz to 8kHz, and amount in percent. Other available processing includes EQ - both in-path and sidechain, for special-effect types of processing. When you are editing any of the building blocks, its icon is visible on the display and the parameters are shown on the graph, so it's always easy to know where you are. Parameters are easy to see in this page driven operating system. When it's as complex as this, it's nice to know somebody was thinking when it was put together.

and More



You can also work in stereo, or set up a completely different and independent processing chain for the other channel. Also, notice that the audio meters are capable of showing both peak and average levels for input and output. Optional digital output with the TYPE IV™ Conversion System with TSE™ (Tape Saturation Emulation) provides up to 24-bit output in either AES/EBU or S/PDIF formats with the trademark digital processing of TYPE IV™. The DDP also has full MIDI/Automation capability, with separate midi in and thru jacks. Entire processing setups may also be saved into one of 50 user defined presets, or use one of the 50 factory setups.

dbx digital

IT FORGIVES

• New dbx technology, the TYPE IV™ Conversion System with TSE (tm) (Tape Saturation Emulation) gives you the pleasant overload characteristics of analog tape without the harsh distortion of most digital input systems. No more dancing around with the input levels to protect the integrity of your audio.

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• With the extensive metering of the DDP, you can see EXACTLY what is going on with ALL parts of your signal: input, internal processing, and output, with peak and VU, as well as gain reduction for both sides of the stereo image.

• And speaking of stereo, you can work in stereo with dbx's True RMS Power Summing™ for phase-coherent tracking, or in dual mono mode, without the two channels interacting at all, making the DDP a great processing value.

IT NEVER FORGETS

• The DDP works right out of the box. It comes with 50 factory setups that are guaranteed to knock your socks off. There are presets for every application you can think of, and then some. dbx engineers are musicians and recording engineers. We know what a compressor is supposed to sound like, and we know it better than anyone else. We invented compression. We eat, sleep and breathe compression.

• Want to duplicate that perfect compressor set-up? Each processor in the chain has all the parameters you would expect. After you set the parameters the way you want them, save it as a processor preset, available to be recalled any time. These building blocks allow you to save entire setups just for the way you like to work. It doesn't matter that you are doing a live gig one night, then mixing the tracks in the studio the next night, the DDP will be there, just the way you left it.

• When you save a preset, you also save the information that makes it work behind the scenes, too. Digital output (optional), sample rate performance, MIDI setup, as well as any of the other utilities, like sidechain setup and monitor, EQ settings, and SysEx functions.

• When you make changes to any parameter, you can see where your adjustments are affecting the signal, simply by looking at the Hi-Res graphical display, which shows the processing curve in real time as you make your adjustments.

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RADS Volume 1 is an interactive system of drum loop files that allows the user to create a virtually endless supply of unique drum loops by interacting with separate drum and cymbal files. RADS Volume 1 contains hundreds of stereo kick/snare loops in two-beat phrases. Millions of new loops can be created by combining one or more of these phrases. These new combinations are placed into the available tracks of a Digital audio/MIDI sequencer, workstation, or Samplecell bank, and layered with any one (or more) of the different hihat or ride cymbal files available. CD-ROM For MAC or PC: \$149.95 (popular sampler formats available by special order). For more details, contact Pocket Fuel at P.O. Box 563, Prince St. Station, New York, NY 10012. Tel: 888-643-8263. Web: www.pocketfuel.com. Circle EQ free lit. #115.



FREE ENSONIQ UPGRADE

Ensoniq is giving away a significant ASR-X 2.5 upgrade to all ASR-X owners. It includes changes in Song Mode (for chaining), Input Record Quantize, SCSI Disk Copy, SMDI Transfers, faster ASR-10 loading, support for ISO-9660 CD-ROM, Selectable "MIDI Out" SoundFinder Category, Time Compression/Expansion, and EFE/EFA File Support. For more information, contact Ensoniq at 155 Great Valley Parkway, Malvern, PA 19355. Tel: 610-647-3930. Web: www.asr-x.ensoniq.com. Circle EQ free lit. #116.

DIY CD FACTORY

Sonic Foundry, Inc. and Microboards Technology, Inc. have introduced Professional CD Factory for Windows 95 and Windows NT. The package features Sonic Foundry's CD Architect software with Microboards' Playwrite 4080 hardware, and includes everything a producer or musician needs to burn CDs to Red Book specifications. Professional CD Factory has a suggested street price of \$795 and features an editor with dozens of professional effects and tools for mastering audio files; the Panasonic 4 x 8 MKE-7502B CD-R recorder in a black external enclosure; a PCI SCSI card; SCSI cable; and two Microboards PrintWrite white printable surface CDs. For more information, contact Sonic Foundry at 754 Williamson St., Madison, WI 53703. Tel: 608-256-3133. Web: www.sonicfoundry.com. Circle EQ free lit. #117.



PHIMUSIC SOFTWARE ZAPS BRAINWAVES

Looking to add that truly unusual sound to your recordings? The Windows 95-compatible Phi-Music Software comes with over 40 different tunings, ranging from Phi (the "Golden Ratio") to the sound of the atomic elements of the periodic table. One of the most unique features of the new software is the capacity to alter human brain waves. As users play their electronic keyboards connected to the computer, Phi-Music sends out slightly different frequencies to each ear over stereo earphones. These tones create a slight pulsing effect in the head that researchers indicate changes the listener's state of consciousness. This is tough to describe, so anyone with access to the Internet can download a free 14-day evaluation copy of Phi-Music Microtone/Brainwave Generator at www.seriouscomposer.com. For more information, contact Serious Composer Software, P.O. Box 18041, Asheville, NC 28814. Tel: 704-254-7160. Circle EQ free lit. #118.



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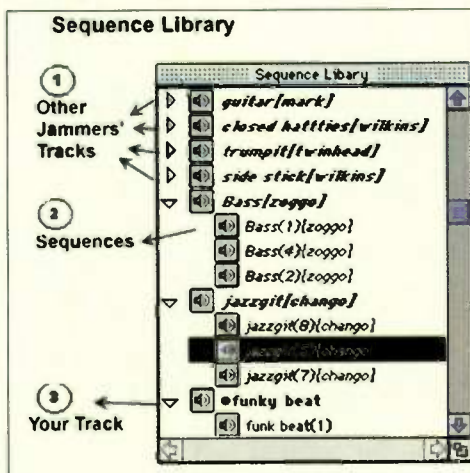
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EQ STUDIO WARE

FINAL WORD FOR SHEET MUSIC

Finale 97, the latest version of Coda Music Technology's notation software lets users enter music in real-time from a MIDI instrument, make guitar (or any other stringed instrument) tablature and chords, or notate anything from a short song to Beethoven's 9th in your choice of classical fonts or calligraphic, jazz-style strokes. Available in both Mac and Windows formats. For more information, contact Coda Music Technology, 6210 Bury Drive, Eden Prairie, MN 55436-1718. Tel: 800-843-2066. Web: www.codamusic.com. Circle EQ free lit. #119.



TIME TO JAM

San Francisco/London, U.K.-based Res Rocket has created the technology enabling musicians around the world to jam live over the Internet. This interactive music network is able to operate with as little as a 2400 modem and a multimedia computer to an equipment packed professional studio. The necessary software is available to download free from ResRocket.com. The sequencer can handle an unlimited amount of tracks that can be played or muted at any time. The system simulates making

music in a live studio, recording tracks separately, and Res Rocket's server blends them together so that everybody in the studio hears the full mix. This all happens live in a chat-style environment, so there's virtually no delay between when a new part is recorded and players anywhere in the world can hear what has been added into the mix. For more info, log onto www.resrocket.com. Circle EQ free lit. #120.

HAVE YOU HEARD?...

From **BIAS (Berkeley Integrated Audio Software)** (Tel: 800-775-BIAS) comes Peak 2.0, a new version of Mac audio editing software with new high-end features, tools, and brand-new user interface...**Gefen Systems** (Tel: 800-545-6900) has debuted the mSoft M&E Pro Intranet, an upgrade to M&E Pro, with online sound effects and music searching, auditioning, and transferring using Internet browsers...**Minnetonka Software** (Tel: 612-449-6481) has introduced the Mx51, a virtual recording console. Just drag and drop your faders and everything else, then make them go in a fully-operable 5.1 mix...The **Gadget Labs** (Tel:

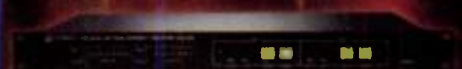
503-827-7371) WaveWarm is a software plug-in for Windows DirectX interface (ActiveMovie) — the first DSP software available for processing digital audio files with the warmth of both vacuum tube overdrive and analog tape saturation...**E-mu Systems** (Tel: 408-438-1921) has debuted the Audity 2000 rhythmic/synth module, which is tailored toward modern dance and synth music creators/performers. It features a 16-channel arpeggiator/rhythmic pattern generator, Digital Rhythmic Modular Synthesis, 12th order resonant digital modeling filters, multiple modulation destinations (can be synchronized), and 640 entirely new presets.

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Azden Performance Series wireless UHF microphone systems deliver crystal clear uncolored sound, with reliable rock-steady RF—all the time! Using the latest design and manufacturing techniques, Azden has removed the price barrier to high-quality UHF. All systems are 63 channel user selectable (in the 794-806MHz range), are crystal-controlled, PLL-synthesized, frequency-agile, and have XLR and 1/4" output jacks. And unlike many of our competitors, we have a 2 year warranty, manufacture and tune each product ourselves, maintain full customer service and repairs in house, offering the "user-friendliest" technical support and service in the industry.



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422UDR dual channel rackmount with unique cascading antenna feature, eliminating the need for an antenna distribution device, rear mount antennas, dual LED displays for RF and AF levels.



412UDR Full rackmount receiver with antenna mounting on front and rear



411UDR stand alone receiver which can be rack-mounted using the 321RK rack mount kit



41HT Handheld microphone. Heavy-duty case, with supercardioid uni-directional element, 63 internal user-selectable frequencies, and uses either 2 AA alkaline batteries or Azden Ni-Cads and unique charging system.



41BT bodypack transmitter with input level control, standby switch, locking mini-plug connector, and metal belt clip. Available with electret condenser omni-directional or uni-directional elements, instrument cable, or HS-11 headset boom mic.



AMC-1A 2 mic Ni-Cad battery charging station for making the 41HT handheld mic into the rechargeable UHF microphone available.

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get the "perfect" touch in
New Jersey

STUDIO: Perfect Pair Recording

STUDIO OWNERS: Ken and Sabrina Johnston

LOCATION: East Orange, NJ

KEY CREW: Ken Johnston

CREDITS: Naughty By Nature; Next; Lauryn Hill; Soul IV Real; Mag G; Zhane; Escape; Monifa; Bryce Wilson; Chino XL; Biggie Smalls; Sabrina Johnston; DJ Tony V.; and lots of 12-inch dance records

CONSOLE: 48-channel Otari Concept 1 with Automation and Dynamics

RECORDERS: Otari MTR 90III; Alesis ADAT; Yamaha CDR100; Sony PCM2300

COMPUTERS: Apple Macintosh 7100/80; Sony Playstation; IBM Pentium 200

PROGRAMS: 32-track Digidesign Pro Tools IV system with all the Plug-ins you could dream of; 24 ins and outs; MOTU Digital Performer; Steinberg Cubase; Opcode Vision; Digidesign Masterlist CD; Toast; Cakewalk; Voyetra SP Gold
SAMPLERS: Akai MPC3000's [2], S900, and MPC60; E-mu SP-1200; Ensoniq ASR10; Roland MKS100

KEYBOARDS: Altenburg upright acoustic piano; Lowry Organ; Roland JV1080 [2], D50, MKS70, Juno 106, and JX8P; E-mu Proteus 1 and 2, Classic Keys, Orbit, and Planet Phatt; Ensoniq MR Rack; Studio Electronics SE 1; Oberheim Matrix 1000; Drum Station; Korg 01 Wfd

EFFECTS: Lexicon 300 and PCM80 [2]; Eventide H3000SE; Korg AI; Focurite ISA 115hd; Roland SDE330, SRV330, and RSP550; UREI LA4 and 1176; Tube Tech CIIb; Demeter VTCL-2; Anthony DeMaria Labs ADL 1500; Klark-Teknik DN504; Drawmer DS201; Alesis Quadraverb and Midiverb II; BBE 422a;

Behringer Composer; Dualflex; Yamaha SPX90

SPEAKERS: Yamaha NS10M; UREI 813b

TURNTABLES: Technics SL-1200

DRUM SET: Pearl Session Series

STUDIO NOTES: Ken Johnston notes: I love the combination of analog and digital working together. My Otari Concept 1 gives me so much flexibility with its dual input/dual EQ design. We have a lot of gear, and the console handles it. And Pro Tools is just "off da hook." (I recently mixed my wife's entire album inside of the computer using Pro Tools.) With a lot of the dance and R&B projects, I sync the Otari tape machine and Pro Tools up for a total of 56 tracks (24 analog 32 digital). My console still has about 60 inputs with EQ leftover for anything else.

BEST REASON FOR A PROJECT STUDIO: Spending time with my family, recording projects, and seeing our 5 year old daughter Ritchess record and engineer a Christmas carol with her friends and cousins. **EQ**



Frankfurt Music Fair: 2 Hot Products

Akai and Creamware
turn heads at the
European audio
convention

BY CRAIG ANDERTON

The Frankfurt Musik Messe saw many significant product introductions. Next month we'll do a complete report; meanwhile, here are two of the standouts.

AKAI'S NEXT GENERATION SAMPLERS

Akai has expanded their sampler line with two new models, the S5000 and S6000 (\$1995 and \$2995, respectively, for basic, nonexpanded models). Both accept up to 256 MB RAM and offer 32 channel multitimbral operation, operating system in flash ROM for easy upgrading, up to 16 individual outputs, optional ADAT I/O, word clock BNC connector, 16-bit resolution (44.1/48 kHz sampling rate), dual SCSI ports, and 128 voices (upgradable from 64 voices in the S5000). For sample editing, there are 15 different filter configurations, an improved time-stretch algorithm that also allows matching sample length to tempo, and 3-band parametric EQ. An additional DSP effects board is standard on the S6000, and optional for the S5000.

Both samplers let you swap the internal floppy drive for a ZIP drive, and the S6000 can also house a Jaz or other 3.5-inch front-panel drive. Files are stored in WAV format on disks using standard DOS (FAT32) disk formatting, so you can stick

a sample-laden removable disk in your PC (or hook up a drive via SCSI) for file management, copying, backup, etc. Perhaps more importantly, this means you can use software in your computer such as Norton Utilities to unerase and fix files. In addition, interleaved stereo WAV files are treated as one sample, not individual L/R samples, which greatly simplifies editing and keygroup placement. Both samplers also read S3000 and S1000 sound libraries, and a "virtual sample" function plays back samples of any length (mono or stereo) from hard disk.

Arguably the most impressive aspect is the user interface, which adopts a disk management system with folders and files, much like a Mac. Keys run down each side of a large graphic interface, allowing rapid recall of the most important programming functions. You can even plug in an ASCII keyboard for fast naming. But my favorite feature is the S6000's detachable front panel that connects to the main box via a 15- to 30-foot cord. The remote can access all parameters, so you can sit anywhere in your studio and tweak samples. Cool!

The S5000 is expected in August, and the S6000 in September. Contact

Akai at 817-831-9203. Web: www.akai.com/akaipro. Circle EQ free lit #175.

CREAMWARE'S BIG SURPRISE

Creamware's SCOPE (SCalable Object Processing Environment) system for Mac and Windows has more in common with a Synclavier-type platform than the hard-disk recording programs that have been Creamware's forte. Based on a multi-DSP PCI board with six Analog Devices SHARC floating-point processors, the system integrates sampling, software-based synthesis, effects processing, mixing, and recording (using the TripleDAT digital audio workstation for Windows). It also accepts existing Creamware hardware (AES/EBU, ADAT, etc.) to allow for a variety of I/O.

Before you get too excited, check your bank balance: the card, software, and development toolkit go for around \$6-\$8000; a spiffy hardware interface (pull out the keyboard, slide in a fader board when it's time to mix) with color touch screen runs another \$5000. But we're talking high-end here, sort of a modern-day Fairlight at a much lower price point. You'll also need to be patient, as Creamware is aiming for de-

continued on page 160



CREAMWARE OF THE CROP: The SCOPE system can construct a variety of software synthesizers, then tie them all together with mixing, MIDI, and hard disk recording.

Fairchild F-22

A look at what may have
been the first FET mic

MICROPHONE NAME: Fairchild F-22

FROM THE COLLECTION OF: Dan Kennedy/
Great River Electronics

TYPE OF MIC: Condenser

POLAR PATTERN: Cardioid

DISTORTION: Less than 0.5% with a sound
pressure level of 120 dB

OUTPUT LEVEL: -45 dBm referenced to a
signal strength of 10 dynes/square cm

RATED SOURCE IMPEDANCE: 200 ohms

SELF NOISE: 20 dB or less

MIC NOTES: This Fairchild F-22 was actually OEM'd by Synchron (the Synchron version was known as the AU7A). It claims to be the first microphone employing an FET in its circuitry. While the body style was in the tradition of the Neumann U67/U87, the capsule design was modeled after the AKG CK12, used in the original AKG C12. However, the F-22/AU7A employed a 12-micron diaphragm, whereas the CK12 diaphragm was approximately one-half of that thickness. Due to the thickness of the diaphragm, the F-22's low-frequency and high-frequency response suffered. Two versions of the F-22 were manufactured, both offering cardioid patterns only. One version employed two back-to-back diaphragms and the other employed a single diaphragm with a sort of phase plate in the rear to create the cardioid pattern.

Bias voltage to the capsule was supplied by two mercury batteries located in the mic body. When these batteries leak (which they often do), the body can become badly corroded. Mercury batteries are no longer available due to environmental concerns, but there is plenty of room inside the body for adapting the mic to other kinds of powering.

Electrically speaking, the circuit is very straightforward, with a single FET driving the output transformer. This circuit is about the same as that used by one of the F-22's contemporaries, the Synchron S-10. Both of these mics use a circuit similar to that used in the Neumann KM84.

Technical data courtesy of David Josephson/Josephson Engineering (www.josephson.com).



PHOTO BY EDWARD COLVER



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* Valid 3/1 through 5/31/98. Rebate will be payable directly to the retail purchaser by Shure upon receipt of proper claim materials. Limit of three microphones per rebate and one rebate per household. Other restrictions apply.

CIRCLE 63 ON FREE INFO CARD

New Gear-At-A-Glance

A capsule look at some of the newest products to hit the shelves

BY CRAIG ANDERTON

What's with all the new product introductions lately? Even with *EQ*'s regular product views, studioware, road gear and First Looks it's tough to keep up with all the new equipment that is now — or will soon be — available. To help you keep up with the times, here's a brief look at some of the many new products that have been introduced since the start of this year.

Aardvark: The *Aark 20/20* (\$995) PCI-based sound card for Windows 95 includes a breakout box with eight 1/4-inch analog I/O (using 20-bit conversion) and S/PDIF digital I/O. Other features include digital mixer software, word clock I/O, video input sync, 24-bit DSP, and optional AES/EBU interface. Contact Aardvark, 202 E. Washington, Suite 306, Ann Arbor, MI 48104. Tel: 313-665-8899. Web: www.aardvark-pro.com. Circle EQ free lit. #121.

Alesis: The *XT20* and *LX20* 8-track digital tape recorders feature 20-bit converters and lower prices compared to the original ADAT family...The *ADAT-PCR* PCI card (Windows/Mac) offers 8-channel ADAT optical and S/PDIF I/O, ADAT sync interface, and bundled editing software for interfacing ADATs to hard disk editing systems...The *Studio 24* analog mixer can send 8 channels to tape and monitor 8 signals from tape without repatching; it also includes 3-band EQ with sweepable mid and 8 individual XLR inputs. Contact Alesis, 1633 26th St., Santa Monica, CA 90404. Tel: 800-5-ALESIS. Web: www.alesis.com. Circle EQ free lit. #122.

AnTares Systems: The *ATR-1* (\$1199) is a hardware implementation of the Auto-Tune Pitch Correction plug-in for Pro Tools. It provides perfect pitch for vocalists while ignoring vibrato, bends, slides, etc. It can also add vibrato. Use preset scales or create your own. Contact AnTares Systems, Box 697, Applegate, CA 95703.

Tel: 916-878-6666. Circle EQ free lit. #123. **Antex:** The *StudioCard AVPro* (\$1595) is a 4-channel (balanced, XLR I/O) sound card optimized for audio-for-video applications running under Windows NT. It locks to AES/EBU, S/PDIF, word clock, video pixel clock, and NTSC and PAL composite video, as well as reads SMPTE (LTC and VITC) and MIDI timecode. It also includes a 32-bit floating point digital mixer. Contact Antex, 16100 S. Figueroa St., Gardena, CA 90248. Tel: 310-532-3092. Web: www.antex.com. Circle EQ free lit. #124.

Aphex: *Big Bottom Pro Plug-In* (\$379) is a TDM-compatible plug-in that emulates the Aphex Model 104 rack unit, which adds low end presence and punch without increasing the overall peak level. Contact Aphex Systems, 11068 Randall St., Sun Valley, CA 91352. Tel: 818-767-2929. Web: www.aphexsys.com. Circle EQ free lit. #125.

Armadillo Enterprises: The Nord Modular by Clavia consists of Windows software that creates a polyphonic synth onscreen using "virtual" modules and cables. These settings can then be stored in the Nord Modular hardware synthesizer (\$2495 rack, \$2795 with keyboard) for live performance, or additional editing using the controller's knobs and switches. Contact Armadillo Enterprises, 923 McMullen Booth Rd., Suite B, Clearwater, FL 34619.

Tel: 813-796-8868. Web: www.armadilloent.com. Circle EQ free lit. #126.

Audio Software Ltd.: *Audio Architect* is a Windows software synth that provides a wide range of synthesis options including subtractive, FM and phase distortion, and basic additive. It plays in real time and accepts MIDI input; modules use virtual patch cords to create patches. Contact: Audio Software Ltd., Blackfriars Foundry, Unit 205, 156 Blackfriars Rd., London, SE1 8EN, UK. Tel: 011-44-171-721-7021; USA Tel: 937-256-4397. Web: www.audioarchitect.com. Circle EQ free lit. #127.

Big Briar: The *Ethervox* MIDI Theremin, designed by Robert Moog, is a theremin, MIDI interface, and MIDI-controlled analog sound generator. A separate breakout box accesses all inputs and outputs; the cabinet is made of hand-crafted mahogany. Pitch and volume information can be updated at 10–200 times/second, with 7- or 14-bit resolution. Contact Big Briar, 554-C Riverside Dr., Asheville, NC 28801. Tel: 800-948-1990; 704-251-0090. Web: www.bigbriar.com. Circle EQ free lit. #128.

Cakewalk Music Software: *Cakewalk Audio FX1* (\$149) is a DirectX dynamics control plug-in (compressor, expander, limiter)...*Metro 4.0* for the Mac (\$199) integrates sequencing, up to 64 tracks of digital recording, real-time audio effects (re-



FANTASTIC 4: The Fostex FD-4 is a standalone hard-disk recorder.

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There's good news coming from ENSONIQ. The latest release of PARIS™ includes all the cutting-edge components you need to record, edit and mix digital audio at a professional level – Mac and PC! Right out of the box, PARIS gives you the most complete integrated digital audio solution on the market today...for a whole lot less. It's a complete recording studio, with...

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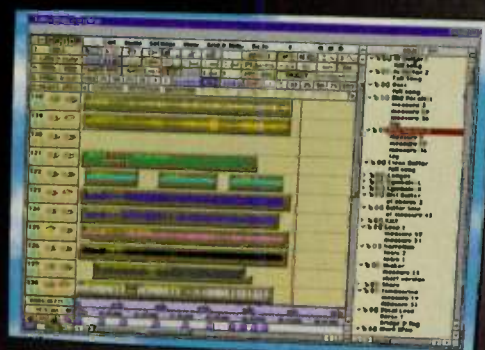
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World Radio History

verb, flanger, chorus, parametric EQ, delay) and supports Adobe Premiere/VST plug-ins. Contact Cakewalk Music Software, 6 Cambridge Center, Cambridge, MA 02142. Tel: 617-441-7870, Web: www.cakewalk.com. Circle EQ free lit. #129.

Creamware: The Windows-based *triple-DAT* hard-disk recording/editing system (4-channel board, 256 track/realtime DSP/CD-burning software) has been reduced to \$1198, and the *MasterPort* system (4-channel board, 16-track DAW/DSP software) to \$798...*MMPort* (\$598) is a 4-channel sound card with stereo analog I/O plus S/PDIF digital I/O and a MIDI interface. It contains Windows multimedia, DirectX, and ASIO drivers. Contact Creamware, 446 Harrison St., Sumas, WA 98295. Tel: 800-899-1939. Web: www.creamware.com. Circle EQ free lit. #130.

Datasonics: *Music Master VS* for Windows (under \$500) interfaces with the Roland VS-880 to provide audio track editing (including virtual tracks) on screen, along with MIDI data. It also provides a custom window for each of the 30 V-Xpanded effects, an effects librarian, and mixer window for MIDI and digital audio. The software controls the

Farm-PCI/ and Project-PCI audio cards. Contact Digidesign, 3401-A Hillview Ave., Palo Alto, CA 94304. Tel: 415-842-7900. Web: www.digidesign.com. Circle EQ free lit. #132.

Digital Audio Labs: The *Timing Gear* sync interface for the Windows-compatible V8 digital audio interface locks the V8's sample clock to all standard SMPTE formats via LTC or VITC, and also provides MIDI timecode out and video window burn...DAL has announced that Waves will support the V8 workstation platform with the Waves V8 plug-in bundle (C1 Compressor, Q10 EQ, S1 Stereo Imager, L1 Ultramaximizer, and Trueverb reverb). AnTares will also port their Auto-Tune plug-in to the V8, and QSound/V8 is now available to transform audio files into surround soundfields. Contact Digital Audio Labs, 13705-26th Ave. North, Suite 102, Plymouth, MN 55441. Tel: 612-559-9098. Circle EQ free lit. #133.

DigiTech: The *Vocalist Workstation* has been reduced in price to \$599...The *Quad 4* (\$479) has been upgrad-

crossfades, *Logic Audio Platinum* has the Gold feature set, but adds support for 24-bit audio with Pro Tools III/24 and up to 96 tracks of digital audio. Mac versions bundle Peak SE. Windows versions bundle Cool Edit Pro LE. Contact Emagic, 13348 Grass Valley Ave., Building C, Suite 100, Grass Valley, CA 95945. Tel: 530-477-1051. Web: www.emagic.de. Circle EQ free lit. #135.

E-mu Systems: The Audio Production Studio (APS) PCI-bus card (\$599) for Windows 95 offers digital sampling, synthesis and sound design. It includes a 64-voice, 32-channel synth with real-time effects, sample rate conversion, S/PDIF and balanced analog I/O, and a variety of software. Contact E-mu Systems, Box 660015, Scotts Valley, CA 95067-0015. Tel: 408-438-1921, Web: www.emu.com. Circle EQ free lit. #136.

Event Electronics: The *EMP-1* microphone preamp with balanced XLR in and out, phase reverse switch, low cut



SYNTH CITY: Yamaha's EX5 synthesizer workstation features 128-note polyphony.

VS-880's on-board editing capabilities rather than editing audio within the computer, thus eliminating SCSI connections. Contact Datasonics, Box 127, Lawson, NSW 2783, Australia. Tel: 011-61-2-4759-1244, Web: www.datasonics.com.au. Circle EQ free lit. #131.

Digidesign: The *ADAT Bridge I/O* (\$1195) enables 16 channel digital transfers between ADAT and Pro Tools systems (cascadable for up to 72 channels). It includes a 20-bit D/A converter pair for monitoring and separate AES/EBU and S/PDIF ports for mastering to DAT. Requires Pro Tools 4.1.1/Disk I/O-PCI/DSP

ed to 20-bit converters, better software, and up to 5 seconds of delay...The *GSP-2120* is an updated version of the *GSP-2112* with longer delays (up to 10 seconds), artist presets, and included footswitch. Contact DigiTech, 8760 S. Sandy Parkway, Sandy, UT 84070. Tel: 801-566-8919. Web: www.digitech.com. Circle EQ free lit. #134.

Emagic: The cross-platform Logic line has been revamped; all programs now include audio and an "adaptive mixer" that simplifies mixing. *MicroLogic AV* (entry-level) has 16 audio tracks and real time effects, *Logic Audio Silver* offers up to 24 audio tracks with 3-band EQ and real time effects on 3 effects busses, *Logic Audio Gold* is like Logic Audio, but adds nondestructive

filter, gain control, low noise operation, clip indicator, and +48V phantom power. Contact Event Electronics, PO Box 4189, Santa Barbara, CA 93140-4189. Tel: 805-566-7777. Web: www.event1.com. Circle EQ free lit. #137.

Fostex: The *FD-4 Digital Multitracker* (\$599) stand-alone hard disk recorder features SCSI for connection to a variety of recording media (an internal drive is optional), varispeed, 2-track digital out, 4-channel main input channel mixer with 2 aux sends and 2 stereo aux returns (8 inputs for remix), ch. 3&4 with XLR mic ins, 3-band EQ with sweepable mid, and MTC slave/MIDI clock and SPP out. Contact Fostex, 15431 Blackburn Ave., Norwalk, CA 90650. Tel: 310-921-1112. Web: www.fostex.com. Circle EQ free lit. #138.

Ilio Entertainment: Ilio has two new guitar sample CDs (\$99 audio, \$199 CD-ROM

including audio CD). *Fingerstyles* is a construction kit with patterns, melodies, cadences, and endings in various musical styles. *Fretworks* provides an "off the beaten path" collection of Delta blues, folk, bluegrass, swing, shuffle, and other "roots" music. Contact Ilio Entertainment, Box 6211, Malibu, CA 90265. Tel: 818-707-7222, Web: www.ilio.com. Circle EQ free lit. #139.

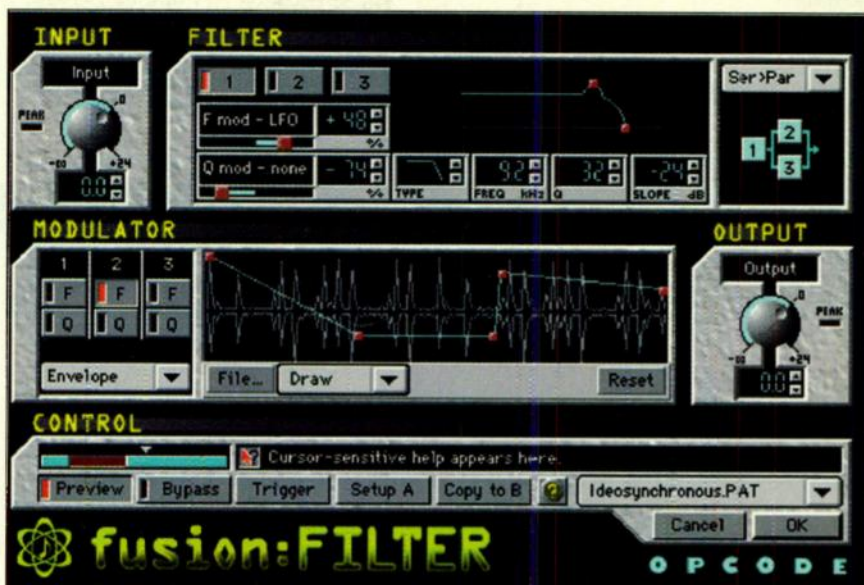
KeyFax Software: *Twiddly.Bits Vol. 9* includes over 1000 acoustic and electric piano, bass, and drum parts (chord progressions, solos, licks, etc.) as Standard MIDI Files on PC or Mac disk. Categories include walking bass lines, brush drum patterns, drum solos, piano solos, etc. Contact KeyFax Software, Box 958, Aptos, CA 95001. Tel: 408-460-0172. Web: www.keyfax.com. Circle EQ free lit. #140.

Korg: The *D8 Digital Recording Studio* (\$1250) is a self-contained, 8-track hard disk recording studio that offers 16-bit recording and playback (with no data compression), 2-track simultaneous recording, 8-track simultaneous playback, built-in 1.4 GB hard disk, SCSI interface for up to 7 external drives, S/PDIF, and aux bus. Contact Korg USA, 316 South Service Rd, Melville, NY 11747. Tel: 516-333-9100. Circle EQ free lit. #141.

Lexicon: Designed by John McIntyre, the *Signature 284* (\$999) guitar recording amp combines a 12AX7-based high-gain preamp with a low wattage, stereo Class "A" power amplifier using EL84s. It also includes a tube-driven stereo effects loop, simultaneous stereo speaker outputs, built-in speaker emulation, and a passive load for silent recording...The *Vocal Fix* card for the PCM 80 corrects off-pitch melody tracks. Contact Lexicon, 3 Oak Park, Bedford, MA 01730-1441. Tel: 781-280 0300, Web: www.lexicon.com. Circle EQ free lit. #142.

Line 6: The AxSys 212 digital modeling-based guitar amp has been upgraded to the AX2 212 (\$1199; upgrade for AxSys 212 owners, \$99), which now has a dozen new amp models and new effects, including ring modulation. Contact Line 6, 11260 Playa Court, Culver City, CA 90230. Tel: 310-390-5956. Circle EQ free lit. #143.

Metalithic Systems: *Digital Wings for Audio Elite* is a Windows 95-based hard-disk recording system with 32-bit PCI sound card, 10 X 10 breakout box (8 simultaneous analog ins and outs with 20-bit conversion + S/PDIF I/O), and recording/editing software including 30 "plug-in" DSP effects. MSI also announced a strategic alliance with E-mu Systems to



PLUG IT IN: fusion:FILTER is the latest addition to Opcode's fusion line of Premiere/DirectX plug-ins.

bundle a version of Digital Wings for Audio with E-mu's new Audio Production Studio PCI sound card. Contact Metalithic Systems, 3 Harbor Dr., Suite 206, Sausalito, CA 94965. Tel: 415-332-2690. Web: www.metalithic.com. Circle EQ free lit. #144.

MIDIMAN: *Audio Buddy* (\$119.95) is a dual mic preamp/direct box intended for matching instruments such as mic and guitar to PC-oriented, line-level sound cards. It has two independent XLR balanced ins, 2 1/4-inch high-impedance inputs, gain control and clip indicator, and phantom power. Contact MIDIMAN, 45 E. Joseph St., Arcadia, CA 91006-2861. Tel: 626-445-2842. Web: www.midiman.net. Circle EQ free lit. #145.

Mark of the Unicorn: *Digital Performer 2.3* for Mac OS includes a free "tube pre-amp plug-in" with "coloration," distortion, EQ, and compression. Other updates include stereo track accommodation, over 200 MB of free audio samples, drag-and-drop for MIDI and audio files, crossfades, export as stereo interleaved file, and a Boolean search function for finding phrases, clusters of controller data, and the like. Contact Mark of the Unicorn, 1280 Massachusetts Ave., Cambridge, MA 02138. Tel: 617-576-2760. Web: www.motu.com. Circle EQ free lit. #146.

Music Industries Corp.: The *Axon AX-100* MIDI guitar synthesizer supports bass guitar, string split, fret split, 3-position pick split, piezo pickup systems, programmable arpeggiator, auto quantize, and many other features. It is also available with an onboard sound generator. Contact Music Industries Corporation, 99 Tulip Ave., Floral Park, NY 11001. Tel:

516-352-4110. Web: www.musicindustries.com. Circle EQ free lit. #147.

Opcode: The "fusion" Adobe Premiere/DirectX compatible line of plug-ins has been joined by *fusion:FILTER*, boasting three independent filter modules with tempo programmable LFOs, envelopes, sequence-style modulation, and envelope/dynamics tracking...Opcode has also announced product support for the USB (Universal Serial Bus) protocol, which allows connecting up to 127 devices to computers including keyboards, monitors, CD-ROM drives, etc. Contact Opcode, 3950 Fabian Way Suite 100, Palo Alto, CA 94303. Tel: 415-856-3333. Web: www.opcode.com. Circle EQ free lit. #148.

Passport Designs: *Memphis* for Windows 95 is a program for song chart and lead sheet creation. It includes a spelling checker, rhyming dictionary, and "fret foundry" for creating a custom library of guitar fret diagrams. Contact Passport Designs, 1151-D Triton Dr., Foster City, CA 94404. Tel: 415-349-6224. Circle EQ free lit. #149.

Peavey Electronics: The *DPM C8X* keyboard MIDI controller features a friendly graphic interface and extensive MIDI control, along with innovations such as arpeggiator, chord and "guitar" functions...The *Tube Sweetener* is a two-channel tube enhancement product that restores warmth. It includes 1/4-inch and RCA inputs/outputs, a -10 dB pad, "strength" LED that indicates the amount of tube compression, and Level control. Contact Peavey, 711 A Street, Meridian, MS 39301. Tel: 601-483-5365. Web: www.peavey.com. Circle EQ free lit. #150.

continued on page 138

Spirit Digital 328 Console

The latest digital console comes ready to use right out of the box

BY STEVE LA CERRA

The digital console revolution continues, with the most recent introduction coming from Spirit by Soundcraft: the Spirit Digital 328. By offering a combination of total recall, moving fader automation, and onboard Lexicon effects processing, the Digital 328 takes a unique niche in the digital console market.

Perhaps more importantly, this desk is designed for "out-of-the-box" use, and maintains a high degree of operational similarity to a traditional analog console.

Combining 16 analog mic/line inputs with 16 digital tape returns and 5 analog stereo inputs, the Digital 328 provides a total of 42 channels on remix. Each analog mic/line input has a balanced XLR mic input with Spirit's UltraMix+ mic pre, a 1/4-inch TRS bal-

anced line input, and a 1/4-inch TRS insert point. Onboard A-to-D and D-to-A conversion is 24-bit (w/128x D-A oversampling), while internal processing is 24-bit (56-bit for the busses).

Sixteen channel strips are provided for control over the 32 mic/line and tape inputs, allowing all of these to access 3-band parametric EQ, onboard effects, aux sends (six total), and the eight busses. Channel strips may be switched globally or individually to access ei-

buttons labeled (oddly enough) "Mic/Line 1-16," "Tape 17-32," and "Masters" (pretty self-explanatory). Three meter bank switches select complementary metering modes.

Two floating mono or stereo dynamic processors are provided in the 328. Each of these can do compression, limiting, gating, and ducking, and may be inserted on any channel, tape return, mix, or aux bus. A total of six sends are available; there is a distinction between the two effect sends and the four aux sends. Two effects sends are internally routed to two independent Lexicon effect units — each of which is capable of producing reverb, chorus, delay, flange, and dual effects such as

ther the 16 inputs, the 16 tape returns, or the group masters. Rather than hiding this switching in a menu, Spirit has provided three backlit fader bank



chorus plus delay. Up to ten parameters may be edited in an effect program, and user edits can be stored for future recall. In addition to these two internal effect sends, the 328 can route signals to external processors via four analog, balanced 1/4-inch aux sends or an optical output. This optical output (as well as the Digital 328's AES/EBU and S/PDIF I/Os) may be assigned to various inputs or outputs, enabling them to be used for bus outputs, aux outputs, or even digital insert points on the mix bus. Two Digital 328's may be linked for 32-track recording, with a total of 84 inputs on remix.

On each channel strip, you'll find a trim control, high-pass filter, level meter; mute, solo, mic/line "select" and tape switches; 100-mm motorized fader; and a rotary encoder. Although there is only one rotary encoder per channel, Spirit's design team has very cleverly enabled access to all channel functions by arranging the 16 encoders (one on each strip) into a horizontal "E-strip." In other words, the sixteen encoders horizontally form the EQ, aux/effects, and pan controls for one channel. By pressing the Select button on a particular channel, the E-strip becomes an active set of controls for that channel (settings from one channel can be copied and pasted into another). Three buttons globally set all 16 encoders to control tape return level, pan, or aux send level — without the need to access a menu. A set of green LEDs surrounding each encoder indicate signal level for whatever function you have selected.

On the master side of the Spirit 328 is a combination of traditional analog-style and microprocessor controls. Solo function may be globally switched to AFL, PFL, or solo-in-place. Control room dim, mono, mix, and 2-track options (A or B) may be selected for monitoring, while traditional analog pots control the master levels of auxes 1 through 4.

One-hundred console scenes may be

*By offering
total recall,
moving fader
automation,
and onboard
Lexicon pro-
cessing, the
328 takes a
unique niche
in the market.*

stored in the Digital 328, each memorizing the entire console's status. Scenes can then be recalled manually or automatically against MIDI clock, MTC, or SMPTE code. Every console control generates MIDI data, so mixes may be dynamically automated by recording the MIDI controller data into an external sequencer.

Also located in the master section of the 328 is a "select" section that provides phase reverse, track arming, routing of a channel to any of the 8 busses or mix bus, and EQ in/out switching. Dedicated rotary encoders are provided for control over the stereo inputs and effects re-

turns, and a single 100-mm fader serves as the L/R master level control. Machine control of TASCAM DA-88- and ADAT-type machines is available from the console (with two locate points), via MIDI output for MMC or Sony 9-pin protocol.

Unlike a lot of digital console designs, the Spirit Digital 328 comes out-of-the-box ready for digital multitrack recording: the rear panel has two TASCAM TDIF I/Os and two ADAT optical I/Os, allowing 16-track digital multitrack interfacing without the need to purchase expansion cards. However, Spirit offers a number of expansion modules, any two of which may be added to the Digital 328. All expansion modules connect to one of the two TDIF interfaces on the rear panel. Spirit's 8-Channel Analog I/O Interface provides eight analog direct outs and eight analog tape returns via RCA jacks. An AES/EBU interface supplies four pairs of AES/EBU I/Os for digital interfacing with production systems such as Pro Tools. The Mic Pre-amp Interface has eight XLR mic inputs with the UltraMic+ pre (and a gain control), plus eight analog outs. Use of two Mic-Pre-Amp Interfaces would make the Digital 328 a 32- (mic) input console with eight busses for live sound applications. Spirit plans to begin shipping the Digital 328 in May/June of 1998 at a suggested retail price of \$4995.95.

For more information contact Spirit by Soundcraft at (Tel.) 916-630-03960 or (Fax) 916-630-3950. Web site: www.spiritbysoundcraft.com or www.spirit-by-soundcraft.co.uk. Circle EQ free lit. #151.

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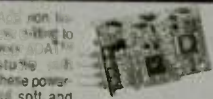
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nies for support, including Cakewalk, C-mexx, Emagic, IQS, Musicator, Sek'd, Sonic Foundry, and Steinberg. The plan is to make sure you can attach a familiar interface to a powerful new card.

Fade in: ADAT "light pipe" 8-channel optical interface. **Fade out:** AES/EBU 2-channel interface. Stereo digital audio is fine for consumers, but for pro audio, you need channels — and lots of 'em. ADAT's optical interface has turned into a de facto standard for digital audio transfer (even for those who don't use ADATs per se) for three main reasons: it's cheap, it works, and no one has offered anything better anyway. Digidesign, MIDIMAN, Panasonic/RAM-SA, Spirit by Soundcraft, Aardvark, Yamaha and dozens of others — everyone is hooking up to light pipe connectors. As for AES/EBU, it seems that for 2-channel work, S/PDIF has pretty much taken over, with AES/EBU as an option.

Fade in: Software synthesizers you can run on a computer. **Fade out:** Overpriced vintage synths. Vintage synths will always have appeal. But for musicians on a budget, you can now get many of the same sounds through virtual means at a fraction of the cost. As computer prices continue to plummet and sound cards become commonplace, more and more synths are being implemented in software. For example: the Nord modular synth for Windows, Bit-headz's Retro AS-1 "analog" synth, Arboretum Systems' Metasynth, the continuing evolution of Propellerheads' ReBirth analog drum emulator, Audio Architect, Synoptic's Virtual Waves 2, and more.... If you have the processing power, these sound generators are pretty amazing. Best of all, you can tweak them to customize sounds to your needs.

And speaking of synths, not all the action is in software. The synth renaissance predicted in these pages last year is proceeding apace, not just with software, but with hardware as well: Consider Yamaha's EX5 Synthesizer Workstation with 128-note polyphony, five different types of tone generation technologies, 480 ppq resolution sequencer, real control knobs, and a ribbon controller. That should keep you busy for a while!

Fade in: Real-time crossfades. **Fade out:** Destructive crossfades. OK, maybe this isn't an earth-shattering trend, but it fits so well into the article concept I just had to include it. Opcode, Emagic, and MOTU all announced that their digital audio programs now do real-time crossfades.

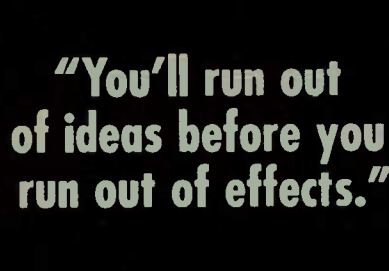
Fade in: Simpler, less cluttered software interfaces. **Fade out:** Rococo graphic designs designed to look like pieces of hardware. A while back, I wrote an editorial for my "Sound, Studio, and Stage" site saying that computers had entered the "tail fins and chrome" phase of their existence. While we're not quite yet at the Toyota Corolla stage of computer evolution (gets you there, simple, efficient, cheap, works forever), there are signs of improvement. Case in point: The revamped Logic Audio plug-in windows (fig. 1) that give you just the info you need to know, and also the "interfacelifts" for Cakewalk and Opcode's StudioVision 4.0. I definitely have a preference for cleaner and simpler aesthetics, especially when trying to get real work done.

Fade in: Dance music. **Fade out:** "Alternative" rock. Walk around the show, and you'd hear the thump-thump-thump of a dance music loop as often, if not more so, than guitar noodling. Rock as a genre isn't dead, but whether you're talking Roland's "groove" blitz of DJ-toys-meet-musical-instruments, MixMan's virtual turntables, Sonic Foundry's incredible-looking "Acid" software designed for loop-oriented music, the Quasimidi Sirius, or any of the tons of other dance music-oriented hardware and software, dance music has finally arrived big-time at NAMM.

Fade in: Strategic alliances. **Fade out:** The corporate equivalent of solo performers. It seems every software company talked to every hardware company at one point during the show. The software people want to port to the hardware, and the hardware people want as much support as possible. Case in point: Event Electronics, which markets extremely cost-effective PCI cards, wisely decided not to become a software company too, preferring instead to bundle existing software with their cards. Or Yamaha — certainly they have enough resources to do anything they want — but which elicited support from a Who's Who of the software biz to complement their DSP Factory hardware.

Craig Anderton is a card-carrying humanoid biped. Check out his latest books, Home Recording for Musicians (revised version) and Multi-effects for Musicians, as well as his hopefully-by-now-it's-done Web site at www.infinitemusic.com.

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perfect tool for a sound designer like **Scott Martin Gershin** of *Soundelux Media Labs*. Scott, who used the PCM 81 to process his voice as the voice of *Flubber*, says, "This is the best pitch shifter I've used. Our job is to create emotional illusions in audio and the PCM 81 is a powerful tool to get us there. I feel I have only scratched the surface of what can be created on the PCM 81 and encourage everyone to explore the depths of this processor."

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Scott Martin Gershin's film credits include:
JFK, True Lies, Braveheart, Flubber
and *Mouse Hunt*

My Guitar Roots



PHOTO BY JIM HERRINGTON

How I learned to play from an eclectic crew of six-string geniuses

BY AL KOOPER

I started out in the music biz as a guitarist...er, actually a guitar owner. It wasn't until a little later I could call myself a guitar player, by virtue of the fact that I had recorded and toured.

I learned how to play, like everyone else at the time, by listening to Chuck Berry, James Burton, Cliff Gallup, and Scotty Moore. I sat in my room after school and played along to their records learning solos verbatim. In my neighborhood, you couldn't play in a band unless you could replicate Billy Butler's solo from Bill Doggetts's record of "Honky Tonk Part One."

Later, as a result of my participation on Bob Dylan's *Highway 61 Revisited* and *Blonde on Blonde* albums, I became an organist. I still kept my guitar chops in order, however, by playing on some of my own recordings as well as others. I appropriated new guitar heroes. First up was Reggie Young — a Memphis guitarist who first gained fame as a mem-

ber of Willie Mitchell's band. Reggie's first brush with guitar fame was a record called "20-75" by Mitchell, where his guitar-playing damn near steals the show. Later his originality in voicings graced the run of hit records by Dobie Gray: "Drift Away," "Lovin Arms," and "I Never Had It So Good," were some of the newer sides where Reggie quietly stole the show.

In the '70s I hired Reggie on many sessions and watched him like a hawk. I learned the rudiments of his style, which consists of Curtis Mayfield-styled hammerings. But there is one trick no one can "steal" from Reggie Young — he plays the most in tune of any player on earth. His impeccable tuning causes him to have a sound that few, if any, can duplicate. The subtle lack of heterodyning (beating between notes of out of tune strings) causes him to have an instantly recognizable sound. I could pick him out of a police lineup of players with my eyes closed if he were playing!

I have detailed in an earlier column my love for Little Beaver's (Willie Hale's) playing [see *EQ*, Dec. '96]. Beaver has a fascinating arsenal of licks — many based on parallel fourths all over the guitar neck. His most famous playing is on Betty Wright's "Clean-Up Woman" where he supplies three different interweaving parts that have delighted guitarists all over the world since that record came out in 1972. When I heard that record, I flew to Florida and insisted on meeting the men who played those parts. Beaver was introduced to me as "the men who played the guitar parts on 'Clean-Up Woman.'" Subsequently, he played on a few of my albums and was kind enough to teach me many of his tricks.

A friendship with Jeff Baxter in the '70s added more fuel to my arsenal. Jeff played a jazz-influenced, low-technol-

ogy sound that eschewed the traditional guitar amp in favor of plugging in directly to the console. He created a signature sound with this method and influenced many up-and-coming rockers and jazzers. His playing style mixed Wes Montgomery with Howard Roberts. Jeff could bullshit his way through any piece of music. When his knowledge ran out, he would push the envelope of wherever he was in the piece at the time until he reached familiar territory. That lesson I was able to incorporate into other areas of my life besides music!

One of my roadies who I trained from a pup began working for Keith Richards. Tunings and other tricks of the trade trickled down to me, and I set up a Telecaster with five strings in typical Richards fashion, to use for the appropriate occasion.

Using all this knowledge gleaned from a rather eclectic bunch of players infused me with my own peculiar style of playing. Rhythm guitar playing is an art form. Any fool can spin out loud blaring leads filled with miles of sixteenth-notes nowadays, but how many can play between the bass drum and the snare to enhance a groove the way Sly Stone's brother Freddie or Jimmy Nolan did in his glory years with James Brown? That's always been my goal, and I still work at it today.

I leave the leads to people like Jimmy Vivino, the guitarist in the

band I'm currently in (The Rekooperators), who plays with a passion and conviction mixed with technical virtuosity I will never aspire to in this life.

But this boy can play rhythm like nobody's business — actually like a combination of Reggie Young, Little Beaver, Jeff Baxter, Freddie Stone, Prince, and Jimmy Nolan. And he's still learning...

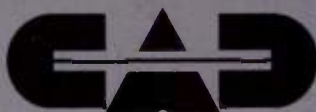
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CIRCLE 10 ON Reader Service CARD

Phil Ramone



PHOTO BY ED FREEMAN

Phil who? Never heard of 'im...

BY MR. BONZAI

Phil Ramone got an early start in music as a 3-year-old child prodigy violinist, played a Command Performance for the Queen of England at age 10, entered Juilliard at 13, but by 17 was goofing off with his jazz pals and recording at home. By the time he was 21 he was engineering for Burt Bacharach and Hal David, Quincy Jones, Leiber and Stoller, Neil Diamond and Doc Pomus. The records have never stopped spinning.

Ramone is an engineer absolutely in control of his sound; a producer with the creative powers and *sympatico* to make sessions push into peak performance. He's a gambler on both artistic

and technical levels. In this funny business you can't stick around without unpredictability.

Bonzai: N2K — So what do I need to know?

Ramone: We make music so people can hear it and the Internet is the obvious place to say, "Here's something new — sample it, try it." N2K gives me a new creative playground and a way for new artists to expand their avenues of communication.

Can we really download finished product?

Sure, and the encoded "e_mod" protects the intellectual rights. The music goes to your hard disk or your CD-R, you are charged for it on your credit card, and you can't duplicate it.

In ten years, what will a "record company" be?

It will build around the same components as an A&R department, but new ways of marketing and promotion will alter the way a company works. The

'Net is like a full-time television network. As the technology grows better, you'll be seeing and hearing more concerts, and clubs will become a very effective way to build acts.

Does this open up new opportunities for independents?

Absolutely. Boutique companies get absorbed by big companies and eventually disappear because of centralized marketing and promotion. The independent can have a shot and sell records through the Internet and live shows. It opens up a new world of "broadcasting." The passion of music can come to life in a small club or on a stage viewed by a billion people.

When was the first time you

felt passionate about music?

I was three years old and a violinist in a restaurant just drove me crazy. It was gypsy music, and I wanted to play.

How do you mic a tuba?

Carefully. [Laughs.] I mic it upstairs, at

Suspect: Phil Ramone

Occupation: Producer, Engineer, Record Company President

Hobbies: Golf. Claims to have broken all records on the first tee.

Childhood Roots: NYC, between Amsterdam St. and Columbus Ave.

Residence: Bedford, NY

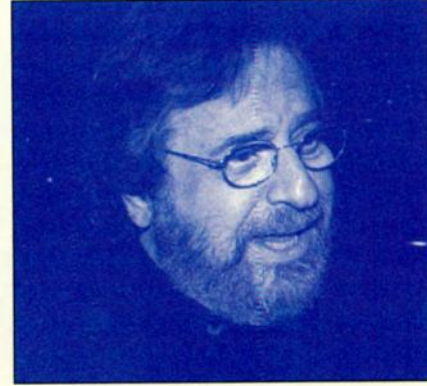
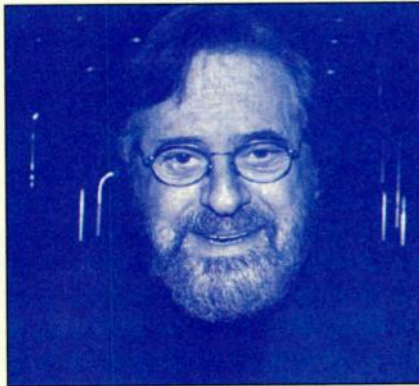
Vehicle: 1980 Mercedes Jeep

Pet Peeves: "People who talk while I'm listening to music."

Biological Oddity: Born with a beard.

Dietary Preferences: Pasta, pasta, pasta.

Notes: Ramone is renowned as both producer and engineer with Billy Joel, Paul Simon, Gloria Estefan, Luciano Pavarotti, Natalie Cole, BB King, Paul McCartney, Sinéad O'Connor, and Frank Sinatra, to name a few. On the technoside, he pioneered satellite links for recording, Dolby 4-track discrete sound (*A Star Is Born*, 1976), Dolby optical surround sound (*One Trick Pony*), digital live recordings (Joel's *Songs In The Attic*), and fiberoptics systems to record in real time from different locations (Sinatra's *Duets*). Currently president of N2K (Need to Know) Encoded Music, which, via their sister company, Music Boulevard, uses "e_mod" in what is reputed to be the first secure and commercially viable digital online music delivery system.



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least three feet above the bell, using the ceiling as a reflector. I like an old AKG ribbon mic because it's not so sensitive to the "splat" and captures the warmth. The secret to making great music in the studio is to understand the instruments by studying them in natural settings.

How do you produce a hit?

It's about the song and the artist. Be true to the song. If everything is honest, there's a chance it will work. The "hit" comes after the fact.

Who do you look up to?

I look up to people who can write.

Could you describe your project studio?

In 1992, I set up a studio to do EDnet work and interlock between studios around the world. I now have two Yamaha 02R's, an 03D, three DA-88's, a Pro Tools system, and an Internet hookup. I can listen, work on a mix, make my film-style stems in stereo pairs that I can manipulate in digital, and make changes. It's my home and a place to develop a song. It's in a barn, and sometimes you can hear the horses — and sometimes even smell them.

What format do you archive to?

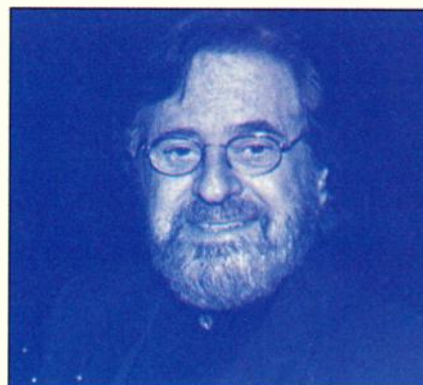
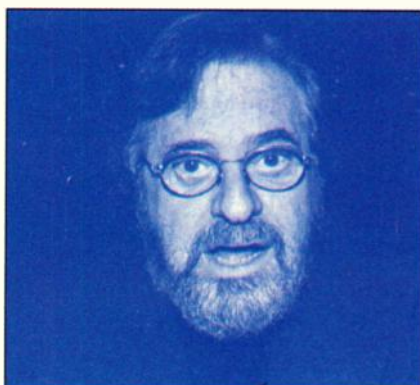
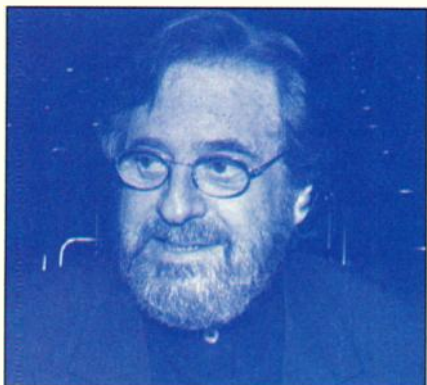
I keep a 15 ips SR Dolby copy of the master and optical disc.

If you could go back in time, before the birth of recording, what would you like to hear?

I'd like to go back and hear Mozart and Beethoven performing in the great concert halls. The dress code was pretty interesting, too.

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I fill the buckets once a month with new records. Don't copy, but learn from them.

What's wrong with the music industry? I don't see anything wrong. But the

business is directed by the bottom line, many times before the music has been completed. There's nothing more fun than having a record start to explode, but records aren't the instant hits they used to be, and it's very nerve-racking for the business community. Alanis Morissette was around for three years before she hit. There's no formula to predict the success of a Hanson. We're not selling widgets — we are selling the most intangible things of all: talent and music. And a kid off the street

with 25 cents in his pocket can still make a hit record.

What is the biggest mistake of your life? Not continuing my studies in arranging, playing the keyboard, and practicing. If you were a musical instrument, which would you be?

The most expressive is the fiddle, which I chose, but from a sound point of view I'd like to be a synth.

Could you give me one of your recording secrets?

If you are in trouble with a singer who is extremely sibilant and very soft, it might help to use a condenser mic with a ribbon or dynamic mic underneath. Mix the two for both depth and the cancellation of the sibilance. I tend to record many vocals with an omnidirectional mic, because it gives you scope in a nice little room and the cardioid pattern gives the artist more space to move around in.

Do you have any business tips?

No matter what you do, you must have a piece of paper — even a letter of intent, which is witnessed and legal. You may need advice, and the new Music Producers Guild is going to be helpful in that regard. When somebody loves you and thinks you are great, they will hand you all sorts of things in a verbal agreement. If things go wrong, your deal will change. I am very trustful of people, but it's important to be clear. It's perfectly OK to say, "Before we go to work on Monday, we need a proper piece of paper."

Any advice for surviving in the music business?

Don't lose your passion. Be faithful to your dream.

How does it feel being the Pope of Pop? [Laughs.] It's OK, because whatever it refers to is flattering. I guess it has to do with my sensibilities in music, and if the works become popular, so be it. The moniker was intended to be humorous, and it keeps me from taking myself too seriously.

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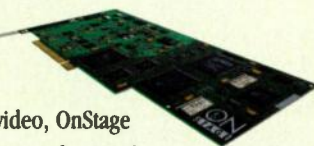
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tant to what I need to do. It's just that the room's not that big and there's so much splash and leakage from other places.

When do you put the vocal in?

Usually toward the end. That can vary because sometimes some people rehearse a little bit without the vocal and then sometimes all of a sudden they go up and sing a song. I think the one thing I've learned from doing this for the last 10 years is how to make the band sound exciting fast. You need to know what parts work as quickly as possible.

How fast is "fast?"

In one or two passes of a four-minute song. I think I lean more toward how the parts fit together rather than turning EQ knobs. I'm more interested in how the parts interact. I don't particularly worry about the perfect kick drum or snare drum sound. I could always forgive something that doesn't quite sound so good. I also got to the point where I'm very minimal on effects. I really think that the balance is more important to make it sound good than whatever trickery I can come up with. I don't fuss over, "Oh, I think I need a delay." I'm more worried about what part's going to come up next and how the parts are interacting in the song.

So you don't add too many effects at all. No, not unless someone's really particular about it. When I mixed Paul McCartney, he wanted a certain millisecond delay on all the time — no matter what. It was just something he did.

What was the amount of delay?

I can't remember exactly. It was like 180. And it didn't matter what the tempo of the song was or what he was singing. It was just his request that you pull up 180 milliseconds and that was it whether the song was slow, fast, any tempo; just put it on and leave it on. But most people just leave me to my own devices. If the band doesn't play well, there's not

much I can do to make them sound that good.

So how do you make the parts interact so it sounds good?

Sometimes it's a battle. It's not like the studio where you can track somebody to death. It happens or it doesn't happen. I don't like it when it's just a bunch of mush coming out of the speakers. I'm into clarity. I need definition.

How do you achieve that?

Layering. I would have to go back to mixing; just putting the parts into perspective and knowing where to put things. I'm always obsessed with the keyboard player who plays big pad parts. It's hard to find where to put them and how to make them support the rest of the instruments while not crowding anything else.

So what do you do then?

Well, then I would get into EQ'ing things and just make sure the level is right, just so it lays underneath something. The players always drive the mix levels. Everybody can't be playing in the same frequency range. But then again, some people do that on purpose. Spring-

steen's known for always creating that sort of environment where everything's sort of clashing in the same frequency. Not everybody's always helping you out. **When you do get into EQ'ing, are there any particular frequencies that you always find yourself coming back to?** Not particularly. I think you always have to watch yourself. There's always the famous lower mids, like the 300s [Hz]. You want that because it really adds the body to everything and supports the rest of the frequencies. I have a tendency to get rid of a lot of low-end stuff. I use a lot of roll-off on the vocals. Actually, I think my biggest problem to overcome is leakage.

How do you deal with monitor leakage?

Ride things, particularly on that stage

since it's only 25 feet wide by 20 feet deep and the walls shake. They're only set walls and they roll around. Then you have 30 mics up on that little environment, so you need to just be able to ride things like background vocals. I'll also use compressors on the vocals and on the bass and guitars to keep things in order. When you have monitors, you're always drawing that line between what level you can get away with against all the other microphones you hear. It always gets back to all the problems being phase related, whether it's electronic or acoustical. It's the old theory of single source sound systems. Throw a pebble in the water, you get waveforms in a circle. Throw three or four pebbles in the water, and you get waveforms going every which way, banging into each other.

Before an act comes on the show, do you know what tunes you're going to do? Do you listen to their CD before they come in and soundcheck, or do you just do it on the fly?

I do it on the fly. I think that if you listen to the music you get a preconceived notion of what you should do. I've always felt that records are a fantasyland, so I always like to have a fresh approach because a lot of times parts that are on the record aren't there live anyway. So I just really take it from the bare bones and build it up. It gets back to doing a good basic mix. I think that always works.

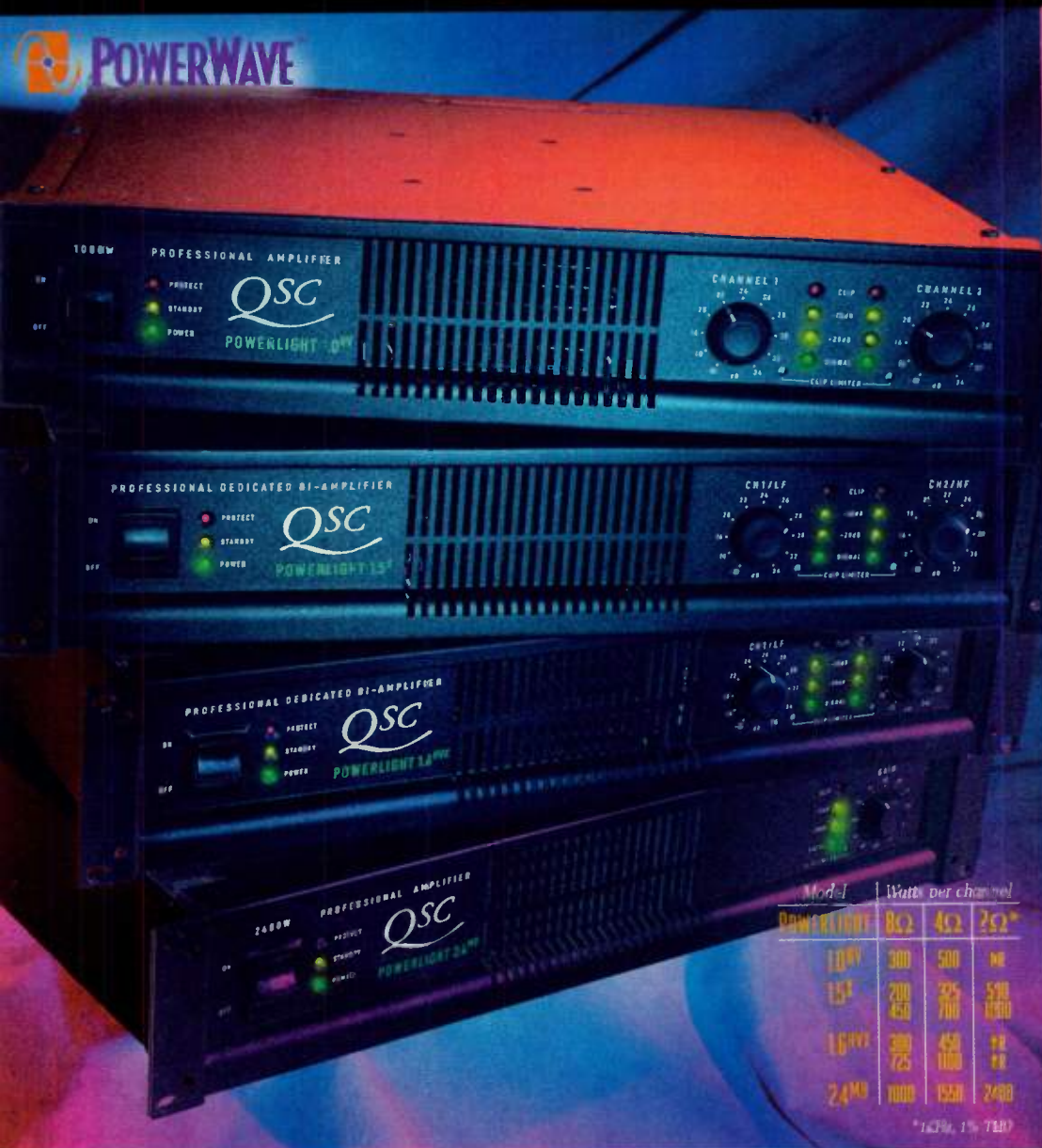
What credits are you the most proud of?

There are a lot of memorable moments, but there was one show that James Taylor was on where he did "Fire And Rain" by himself without a soundcheck, and it was absolutely electrifying. I'd have to say that was absolutely one of the most memorable times I've ever had. A man with just an acoustic guitar and two microphones floored these people.

There have been other times as well. Paul McCartney, I think, was a highlight. Tina Turner was very exciting and was one of the big highlights. I think working on *Night Music* (the short-lived David Sanborn hosted music show), the other TV show I did, and working with Eric Clapton, Stevie Ray Vaughn, and Al Greene are all memorable moments. I have to admit that doing live music sound for television shows has been much more than I ever thought. I never dreamed that it would be this interesting and that I would've worked with such a wide range of talent.

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A Sampling of Sample Pros

Tips from the experts on how to get the most from sampling

BY SCOTT RUBIN

Sampling is no longer the underground phenomenon it was some years ago. Just check the countless number of recent songs that have included popular samples from older hits. *EQ* sat with noted hip-hop and R&B producers Bob Power, Stevie J, Gary G-Wiz, and Tony Maserati to discuss their setups and sampling techniques. Keep in mind no one is going to reveal all their tricks and secrets, but a common theme throughout these interviews was that these guys use sampling like a guitar player uses pedals; it's become a part of the songs they construct.

Producer/engineer Bob Power, known for engineering ground-breaking

hip-hop albums for A Tribe Called Quest and De la Soul and producing R&B stand-outs Erykah Badu and D'Angelo, consistently uses his sampling set-up in building tracks for his artists. "My rig usually goes with me when I start a project, if I'm not working at my pre-pro[duction] facility," says Power. A Kurzweil K2000 and an Akai S3000 are Power's main units of choice. "For drums, I tend to rely on my Akai S3000. The architecture on the S3000 is very straightforward and particularly easy to use when dropping in drum samples in a track to see what works best. It's also quick and easy to use when setting up programs. The DSP on the K2000 is tremendous. Time stretch, filtering, and effects like that are a lot heavier [on the K2000] than on my Akai S3000."

Industry vet Tony Maserati also uses two main units for his sampling chores. Like Power, Maserati chooses an S3000 and uses an Akai MPC-3000 as well. "The editing capabilities of the S3000 are excellent. I like to look at the waveform and listen to the start and end points when I'm editing. I try and

evaluate all angles when truncating," says Maserati. Often coinciding with the use of his S3000, Maserati uses a sampling program from Steinberg called ReCycle. Used to add punch to loops and beats by breaking up the sample into user edited sections, ReCycle is commonplace among hip-hop producers. When the need arises to add kick or snare samples separately from the original loop, ReCycle can be a producer's best friend. "From the SCSI hookup between the S3000 and my Mac running the program, I can manipulate the sample more drastically than in the S3000 alone. I use the time compression and pitch change in ReCycle, which calculates the procedure and automatically gives me my new sample as per the tempo. It then sends back the pieces you've edited to the S3000 as a MIDI program. It's an amazing tool for taking a loop and making your new beat sound different than the original," states Maserati.

Traveling with all of Maserati's gear is not always an option, but the Akai MPC3000 can fulfill all his needs. "The



SITTING PRETTY: Tony Maserati is one of the sample pros that reveal his secrets to *EQ*'s readers. Other contributing producers include Bob Power, Stevie J., and Gary G-Wiz.

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MPC gives me everything I need in a complete unit: sampler, drum machine and MIDI sequencer. For drums, I like to edit my sample on the S3000 and then load it into the MPC. With the S3000 and the MPC3000, I can transfer samples easily between the two."

Stevie J swears by the MPC3000 and often doesn't use any other sampler. "If I'm on the road with [producer Sean] Puffy [Combs] and working in three or four different studios, the only constant I can have is my MPC3000. I'll play a guitar or bass part throughout the track, then sample the best section into my MPC3000 and loop it," says Stevie J. Flying in vocal samples, keys or string parts, the MPC3000 is always near the producer.

"All my drums are programmed on the MPC, but occasionally I'll use an E-mu SP-1200 for a dirtier-sounding sample. Eventually, when I get around to it, I'll check out some other units to start playing around with, but my schedule is so hectic that I need to have something I can rely on," admits Stevie J.

Some producers use anything and every-

thing they can in a room when it comes to sampling. Gary G-Wiz has a MIDI setup that includes a Roland S-770, Akai MPC60 II and MPC2000 units, an E-mu SP-1200, and a fully blown 24-track Pro Tools setup that he can also use as a sampler. "I run the gamut when it comes to samplers. I can go from a mono 12-bit grungy-sounding unit with limited editing, to a 24-bit brilliant-sounding sampler that has amazing editing features," comments G-Wiz. One might ask why G-Wiz keeps so many samplers around. "I never sell anything or get rid of anything that might be outdated. You never know when you are going to need a certain unit for a particular project," admits the gear junkie. "I

was that it depends on the track, the song, and how you're planning to use the sample. "If a sample I'm using is really dirty and crappy-sounding, and I want to clean it up before sampling, I'll put it through some outboard EQ like a Pultec, generally something analog. It's really about what your goals are for the sample," comments Power.



believe that all units sound different. Even if you have two units that are

If you lack outboard processing or EQs in your setup, do not be afraid to use the EQ section of your board. "I'll use the EQs on my [Soundcraft] Ghost board if neces-

sary. If I don't have the EQ at home I want, I'll sample it dry and use a Neve module at mixdown to change it," says G-Wiz. Samples are commonly recorded dry and then effected through outboard gear. "I really sample straight into my MPC and then lay directly to tape," offers Stevie J. "If I want to do some crazy filtering or modulation, I'll use outboard EQs and/or processing, but most often I go dry when sampling and play around with it later."

With drums being a main focus of sampling, a compressor might be a valuable tool to beef up your samples. "I'll throw my drum samples into a compressor to give them more attack or punch sometimes," states Maserati. "I tend not to use any one particular piece of equipment — it depends on the effect I'm looking for and what the [studio] has for processing."

Since most drums in hip-hop and R&B tracks are programmed, live sampling is a rare occurrence, yet it's at the very heart of sampling. Hip-hop and R&B producers have always longed for a great-sounding loop with a great feel. More often than not, both are not present when sampling older records for beats. "Setting up a kit and using a couple of mics to record it provides me with the kind of live feel you wish for when programming sounds," says G-Wiz. Using an Electro-Voice RE20 on the kick, Sennheiser MD421 on the snare, Shure SM81 on overheads and SM57's on the toms is a common set-up. "I'll try and use certain mics, depending on the cut and what's available at the studio," adds G-Wiz.

Whether sampling drums or vocals, guitars or keys, technology changes so quickly and significantly that sampling today is different from sampling last month. The trick is to understand which samplers do the thing you want best. Are you into the editing, the sound, the easy-to-drop-in characteristics, the DSP, or the outputs? It's easy for a producer making a ton of money to have different samplers at his disposal, but what can you get from their experience?

"Think about what your objectives are when it comes to sampling. Be original, don't do something that has been done to death," advises G-Wiz. Maserati adds, "Taking a piece of music, using a certain [part] or vibe of it, and creating something totally new is the beauty of sampling." **EQ**



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By Jack Joseph Puig

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Working with artists such as Eric Clapton, The Black Crowes, Jellyfish, Semisonic, Talk Show, Tonic, and (most recently) You Am I, producer/engineer Jack Joseph Puig has recorded his share of guitarists. Jack Joseph recently spent some time with EQ sharing his views on recording guitar, and offers some insight for getting good guitar tones on tape.

It's difficult to discuss recording guitar tones because you really can't narrow it down to one particular aspect, such as the microphone. When I worked with Eric Clapton, I recall arriving at the studio where he was diddling around through an old tweed Fender amp. I stood there in astonishment at the tone that was coming out of the amp and thought, "I have to capture that."

All guitar tones start at the musician's hand, and you have to realize this. From there, each part of the chain contributes to the end result, and that chain includes the way the musician plays, the guitar itself, the pick, the voicings, the cable, amp, room, position of the amp in the room, and even the way the musician holds the instrument. You really need to look at the picture as a whole. It would be impossible to address all of the aspects of what makes a guitar sound, but we can look at a few.

WATCH AND LEARN

The object is to find the weakest link and get around it quickly without drawing attention to it. A good place to start is to watch the musician play their instrument. An inexperienced guitar player might hug the guitar and sort of wrap their body around it. They are choking the instrument by not allowing it to vibrate. If they can allow the instrument to breathe, it will sound more open. If the guitarist wants the sound to be a little more bright or aggressive, you can suggest that they move their picking hand a little further towards the bridge, or maybe turn the pick sideways so the string catches the side of the pick a bit. These are simple things that can make for a better tone. By watching a person play, you can notice little things like that and make adjustments before even dealing with any gear.

For instance, if you are working



PHOTOS BY ADAM DELUCA

with a musician who has a very light touch, but wants to get an edgy sound, a simple MXR Dyna Comp or Electro/Harmonix Linear Power Booster 2 can make a big difference. It's not a good idea to draw too much attention to his/her playing style, because you want the guitarist to concentrate on the music rather than the sound. Put the Dyna Comp in the chain after the guitar cable and whack it up. All of a sudden — even though he's still playing lightly — the amp is getting a stronger signal and it

sounds like he's playing more aggressively. Or you might try suggesting a heavier pick, which puts more weight on the strings, adding a bit of edge to the sound. Players get used to certain picks and the way they feel; always show respect to the player. I generally have a pack of picks with me that range from medium to thick, metal, wood, plastic, felt, and smooth and jagged edges. This part of the equation is as important as selecting the proper amp.

ASSUME...

Equally as important in the chain is the guitar cable. Don't assume that any cable will work. My favorite is from Matchless, but keep in mind what kind of guitar it is. If it's a (Gibson) Chet Atkins acoustic, it has electronics built in and puts out so much signal that the cord is not nearly as important as if you are using a guitar with less output (for example, a vintage guitar with weaker pickups). In that case, the guitar will be very sensitive to the cable. For every band I have worked with, I've gone through every one of their cables and checked them out. We'll get myriad cords, try them all, and figure out which cable works best with a particular guitar player's set up. I have even outfitted bands with guitar cables because they make

such a big difference.

I like to record with the guitar player in the control room, but if you use a cable longer than about 12 feet, the pickups will have trouble driving the line. I had a box built to drive the line so that the pickups will not be affected much, but you can use a Matchless Cool Box (pedal) to drive the line. The Cool Box (which is one of my fa-

vorite pedals) is a tube buffer with a tone-shaping knob on it. What is brilliant about it is that you can take many guitars or amps that might be satisfactory at best and by using that box alone, you can change the world — really warm up a tone, or make it brighter or darker. As an alternative, other guitar pedals can be used to buffer the guitar from a long line, though

A good place to start is to watch the musician play the guitar...you notice little things that make a big difference.

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maximum length for me is about 12 feet if a buffer is not used. Choose an alternate to the Cool Box at your discretion depending upon what you'd like to hear.

An important thing to consider is the relationship between the amplifier and the room. If I walk into a huge room and see a guitarist playing a small amp, I immediately know that I am not going to put that amp in the center of the room because it will sound too small. I need to put that amp in an area that will give it more body, or perhaps change to a smaller room. Placing the amp in a corner makes the walls behind the amp act as a horn to project the sound and make it seem bigger. Listen to the way the amp sounds in the room and make adjustments. If the sound is a little bright, place the amp on a piece of carpet. If the amp sounds muddy, place it on a chair (or better yet a riser) and it will add clarity to the sound because the amp is no longer coupling to the floor and reinforcing the bass frequencies.

LOST ON A DESERT ISLAND

I wish I could say that there was another mic besides a Shure SM57 that pretty much works almost every time — but I can't. Without a doubt, that microphone is a desert island mic. But I still try different mics all the time, and I have had great success with different dynamic or condenser microphones. The SM57 has been used on every possible amplifier, by a million engineers in a million situations. And every record sounds different. So it's really not just about the mic, but the way you listen to the amp and your attitude about the recording.

I could make a bunch of suggestions for microphones that you could try as an alternate to the SM57, but that's kind of ridiculous because every situation is different. That's why I chose the SM57 as my desert island mic. As an experiment, I once told an assistant, "Go into the mic locker, pick whatever mics are on the immediate left when you walk in, and put them up on the various instruments." The outcome was a couple of tracks from Tonic's *Lemon Parade*, one of which was a big hit.

If the sound is too thin in the control room, move the mic around to get what you need. You don't necessarily need to add another mic or change the

mic. An old trick is to put on headphones, whack them up really loud, and listen to the amp so you'll hear what that mic is picking up. Try this with the guitar plugged in and turned up, but no one playing it. It acts like an antenna and provides a sound to the amp. Put the mic up close and you'll hear hum and buzz because no one is holding the guitar. As you move the mic towards the center of the speaker, you get more highs, detail, and fret noise. As you move the mic away from the center of



An old trick is to put on headphones, whack them up really loud, and listen to the amp so you'll hear what the mic is picking up.

the cone, you get more woofy-ness.

You may need to use two mics: one focused to pick up every little detail and another off-axis to pick up the low end (a lot of times I'll use a dynamic and a condenser to cover different aspects of the sound, using each to fill in what the other is missing). When you add those together, they may add in a good way or in a weird way, but that weird way might be very cool for the song.

If someone brings in a 4 x 12 cabinet, it doesn't mean that all four speakers sound good. Listen to them through the headphones to find the good sounding one(s). This gives you a way of assessing what's happening in the chain. Something to keep in mind when using condenser mics (such as a U67 or U47)

is that they do pick up sound at their head. If the mic is hanging upside down with the head toward the floor, it's picking up sound bounced off the floor, which could make it brighter. But if the head is up, it doesn't pick up the same reflection. Take the time to listen both ways until you've learned the difference.

SEEING RED

The Hughes and Kettner Red Box is a cool device to use as part of the sound along with the mics. A speaker level output from the amp is plugged into the Red Box and the Red Box puts out two signals — an output to the speaker and a mic level feed to the console. There's definitely a phase issue between the Red Box and the mics because the sounds arrive at two different speeds (the speaker-to-microphone path takes longer). Sometimes you'll get amazing cancellations that sound great. An interesting thing to do is to use the mics on one side of the mix and the Red Box on the other to give it a "false stereo" feel. That technique is all over The Black Crowes's *Three Snakes and a Charm*.

USE THE FORCE

To me, getting a guitar sound is not just in the mics and placement. It's equally in the signal chain. Everybody always says "there are no rules," and it's really true. You can try all sorts of things like using a DI or miking the front of an electric guitar. I have even taped a telephone pickup from Radio Shack onto the guitar body and added that in to the sound. Don't limit yourself artistically. The mic selection and placement really comes in only when you hear a tone in the room and say, "I have to capture that," as opposed to manipulating the tone. It's a great day when you reach the point of learning all these things and the process becomes more like walking — you no longer think about it. You listen to the amp in the studio and instinctively know what to do. As your career goes on, you have a larger variety of solutions because you have learned more tricks.

Share these experiences with other engineers and they'll share theirs with you, allowing you both to grow and make better recordings for you and your artist. The point is the human touch is an important part of the equation!!!

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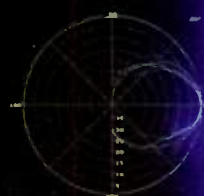
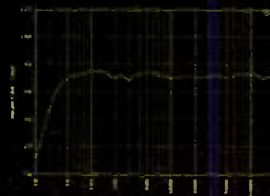
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Weird Science: **Guitar Meets Hard Disk**

Team your six-string with a computer for some interesting sound-enhancing techniques

BY CRAIG ANDERTON

A guitar makes a great signal generator for creating licks and sounds you can stuff into a sampler or digital audio editor. Once digitized and primed for editing, you can boldly go where no guitarist (or at least very few of them) has gone before...which is what this article is all about

TECHNO GUITAR

You can totally transform guitar parts with even the simplest editing functions, such as cut, copy, paste, and reverse. For example, taking individual pieces of a solo and repeating them in various rhythmically interesting ways can give an hypnotic, repetitive, "techno" sort of sound, yet retain the guitar's distinctive timbre.

Because I mostly use a hybrid recording system (digital tape for capture and storage, hard-disk digital audio editor sync'd to tape via SMPTE for editing), it's more convenient to bounce the guitar track to the hard disk for editing and bounce it back to tape rather than edit while sync'd to tape. Since a 2-track digital audio editor like Sound Forge, Sample Wrench, Peak, or WaveLab tends to have more pure editing horsepower than a multitrack hard-disk system, I generally record a premix (preferably with a heavily accented kick drum or metronome click) into one channel of the editing program and bounce the guitar into the other channel. When editing, this allows using the hard disk by itself, because the premix provides a reference to which you can edit the guitar.

Fig. 1 shows an edited rhythm guitar part. The lower channel is the pre-mix. Note the "spike" from the kick drum on each beat; this provides a rhythmic reference for working on the guitar track. (If you were working completely within a hard-disk multitrack en-

vironment and not bouncing from tape, you could probably just use the kick track as a reference.) Toward the beginning, two beats fade in. Beats 5 through 7 have the same slide pasted

into each beat, then some sections toward the end were cut out to add a jarring rhythmic effect.

After editing the main guitar part, the pre-mix becomes superfluous. It can

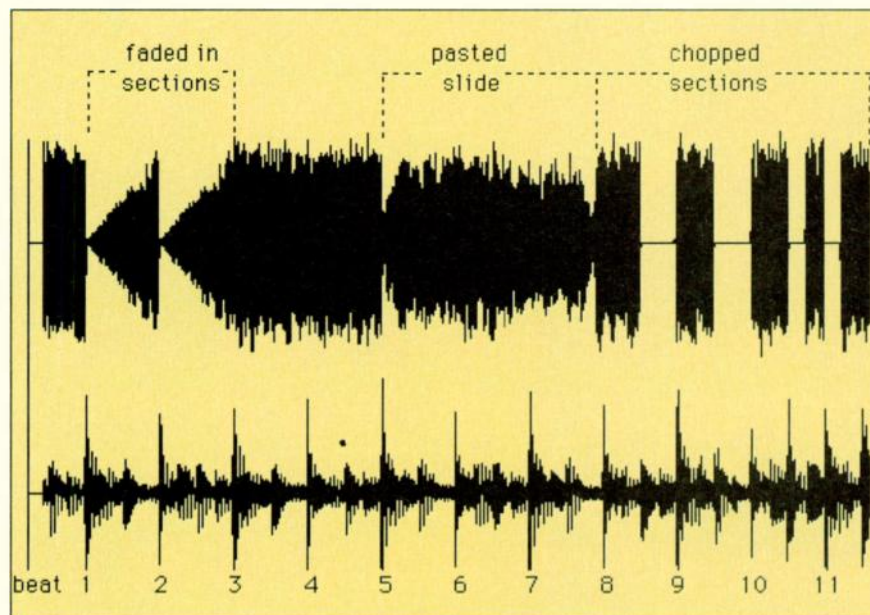


FIGURE 1: Fade, paste, and cut referenced to a pre-mix.

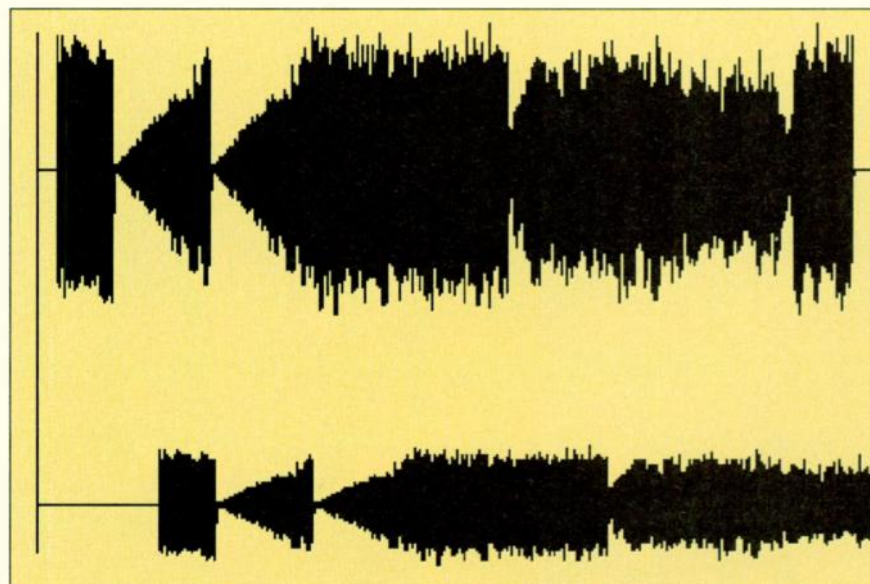


FIGURE 2: Synchronized echo effect.

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then be replaced with more modified guitar sounds. As one example, you can copy the edited guitar part, and paste it where the premix was but slightly offset in time. This creates an echo effect (fig. 2). You can then vary the level, EQ, or some other aspect of the echoed sound to differentiate it compared to the main part.

LOOP RECORDING TECHNIQUES

In the old days of tape recording, creating a composite solo (where you assemble the best parts from individual tracks) required laborious punching, or lots of tracks so you could record multiple guitar parts and then mix them down to a final track. Hard-disk recording simplifies the process dramatically through a process called *loop recording*—where you mark a specific region (e.g., a solo). This repeats over and over during the recording process. As you record, the first take of the solo goes on one track, the next take goes on another track, and so on. You then edit the best parts of each track, and bounce or mix them down to the final, composite track.

Although this sounds great, be aware that each take uses up hard-disk space, so make sure you have enough free space before you begin recording. After assembling your composite track, invoke any “purge” function the program offers to clean unneeded audio off your drive.

FUN WITH STEREO

You can “superpan” a mono part by cutting some sections from the original channel’s signal and pasting them at the same location in the opposite channel. For smooth panning, copy an entire track to another channel, then crossfade between the two (as one fades in, the other fades out). On one tune, I also equalized each section a little bit differently, so the part changed timbre as it bounced back and forth between channels. Of course, you could do this in real time during mixdown with automated mixing and automated EQ, but it’s often simpler to build these changes into the part.

MULTIEFFECTS À LA CARTE

Plug-ins are accessory programs that run within existing digital audio editing software to provide specialized processing functions (chorus, magnetic tape simulation, reverb, acoustical modeling, vocoding, etc.; see fig. 3). Some effects are designed almost exclusively for guitar, such as the TDM-compatible Amp Farm from Line 6 (which models different guitar amps) and Steinberg’s Red Valve•It.

Most plug-ins work on pre-recorded material. Although some programs (such as WaveLab) allow using plug-ins with live input, there is an unavoidable sound card latency that creates a delay of around 100 ms or more. This is long enough to make the “live input” feature unsuitable for most applications, although it is useful for “proofing” what an effect will sound like without having to actually record it first.

For guitar, consider recording your parts with only the effects necessary to provide the proper aural feedback for what you’re playing (e.g., distortion or wah-wah pedal), and use plug-ins for

the “icing on the cake” effects such as reverb, chorus, tapped echo, and the like. Recording without these effects gives more flexibility, as you can add them (if needed) during mixdown.

There are also some excellent noise-reduction plug-ins available. Sonic Foundry’s noise reducer does a great job cleaning up guitar amp hiss; record a second or so of pure hiss (without guitar), and the program analyzes the hiss and surgically removes only that “noiseprint” from the file. There are also less space-age ways to reduce noise, from simply rolling back a bit on the high end with equalization, to using a software noise gate.

REAL-TIME CONTROL

The big buzzword in hard-disk recording is “real-time control” (particularly with plug-ins), where you don’t have to wait for the program to process material—any changes you make occur instantly. However, it takes a fast processor to do this, and sometimes a lot of RAM as well. One alternative is to simply send audio to a hardware effects de-

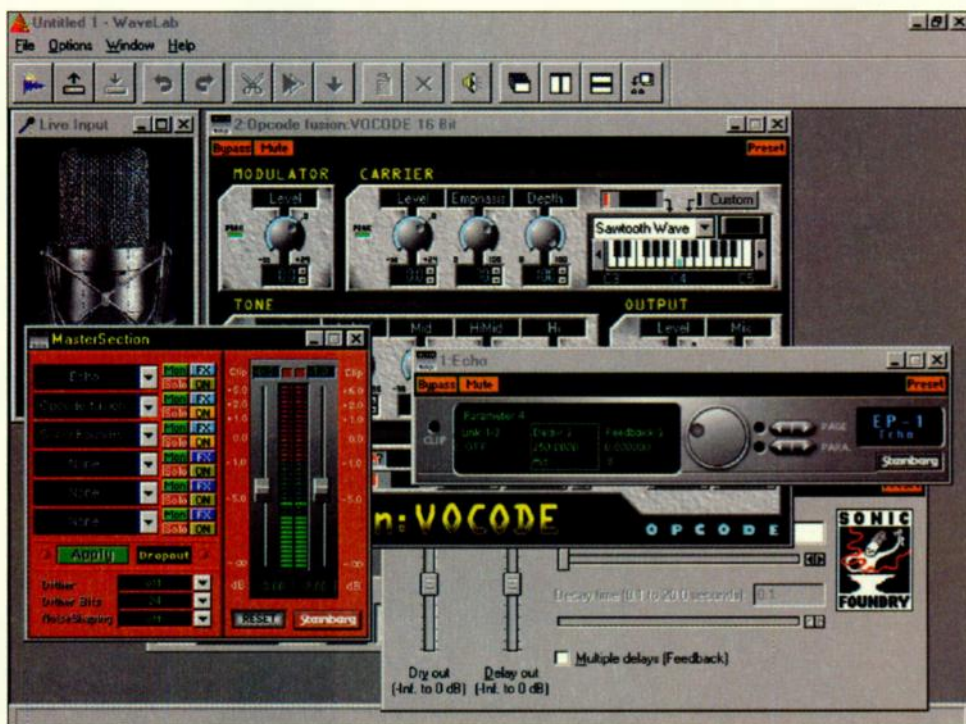


FIGURE 3. Steinberg's WaveLab simultaneously running plug-ins from Steinberg (chorus), Opcode (fusion:VOCODE), and Sonic Foundry (simple delay). The window with the mic means that live input is activated, so you can process incoming signals without having to record them first.

vice through an output (mute all tracks except for the track to be processed), then bring the effect back via an input. Assuming you can twiddle the hardware box's knobs in real time, *shazam* — instant real-time control. If your hard-disk system has aux outs, the process is even easier. Granted, converting a signal to analog and back to digital again theoretically colors the sound, but trust me, no one will notice.

Note that guitar effects are usually designed for low-level input signals, so you may have to pad the hard-disk output down somewhat. Similarly, the effect might need to be boosted on the way back in.

RECYCLE THAT GUITAR

Steinberg's ReCycle is designed for working with drum loops, but can also do amazing things with guitar. In a nutshell, the program analyzes a digital audio drum loop and marks where the different beats occur by checking for fast-rising transients. It then slices the loop up into a series of samples that correspond to the audio in between the markers; these samples are then assigned chromatically to a sampler. This makes it possible to play the loop any way you want by triggering various keys at various times (there are many other drum loop-oriented features, but since we're talking guitar, we'll skip those for now).

A guitar also tends to have lots of fast-rising transients where a new note begins, and with single-note solos that aren't played *too* fast, ReCycle can separate out each note into its own sample. For a kick, try playing the bits and pieces from the sampler's keyboard to create a solo — it's really fun to slice and dice what you've creating into something completely different. And pitch bend wheels make *great* whammy bars!

AUTOMATED MIXING

Most digital audio editors can superimpose an amplitude "envelope" on the signal, which allows for automated mixing as well as cool special effects. For example, with Sound Forge you can literally "draw" an envelope by clicking on a volume "rubber band" where you want "handles" to occur. You can then drag these handles wherever you want — up to increase volume, down to lower volume, or even move them sideways to create diagonal changes such as fade-ins and outs. This technique is also handy for ducking bad notes, as well as creating tremolo effects that are

matched precisely to the beat, or that follow non-periodic amplitude changes.

ESREVER RATIUG

Although it seems like backwards tape effects would be easy to do with hard-disk recording — just reverse the track — you want the part to flow with the existing music, which won't happen if you just overdub a solo and then reverse it.

The best way to overdub a backwards part is to reverse all the tracks, so the entire tune is going in reverse. Identify where

you're going to play your solo, and practice the part while listening to the reversed music. Record the part, and when you do a keeper, reverse all the tracks again. Your overdub will come out reversed, and everything else will play as it did originally.

FUN AND GAMES

A guitar is definitely fun, but if you add a little technology to the equation, you can go well beyond the expected. And don't your listeners deserve a few surprises every now and then? **EQ**

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To DI For

What you get when you combine two editors, 16 direct boxes, one photographer, and several alcoholic beverages

BY STEVE LA CERRA AND
ROBERT GRANGER

Originally it sounded like a great idea — take two EQ editors, give them a bunch of DI toys, and let them go into the studio and play. But these poor unsuspecting guys didn't really quite realize how many DIs would show up at the EQ office. It took a small van, a few cables, a bunch of guitars, and a few cans o' Guinness to evaluate all this stuff — but they finally did it. Here's what they found...

A DI is a DI, right? Well, we initially thought so, but then the boxes started coming in. Every day our UPS guy

would grumble a little louder at us as the boxes came in — he actually started to openly swear at us after the 10th box. As we opened each of the boxes we received, we couldn't believe the diversity in the designs — we got small DIs, large DIs, solid-state DIs, tube DIs, passive DIs, active DIs, DIs with AC power supplies built in, and even a Class-A DI. As everything piled up on our desks, people would walk by and ask, "What are you guys up to?" and we'd tell 'em, "We're planning on making a whole lot of noise with some electric guitars, a bass, and no amplifiers."



PHOTOS BY CHRIS JOHNSON

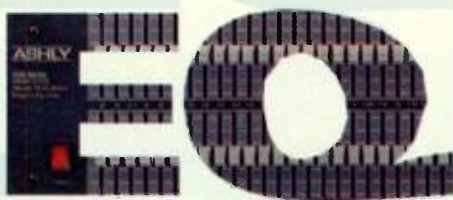
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The response confused some, made others laugh, and sent others walking away talking to themselves — but it was the truth.

Probably the biggest thing that we learned from our night in the studio, aside from the fact that Murphy's Irish Stout is *almost* as good as Guinness, is that all DI boxes are not created equal — they *do not* sound the same by any stretch of the imagination. The guitars that were plugged in include a G&L SB1 P-style bass from the personal collection of Mike Speranza, a '82 Carvin V-Tail, and a Jackson Stealth with a Seymour Duncan JB pickup in the bridge position. All of these instruments have passive electronics — which we felt would more accurately reveal guitar-to-DI interaction. In addition to running the instruments straight into the DIs, we tried adding an Ibanez Tube Screamer (distortion pedal) and Snarling Dogs Addicted to Wah (wah pedal) to the chain. The DIs that could handle higher output levels were also connected to the preamp out of an ADA MP1 (tube) guitar preamplifier.

ANTHONY DEMARIA LABS ADL 300 G

This is the Mercedes-Benz of direct boxes. It's a beautifully constructed, 2-

channel tube DI that can be mounted in a rack with optional ears (two spaces). All controls are on the front panel, so you could rack it and not worry about having to get at the rear panel. The front panel has high-quality gain pots for each channel and a switch for direct out or through tube. The ADL 300 G sounded excellent on bass with a solid, extended bottom end. In spite of the fact that the circuitry employs three tubes for the box's two channels, it does not run hot. While the ADL 300 G sounds a bit thin on guitar, this may have been more of an indication of how other boxes load the guitar down and alter the frequency response. When fed from the output of the pedals, the ADL sounded a little dull, but it was extremely quiet and was very warm sounding at all times. The ADL 300 G is designed with an internal AC power supply. MSRP: \$899. Contact: Anthony DeMaria Labs, 914-256-0032. Circle EQ free lit. #177.

ARX DI -1

Built in a heavy steel chassis, this unit can be powered via phantom, two 9-volts, or DC. The batteries live in a slide-out drawer that looks like a good idea, but we don't see it surviving a road trip. Unlike most DIs, this one has a gain

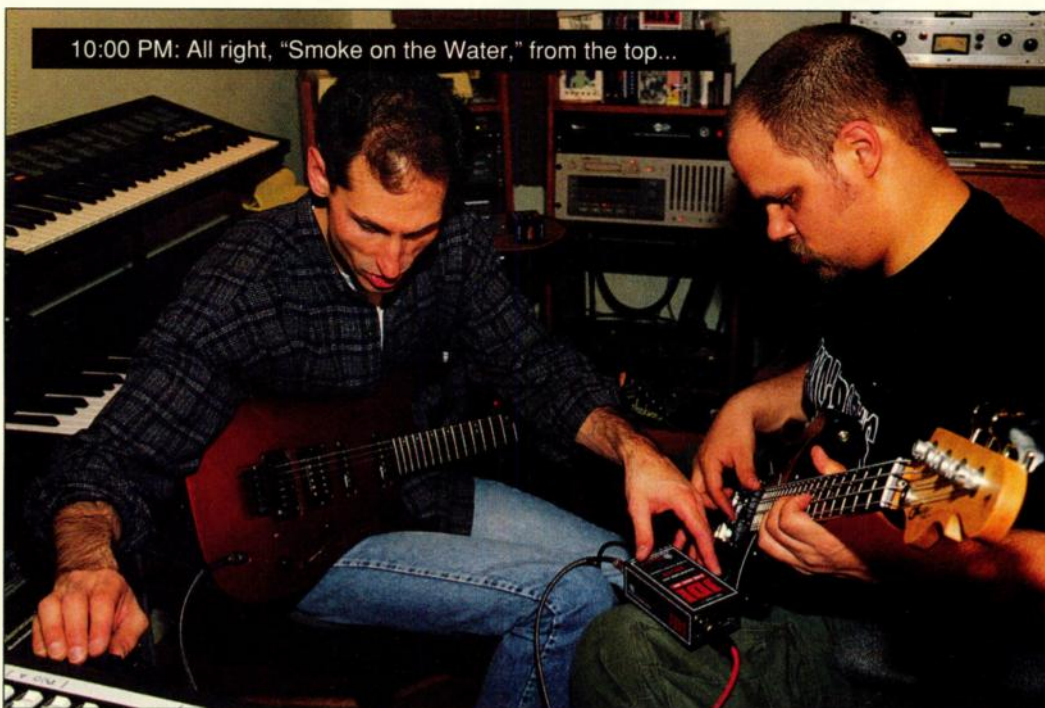
control with a continuous range of 0 to +20 dB. Output was a little thin sounding, and the DI-1 sounded much better handling the Jackson's single-coil pickups. Bass sounded a little muddy, like a very retro '60s P-bass tone. The input jack was extremely secure, output was hot, and we liked the indicator for phantom present/battery check. MSRP: \$149. Contact: ARX, 818-225-4363. Circle EQ free lit. #178.

AVALON ULTRA-FIVE DIRECT BOX

Avalon's U5 is a pure class-A direct box with variable gain from +2 dB up to +32 dB and a unique passive "Tone" selector that applies six different frequency curves designed for various instruments. Avalon has provided EQ curves optimized for electric bass, electric guitar and keyboards (the Tone control may be switched out of circuit if desired). One really cool feature of the U5 is the active to thru switch which places the tone enhancement before the through jack so that the EQ'd signal may be sent to an instrument amplifier. With its boost switch set to minimum gain, the unit is capable of handling speaker level input of up to 400 watts. For the entire dope on the U5, see our review in the February 1996 issue of *EQ*. MSRP: \$679. Contact: Avalon Design, 714-492-2000. Circle EQ free lit. #179.

BELLARI ADB3 STEREO TUBE DIRECT BOX

Bellari's ADB3 is a table top DI that uses a single 7025 valve for both channels (one stage per channel). By using the front-panel pad and gain switches, this box easily handled the output level from the ADA preamp as well as the guitar or pedals (it can also handle speaker level output). We liked it on bass, where it had a gentle lift in the lower mids, giving the bass a nice presence. In addition to the front-panel instrument input, there is also a rear-



panel parallel jack for either input or through purposes. We found the ADB3 to be a quiet DI and felt it did a great job at its price point. For a full review, see the September 1996 issue of *EQ*. MSRP: \$200 Contact: Rolls Corporation, 801-263-9053. Circle EQ free lit. #180.

BSS AUDIO AR-133 ACTIVE DI

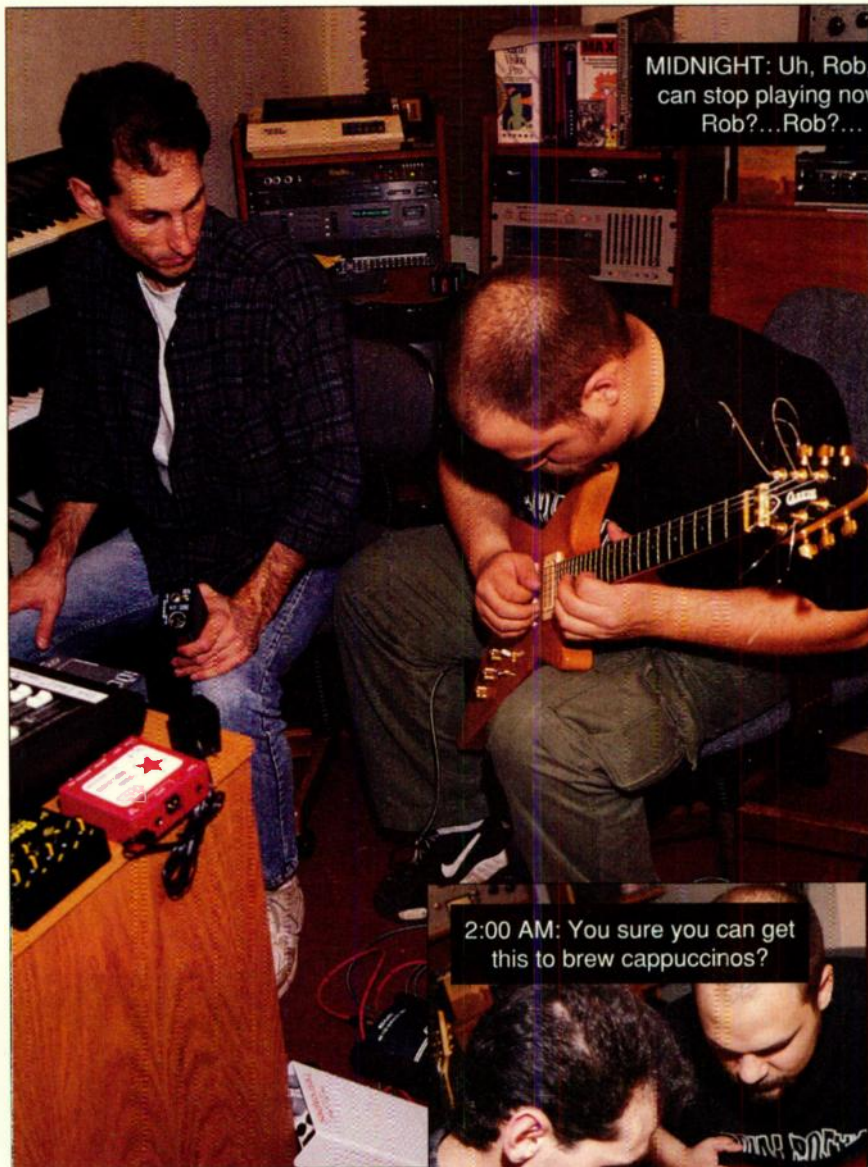
This one gets the award for the biggest feet. Built to last with high-quality switches, the AR-133 boasts very solid construction with thick rubber bumpers on each side to cushion shock when that hapless stage assistant drops it. The AR-133 was one of only two DIs we received with an (unbalanced) XLR input. A 0/-20/+40 dB pad switch allows the box to work on a variety of input signals. The unit is designed to run on phantom or a single 9-volt — the battery compartment has a screw-locked door, but it's not captive, so it could be lost if you're not careful. The AR-133 produces fat bottom, was very quiet, and worked well for clean sounds coming from the MP-1. The AR-133 had absolutely no problem handling various grounding scenarios. BSS might have a hard time getting this one back from us... MSRP: \$185. Contact: BSS, 615-360-0277. Circle EQ free lit. #181.

COUNTRYMAN TYPE 85 DI

For years, the Type 85 has been an industry standard. Simple construction with 1/4-inch input and through jacks; the input jack will accept either pickups or a speaker level signal. XLR mic output is actually isolated from the chassis. Very neat internal construction. The Type 85 will run off of a single 9-volt battery or phantom power. When used on bass or guitar, the Type 85 was tonally neutral and really didn't add any kind of "sound." Definitely road-worthy. MSRP: \$231.70. Contact: Countryman Associates, 800-669-1422. Circle EQ free lit. #182.

DEMETER AMPLIFICATION TUBE DIRECT

A very nicely constructed DI with tube-based circuitry (one 12AX7A) and an extremely high input impedance that prevents pickups from being loaded down. Both guitar and bass sounded *very* transparent through the box, with an obviously extended frequency response.



The bass sounded especially fat, with a distinctly warm character. A boost switch bumps the output up by 10 dB for instruments with weak pickups. Road warriors will have to think twice about taking this puppy out on a tour because it ain't cheap (but it's worth it). Parts quality is high with 1 percent metal film resistors, WIMA caps, and a Jensen transformer on the output stage (yes, we opened it up for a look). MSRP: \$600. Contact: Demeter Amplification, 818.994.7658. Circle EQ free lit. #183.

DOD 275

This box is built much more solidly than it looks. Unfortunately, it didn't do too well at dealing with ground loops from the guitar rack. The battery compartment was very clever — easy to use, it looks reliable, and it closes securely. We found the unit's output to be compressed-sounding, but it would proba-



bly fare well in a club environment. MSRP: \$89.95. Contact: DOD, 801-566-8800. Circle EQ free lit. #184.

THE HUGHES & KETTNER RED BOX PRO

This compact powerhouse does exactly what it claims: it delivers an authentic guitar cabinet tone when the cabinet simulator is switched on. We ran Rob's Carvin through the ADA MP-1 on a *really* high gain setting, and plugged

straight into the Red Box Pro in the speaker out setting, and it handled the guitar's humbucker chunk perfectly. It did a really good job of simulating the bark that you get from playing muted power chords through a screaming amp and cabinet. We also ran the bass through the Red Box Pro, and the Guitar Cabinet Simulator gave it a nice rounded tone. On both accounts, the box in the straight DI configuration sounded a little dull, but it was quiet. The Red Box Pro also handed ground loop problems with ease. MSRP: \$129. Contact: Hughes & Kettner, 708-439-6771. Circle EQ free lit. #185.

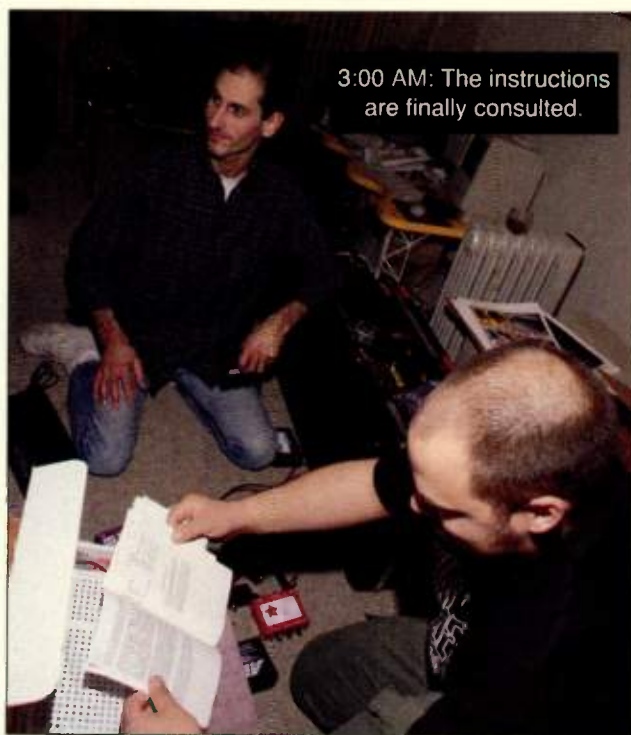
KLARK-TEKNIK LBB100

An active DI with a very heavy-gauge, no-nonsense case, the LBB100 offers three parallel inputs: two on 1/4-inch TRS and a single XLR, allowing any two to act as through outputs when the other is used as an input. Because the LBB100

has an input pad and an output attenuator, a wide variety of interface situations can be accommodated, including interfacing a power amp to a mic input. Although the LBB100 will not operate on batteries, it will operate on 48-volt phantom power, ± 10 percent. Looks like it would last a lifetime, even on the road. MSRP: \$196. Contact: Klark-Teknik, 800-695-1010. Circle EQ free lit. #186.

PEAVEY EDB 1

A solid little box that falls into the "meat-and-potatoes" category. The



EDB 1 was one of the few DIs that we tested that featured an on/off switch. The compact unit can be phantom powered or run from a 9-volt. We could definitely see this box surviving *continued on page 160*

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CIRCLE 41 ON FREE INFO CARD

Why We Emulate

The use of a direct box on a guitar tube amp is not as simple as you may think

BY MIKE SOKOL

Most of us will have used a direct box from time to time. They're handy, inexpensive, and easier to hook up than a microphone. Depending on your situation, however, the results can be less than excellent. That's because there are different flavors of direct boxes, each for a particular musical situation. We're going to discuss using them on the output of a guitar tube amplifier, which seems to be one of the more difficult setups to do properly.

Why all the fuss, you ask? After all, to mic an amp stack you just stick an SM57 in front of the one of the speakers and plug it into the board. How hard can it be to plug in a direct box? Glad you asked. Direct boxes used for keyboards and acoustic guitar pickups only have to pass the original sound of the instrument and convert it into a balanced mic-level signal. But direct boxes used on the output of electric guitar amps need to perform a number of additional functions:

1. Pad the voltage level of the output stage of the amplifier from 20 or 30 volts RMS down to the 50 millivolts required for a mic preamp.
2. Provide electrical isolation between the stage amplifier and the mixing board so that any power transformer leakage won't induce a ground loop and make the whole PA system hum.
3. Provide acoustic isolation from other instruments on stage, such as bass guitars or drums.

4. Simulate the bandwidth-limited sound of a guitar speaker (speaker emulator).

The last item, simulating the speaker sound, is perhaps the most important part of making a direct box sound "correct" on a guitar amp. I learned this lesson early on when I built my first power soak and direct box. I made a big resistor out of the nichrome heating element with a center-tap connection, allowing the speaker power to be dropped to any level while still loading the tubes properly. [Note: Pay special attention to this article's last paragraph.] Then I added a mic/line transformer with a resistive pad to get the levels correct. It sounded great until we cranked up the amp and let it distort. Then it was the shrillest sounding mess I've ever heard. It wasn't until I added a little variable low-pass filter that we could get the sound under control.

Here's why: One of the main reasons that distorted tube guitar amps sound so good is that guitar speakers don't reproduce the high-order harmonics generated by the tubes. That's right. You have to get rid of most of the distortion overtones before they reach the audience or the sound will be overly bright. And there's a surprising amount of infrasonic bass energy put out by a guitar amp, probably due to the guitar strings reacting with the magnetic bias of the pickups. A proper guitar speaker is really a mid-pass filter that cuts most of the sound below 70 Hz and above 4000 Hz.

So if you're going to simulate the sound of a speaker cabinet with a microphone in front of it, you need to chose a direct box with a filter circuit that emulates this mid-pass response. Hughes & Kettner made the original Red Box DI; now many other manufacturers, such as Whirlwind and DOD, of-

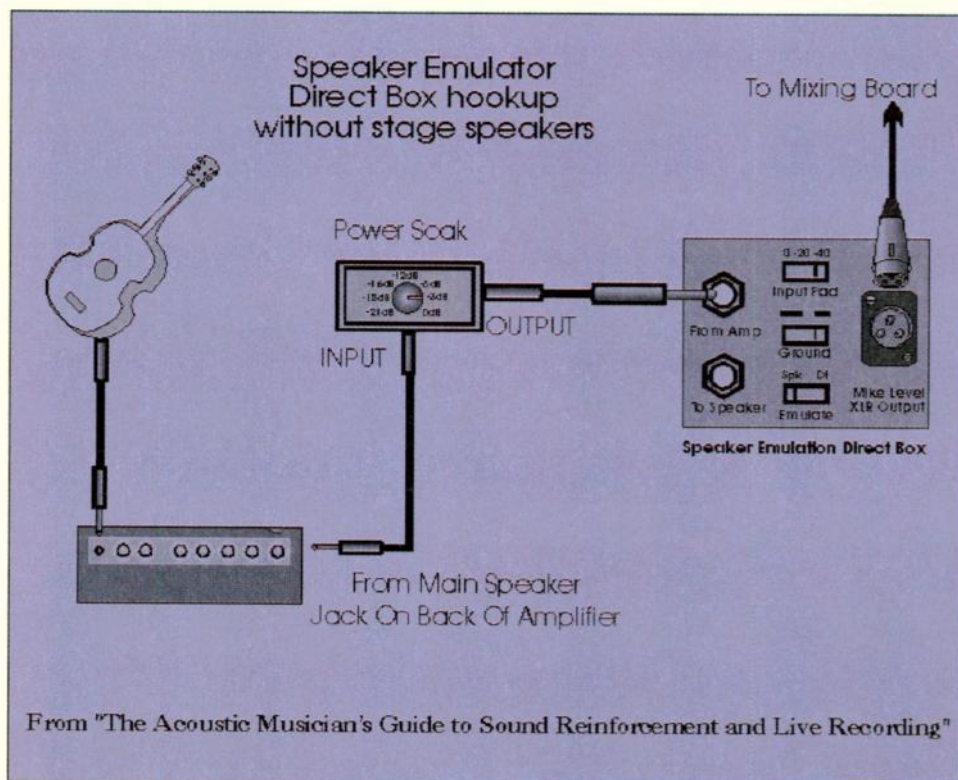


FIGURE 1

what's your **studio vision?**



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fer models with a speaker emulator function. Some models offer "2 X 12" or "4 X 10" settings to emulate the sound of a closed-back cabinet with a pair of 12-inch speakers or an open back cabinet with four 10-inch speakers.

Just be sure to properly load any tube amplifier with either a speaker cabinet or a power soak. [See diagram.] Don't be tempted to hook up a direct box to the output of any tube amplifier without providing a load. If you don't, the output transformer won't be driving the proper impedance, and the voltages can go dangerously high. This may short the power transformer and output tubes in a flash, effectively destroying the amplifier. It can literally happen in a heartbeat from a single guitar power chord, so always properly hook up your amps, speakers, and direct boxes before applying AC power. Save your tube amp so it can rock yet another day.

Author and live/studio engineer Mike Sokol's Web site is www.soundav.com. Feel free to peruse it.

GUITAR GEAR

Hughes & Kettner introduce Tube Factor

Hughes & Kettner have announced the introduction of its Tube Factor booster/overdrive pedal. According to the manufacturer, the Tube Factor specializes in "clean" boost and "neutral" overdrive. It accomplishes this through new technology employed in the device's pre-amp stage and through the use of a higher voltage than that employed by standard pedals (290 volts). Power to the unit is supplied via an external adapter. Retail price is \$299. For more information, contact Hughes & Kettner at 800-452-6771. Circle EQ free lit. #171.

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Build A Buffer Board For Guitar

Alright all you DIY'ers —
break out your screwdrivers
and start buffer building

BY CRAIG ANDERTON

Regular readers of *EQ* may remember that effects, amplifiers, and even cables are capable of robbing your guitar of level and high end. In addition, parallel effects systems (see sidebar), where a single guitar output may drive several effects, can also degrade sound quality.

The Buffer Board, which costs under \$30 worth in parts, is a unity-gain buffer that patches between your guitar and the first effect (or effects, for parallel setups). It buffers (isolates) your guitar's pickups from the rest of the system, thus allowing them to deliver their maximum possible output without any significant loss of high frequencies due to loading from subsequent stages.

Although the buffer board is not a preamp, gain is not always necessary to allow stock pickups to drive project studio-type processors to a reasonable level. In fact, a stock pickup that's not being loaded down can generate a fairly hefty peak output (around 2–3 V).

For parallel effects systems, the Buffer Board provides three outputs and can drive a *minimum* of three effects boxes simultaneously (and can drive at least ten effects if they each have a 100k or greater input impedance).

ABOUT THE CIRCUIT

Fig. 1 shows the schematic. IC1 can be an LF351, TL071 (for extra-low noise), or TL081 op amp. If you have a favorite "designer" op amp you like to use, do so, because anything works as long as it's internally compensated for unity gain.

R1 protects the op amp from static electricity, which can be a problem if you walk across a carpet on a dry day then touch the end of a cord plugged

into one of the inputs. R3 provides a high-input impedance path to ground when using cap-coupled input 2, and R2 prevents capacitor C2 from building up a charge. This eliminates "popping" when you plug into the outputs.

The power supply uses two 9V batteries, but you can also use two 9V DC adapters or a $\pm 9V$ to $\pm 15V$ bipolar power supply, such as project #12 in *Do It Yourself Projects for Guitarists* (published by Miller-Freeman books). The power supply capacitor values (C3 and C4) are noncritical; anything from 5 μF to 100 μF will work. If using two AC adapters creates hum, increase C3 and C4 to 220 μF . On-off switch S1 can be DPST or DPDT. Diodes D1 and D2 provide two functions: they protect against improper battery polarity and help filter out hum when using wall-powered DC adapters.

USING THE BUFFER BOARD

Patch your guitar into the input and send the Buffer Board's output(s) to the

next step(s) in the signal chain. Patching into input J1 should give the lowest noise. However, if you encounter prob-

PARTS LIST

Resistors (1/4 watt, 5% tolerance)

R1 1k
R2 100k
R3 470k

Capacitors (25 working volts or greater)

C1 0.22 μF (220 nF) disc or Mylar
C2 2.2 μF (2 $\mu 2$) electrolytic or tantalum
C3, C4 10 μF electrolytic or tantalum

Other parts

D1, D2 1N4001 or 1N914 diode
IC1 See text

J1-J5 Mono, open circuit, 1/4-inch phone jacks

S1 DPST or DPDT switch (see text)

Misc.: Batteries, battery connector, case, wire, solder, etc.

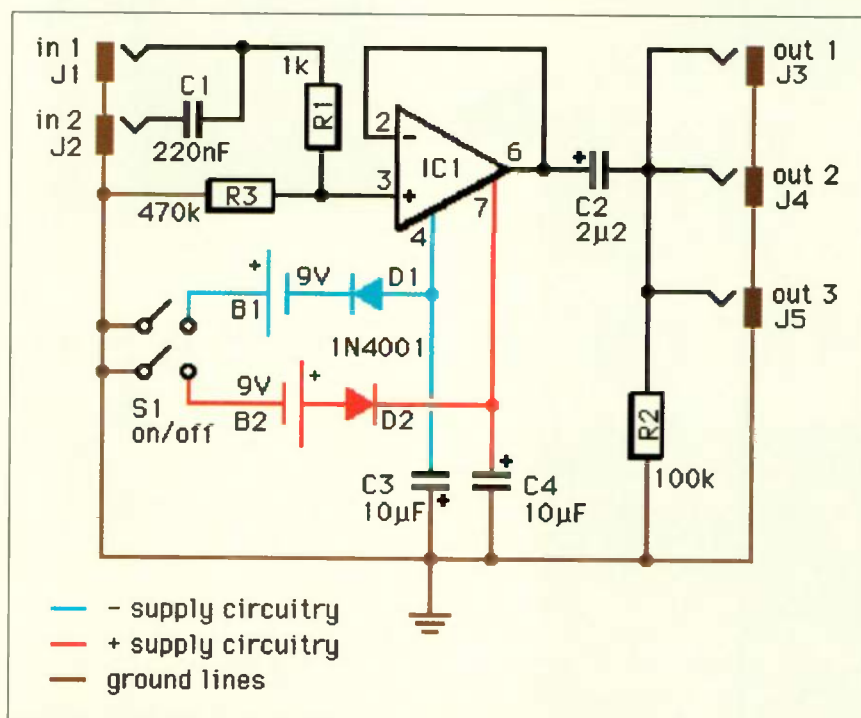


FIGURE 1: Buffer Board schematic.

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Guitar

RECORDING TECHNIQUES

lems such as popping, distortion, or hiss, plug into J2.

Output jacks J3, J4, and J5 patch to subsequent inputs (effects, amplifier, mixer, etc.). The reason for several paralleled output jacks is for driving parallel effects systems (see next section). Note that the multiple output jacks can also provide direct outs for feeding devices such as tuners or tape recorder inputs.

Although the Buffer Board can really clean up your signal, you don't get something for nothing. A circuit with a high-input impedance is more susceptible to hum and noise pickup, especially with a marginal cable. Plus, if

you're feeding the buffer with a shoddy cable that has a high internal capacitance, you can lose treble. *Always use the best quality shielded cable you can find to patch your guitar to the Buffer Board.*

One final consideration: If there is any radio frequency interference, add a 10 pF capacitor in parallel with resistor R3. This shunts frequencies above 30 kHz to ground.

And that's all there is to it. For those instances where a guitar sound lacks "snap" and definition, or poops out sonically when feeding too many effects, the Buffer Board is an inexpensive, easy-to-build solution with quality sound. **EQ**

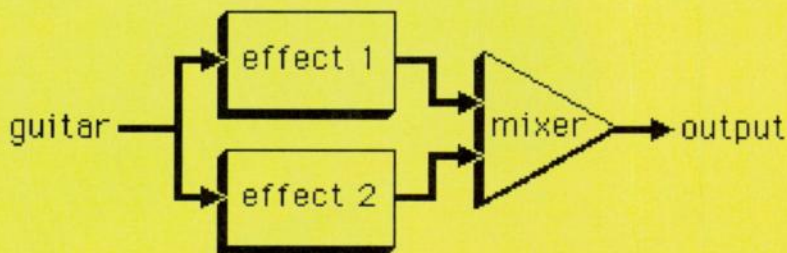


FIGURE 2: Two effects connected in parallel.

ABOUT SERIES AND PARALLEL EFFECTS

There are two main ways of hooking effects together: series and parallel. With a series effects connection, the effects are strung together, one after another, in a serial fashion. The instrument plugs into effect 1's input, effect 1's output plugs into effect 2's input, effect 2's output plugs into effect 3's input, and so on.

A parallel effects combination (fig. 2) splits the guitar into the inputs of effects 1 and 2. Mixing the outputs of the two effects together gives the combined (paralleled) sound of these effects. This connection is a little more complex than series connections, as it requires a mixer to combine the two effect outs.

Parallel effects combinations can provide more subtlety than series combinations. For example, putting bass through a serial effects combination consisting of chorus and envelope-controlled filter will often sound thin, because the filter removes the bass "bottom." Placing the envelope-controlled filter in parallel with the chorused signal adds the filtered effect to the chorused bass sound (which doesn't remove the low end). Parallel effects chains are also a good way to create a stereo image, since one leg of the chain can provide one channel while the other leg provides the other channel.

However, a problem with parallel effects is that two effects load down a guitar more than one effect, which makes it even more necessary to have an electronic buffer. The Buffer Board provides the separate outputs needed to feed multiple effects.

—Craig Anderton

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World Radio History

Guitar Multieffects Tips

The sounds you can achieve from your guitar is limitless when you put a multieffects device in the mix

BY CRAIG ANDERTON

I admit it: I like multieffects. Sure, vintage gear is fine, but when it comes to packing the most sound potential per cubic inch, a good multieffects box still rules. The trick is figuring out how to tame it so that it makes the kind of sounds *you* want, which are not necessarily the ones burned into the factory ROMs.

Having spent more "green screen" time than I care to admit, I've stumbled on some pretty interesting patches. This article describes some favorites.

These were developed mostly on Peavey multieffects (e.g., the TubeFex and TransTube line of effects and amps). However, most of these tips translate well to other boxes; I've had good luck porting several of these concepts to the Ensoniq DP/4+, DigiTech GSP2101, and TC Electronic G-Force.

Patch Organization. First things first. With devices now storing more and more patches, you need a way to differentiate sounds at a glance. Most programs seem to fall into one of five categories, so I add a symbol in front of each type of patch:

- . — Clean rhythm
- * — Dirty rhythm
- : — Clean lead
- ! — Dirty lead
- # — Special effects

This saves time when scanning through programs; for example, to find a crunchy

rhythm sound, just look for the appropriate symbol.

Distortion and EQ. The secret of good distortion is wrapping the right EQ around it. Distortion tends to generate harmonics that sound like a nest of hornets. To sweeten this, first reduce some of the high frequencies going to the distortion. I like to use a 3-band sweep EQ to drop the highs way down (–12 starting at 4–8 kHz), push 125 Hz up about +3 dB for fattening, and increase touch sensitivity a bit for solos by boosting the midrange about +4 dB at 1 kHz. Then add some post-distortion EQ with a graphic, parametric, or speaker emulator. Any of these works well to cut the highs a bit further; bringing up the midrange a tad (try 1 kHz to 3.5 kHz) gives more definition.

The Bonus EQ Module. An envelope-controlled filter can serve as a fixed filter if you set its sensitivity parameter to 0. Adjust the frequency and resonance for the desired tone.

Resonant Chords. Do you like those Lexicon-type resonant chord patches, but think your multieffects

lacks "resonance" modules? Delay and chorus modules can "resonate" by selecting a very short delay (1–20 ms), turning the feedback way up (at least 90 percent), setting the mix to 100 percent effect sound, and, in the case of chorus, editing any modulation depth parameter to 0. Place delay and chorus in parallel and the signal will pass through several highly resonant filters. *Caution:* Resonance creates high gain levels. To avoid distortion, add a compressor before the paralleled delay/chorus and use the compressor output control as an attenuator.

The Magic of Speaker Simulation. Most multieffects have a speaker emulator module, which is *essential* for building sounds that will be recorded direct.

Compressor Tips. Although compression is popular for recording guitar, a common mistake is to turn up the compression sustain parameter until you can hear the results of the compression. This often gives a squeezed, choked sound. Instead, try using low sustain settings (or high "threshold"

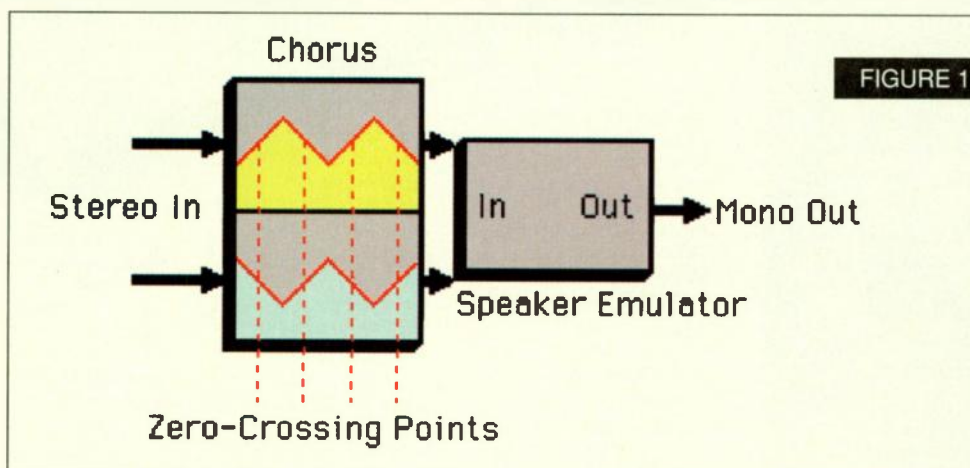


FIGURE 1

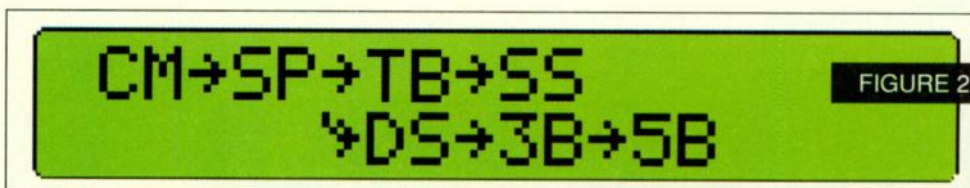


FIGURE 2

Our customers' comments

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Geno Porfido, Boulevard Recording Co. New Milford, NJ

"Other consoles I've worked with in the past just couldn't deliver the levels of punch and clarity I felt the music deserved. I never have this problem with my Soundcraft Ghost. The Ghost gives me the flexibility I need over a wide range of frequencies and has the body and warmth to really bring my music to life."

Johnathan Moffett, Drummer with Michael Jackson and Madonna

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settings, depending on how the parameter is labeled). You may not hear a distinctly "compressed" sound, but don't be fooled — if you press the Bypass button (and the bypassed/effect peak levels are matched), you'll hear the difference.

Super Chorus. For a super-thick chorusing sound, patch pitch shifter and chorus modules in parallel. The chorus

effect works by slightly detuning the original signal and mixing the original and detuned versions. The pitch shifter, when set for a slight amount of detuning (around -8 to -10 cents) provides a similar effect but with a somewhat different "character." Adding the two together gives double the chorusing you would hear with the chorusing module alone. If you drop out most of the dry

signal for both modules, you'll also get some wonderful psychoacoustic panning effects.

Through-Zero Flanging. Flanging combines a signal whose delay time is being modulated over a short delay range with a nondelayed signal. The varying time difference between these two signals produces a "swooshing," jet-airplane sound. However, with most flangers, the delayed signal cannot sweep all the way to zero milliseconds of delay, so there can never be a zero time difference between the delayed and straight signals. Therefore, the flanger never really seems to quite "peak," but only *approaches* a peak.

A "through-zero flanger," like analog tape-based flanging, provides a true zero time difference. The TubeFex chorus is a stereo circuit with two delay lines running in opposite directions in each channel — as one delay time gets shorter, the other gets longer. Following the chorus with the speaker emulator converts the signal into mono (fig. 1). Since the two chorus signals are summed together, as the delay of one increases and the other decreases, at some point they "cross over," resulting in zero delay between them. This flanges over a far wider sweep range than most flangers, and sounds much more like true tape flanging.

Funk Machine. Back in the mid-'70s, envelope-followed filter effects were popular in funk music. Although using an envelope filter should be sufficient to get the desired sound, in practice the filter's high resonance can lead to distortion. Patching a compressor *after* the envelope filter smooths out the rough edges and keeps the peaks under control. Also, because the envelope filter will probably use either a low-pass or bandpass filter, there may be an unacceptable loss of brightness. If so, add just a dash of exciter or treble boost in parallel with the envelope filter.

Pre-Distortion Wah. One of the classic guitar sounds, popularized by Jimi Hendrix, is placing a wah-wah pedal before distortion instead of after. Post-distortion wah-wah provides a radical change in overall output timbre, whereas predistortion wah-wah changes the distortion's "character."

An envelope filter can provide the necessary wah-wah effect. Since the

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wah frequency depends on the input signal dynamics, the envelope filter goes first in the signal chain (anything that reduces the dynamic range, such as compression or distortion, should not precede the envelope filter in order to provide the maximum possible filter sweep). Set the filter resonance high enough to significantly influence the distortion timbre. With a little practice, your picking style will control the filter almost as well as moving your foot on a pedal.

Double Your Pleasure, Double Your Fuzz. This is a TubeFex-specific program, although it can also be done easily with individual hardware boxes, as well as some software plug-ins.

Biamping, which splits a signal into low- and high-frequency components then amplifies each one separately, is used in hi-fi and PA systems to reduce intermodulation distortion. However, it's also applicable to guitar. When playing power chords, splitting the highs and lows, then distorting the two frequency components separately, provides greater clarity and focus than running the chord through a single stage of distortion.

Fig. 2 shows the effect algorithm: the compressor (CM) splits into two channels (SP). Send the high frequencies to the left channel and the low frequencies to the right channel. The high-frequency chain consists of tube distortion (TB) and a speaker simulator (SS). The low-frequency chain uses standard distortion (DS), along with both 3-band and 5-band EQ (3B and 5B), for postdistortion frequency shaping.

Here are some suggested settings for the various TubeFex modules, but by all means experiment. Even changing one parameter a tiny bit can make a big difference. A bullet (•) separates each parameter value, going sequentially from left to right on the display.

CM: Medium • X Slow • 1 • 33% • 8
 SP: Biamp • L=100 R=100 • 810 Hz
 • 530 Hz
 TB: 94 • Lo • 36 • 73 • 44 • +3 (also set front-panel Tube Mode to Crunch)
 SS: 2X12 Closed (also try 4X12 Cabinet)
 DS: 60 • 33 • +35 • -50 • -50 • 900 Hz
 • 2.0
 3B: Guitar • +3 • 470 Hz • +10 • -50

continued on page 146

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Young and Restless

How 18-year-old guitarist
Richie Castellano built
his own studio and
recorded his first CD all by
himself

BY STEVE LA CERRA

It's been said many times that there's something in New York water that mystically nurtures musical talent. If that's the case, then Richie Castellano must be drinking a *lot* of water. At a mere 18 years old, he's just released his first CD, *Alone In The Basement*, which, as the name implies, was recorded by Richie almost completely solo. In addition to playing some seriously adept guitar parts, Richie played bass, keys, programmed drums, and acted as engineer and producer. In spite of the fact that *Alone...* is his first CD, it sounds great and shows musical sensibilities way beyond those of the typical 18-year old, echoing classic sensibilities of far more experienced producers.

GATHERING THE GEAR

Putting together gear for a recording studio is no easy feat for anybody, let alone a person who is still in high school. Fortunately, Richie comes from a family with a strong foothold in the musical instrument business. Besides playing a mean guitar, his dad John runs Castellano's House of Music (Staten Island, NY), his grandparents (Phil and Marion) run Bath Music (Brooklyn, NY) and his aunt, Pat Castle, is the manufacturer

of Invincible Strings (Brooklyn, NY). Add to this the fact that his Uncle Phil (a bassist) had a recording studio, and there's got to be gear laying around somewhere.

"The patchbays are from my grandparent's store and I use whatever I can that's floating around," explains Richie. John concurs: "He's taken parts from my broken system and made them work. When you look at his studio, you're looking at a lot of scrap!" Yeah, well Richie's making some great sounds with scrap. The only piece of new gear in his studio is a TASCAM DA-30 Mk II DAT machine that Richie used to mix the record

THREE OUTTA FOUR

Richie started out recording on a broken 4-track cassette machine ("only three tracks worked..."). But after John and Phil heard his recordings, they were impressed and decided to give Richie

the Fostex E16 and TASCAM M224 that they had planned to use for recording their band (Good 'N Plenty) live. Richie's original intention was to record the album by himself and maybe have a friend play some percussion parts (this evolved into him having a live band play on the song "Snake").

According to Richie, "all of the songs were written in my head. I usually just have chords and words. Sometimes I don't even have the words, but I know how long I want the song to be. I lay down a drum track and then build the other instruments upon that."

RHYTHM SECTION, PLEASE

Drum sounds came from a Roland R8, but only one song was actually programmed on the R8. "I have this old Octave Plateau sequencing program and I run it on a PC from 1982," Richie reveals. "So I just use the sounds from the R8." [This computer has no hard drive



A BOY AND HIS BOARD: Richie Castellano made his own record and project studio — with a little help from his family.

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World Radio History



and must run completely from floppies —Ed.] In spite of the fact that drums went down on tape first (generally onto four tracks: kick, snare, drums left, and drums right), they were actually the finished drum parts, not “reference” parts.

Richie feels his songs “started shaping when I did the drums. I think that once you get them down, the rest of the track kind of falls into place. Programming drum tracks took a long time, but I had to use the drum machine because I don’t trust my own timing. Building a song is like a stack of boxes — if you don’t have a strong foundation, they fall down.”

Once the drums were recorded, Richie would usually play a bass track,

ing the mic until I found where it sounded best.

“On the song ‘Was This A Game?’ I pointed the mic at the floor because it sounded good. That was a Music Man bass with Invincible Strings through the BX50. I played a couple of different basses: a D’Agostino five-string, a Rickenbacker, and the Music Man. Toward the end of the record I started using a direct box because it was less of a hassle, had a cleaner sound, and a presence in the low end. I printed compression to tape from a Behringer Composer, and used the mic pres in the TASCAM.

“On the Rickenbacker tracks I had to do a decent amount of EQ’ing because

Yamaha TX802 modules — most of the keyboards on the record were typed into Plateau by Richie via step mode, which to him became a “second language.” He explains, “Organ solos and piano were really frustrating. I wanted to record certain sounds — like piano or the Hammond on ‘One Day’ — to get that tape sound (not leave them virtual). But it was frustrating, because I’d do 50 takes of a piano part to get it right. It’s simple to a keyboard player, but I’m a guitarist.”

Richie discovered that locking Plateau to the E-16 with SMPTE presents certain challenges. “Everybody tells you to record SMPTE on the first or last track, but the problem is that when you run the tape pass after pass, it gets damaged at the edges and the SMPTE craps out — it’s not perfect anymore. I really had to clean the heads thoroughly before I recorded SMPTE so that no dirt could get in there and mess up the code. I printed it on the edge track, but I couldn’t afford to skip the next track.”

KEEPING IT CLEAN

One of the problems that Richie ran into during the recording process was isolation — or rather, lack of isolation — of his studio from the outside world and upstairs neighbors. “I could work through the night on sequencing and bounces with headphones, but judging vocal tracks is tough with headphones. You don’t get a good bearing on pitch. I usually record vocals with the phones on and then listen back on speakers to see if I was in key.

“In the last month of recording, my power amp broke. I couldn’t use any speakers at all, so I did a lot of recording with headphones.” Other isolation problems that Richie encountered include the washing machine in the next room (“the groove of the song has to be the same as the washing machine...”), the tenant (“we can only record drums when there’s nobody home upstairs”), and his Mom yelling at his sister (“it’s all gated out”). Richie also had a minor problem recording acoustic guitar: the mic was picking up



THAT’S DISGUSTING!: Actually, it’s the Disgustocaster guitar that Richie designed himself and that can produce Srat or Tele sounds.

“but occasionally I’d play a rough rhythm guitar and write a bass part around that. I tried a lot of different ways of recording the bass because that’s something I wanted to get better at. If I’m going for the trebly, hard rock sound, I usually use an amp and mic it. Some of the tracks were recorded with an Electro-Voice RE20 on a Peavey Combo 300 or a Crate BX50 amp. I played around with different mic positions by putting on headphones, listening to the sound of the bass, and mov-

they have noisy pickups that produce buzzes and clicks. I was able to get a lot of that out by cutting the EQ at about 16 kHz. I had a lot of fun playing bass on the song ‘Bird’s-Eye View,’ because I got to do a Chris Squire-type of thing and he’s one of my favorite bass players. Also, I got to rip off a lot of my uncle’s licks!”

THIS GUY IS NO MIDIOT

Although Richie has a few synths in his studio — Yamaha PSR400, Roland SH101 (analog synth), D110, and D550, and

the sound of tape rubbing against the reel flange of the E-16. His solution was to leave extra space at the beginning of the song, place the mic across the room (where it wouldn't pick up the mechanical noise of the E-16), start the machine, and run back to the mic to record the track.

THE NITTY GRITTY

Richie's passion being guitar, he took a lot of care in recording the guitar tracks. "A lot of people like to put the mic right in front of the amp, pointing at the speaker. That sounds good for certain things, but I don't understand why they do that. You set the amplifier (controls) while listening in one area and then put the mic in a completely different place. It doesn't make sense." Richie's solution for dirty guitar sounds is to place the mic (an Audio-Technica ATM41a) above the amp, pointing toward the speaker and angled downward by about 45 degrees.

For cleaner sounds, he places the mic closer. An Ampeg amp was used for the dirty sounds, a Tube Driver "for all of the cheese-guitar sounds," and a Fender Sidekick Reverb '65 for the clean sounds. Richie's choice of guitars includes a Music Man Eddie Van Halen model and his custom, home-brewed Disgustocaster (see photo). "It's really ugly and I designed the electronics for it. I put coil taps on every pickup and a push-pull switch for the tone control. A lot of times I need a Tele sound or a Strat sound, and I can get a pretty good rip-off of those sounds with the Disgustocaster."



Because Richie's selection of effects is limited (he has a Roland DC30 Analog Delay, BBE Sonic Maximizer, Alesis Midiverb, and a DigiTech IPS 33B), he recorded a lot of effects. He used a Super Chorus pedal between the guitar and amp for the clean sounds, as well as some pitch shift and delays from the DigiTech unit for other tones.

Richie learned a trick about delays from engineer Tim Cox. "Tim showed me how to create a stereo image using slight delays and detunes to widen the space you have to work with. I pan the original signal center and put it through the DigiTech unit, which splits the signal with +1 pitch on one side and -1 pitch on the other."

Richie acknowledges that he made a "lot of mistakes trying to make mixing easier by erasing clicks and noises. Usually you mute those in the mix, but I don't have automation. I accidentally

continued on page 146

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Happiness is a **Warm Track**

How to get the warm guitar sound you're looking for on a statistically nonexistent budget by using re-amping

BY CHRIS HASKETT

When it came time for me to record my second solo project, *Non-Fiction*, I really wanted to make sure that I got the biggest bang for the buck (since the bucks were rather few — maybe it was the biggest bang for the 75 cents...anyway...) without having to sacrifice an environment where I could get the best performance. Like many musicians, I had to try and balance the budget tension between paying for time (the leisure to spend days doing takes and shaping production decisions to meet situations as they develop without having a little money-clock constantly going “ch-ching” in the back of your head) as opposed to space (the ability to work in a space suitably large for your sound).

Einstein curiously (and, I think, suspiciously) omitted this problem from the paper of 1905 and its subsequent amendments. I had to tailor my resources to cover one part of the recording process at a time. I didn't have the luxury to lock out a big live room to do all my overdubs or sit around trying to make production decisions. But, like most people, I work better when I'm comfortable and can just work relentlessly.

If I were a purely MIDI guy, this wouldn't be a problem: I'd just never come out of my little space at home. Unfortunately, I'm a noisy gui-

tar player trying to do noisy guitar-driven music that requires both a good space to get decent SPL to tape and the time to get the takes. Worse than that, I was Chris the guy-who-just-wants-to-get-on-with-playing-guitar battling Chris-the-reluctant-producer (a classic tale of Jungian duality, anima vs. animus, laughter, tears...er, I

TO AMP AGAIN: Haskett uses re-amping to warm his sounds.

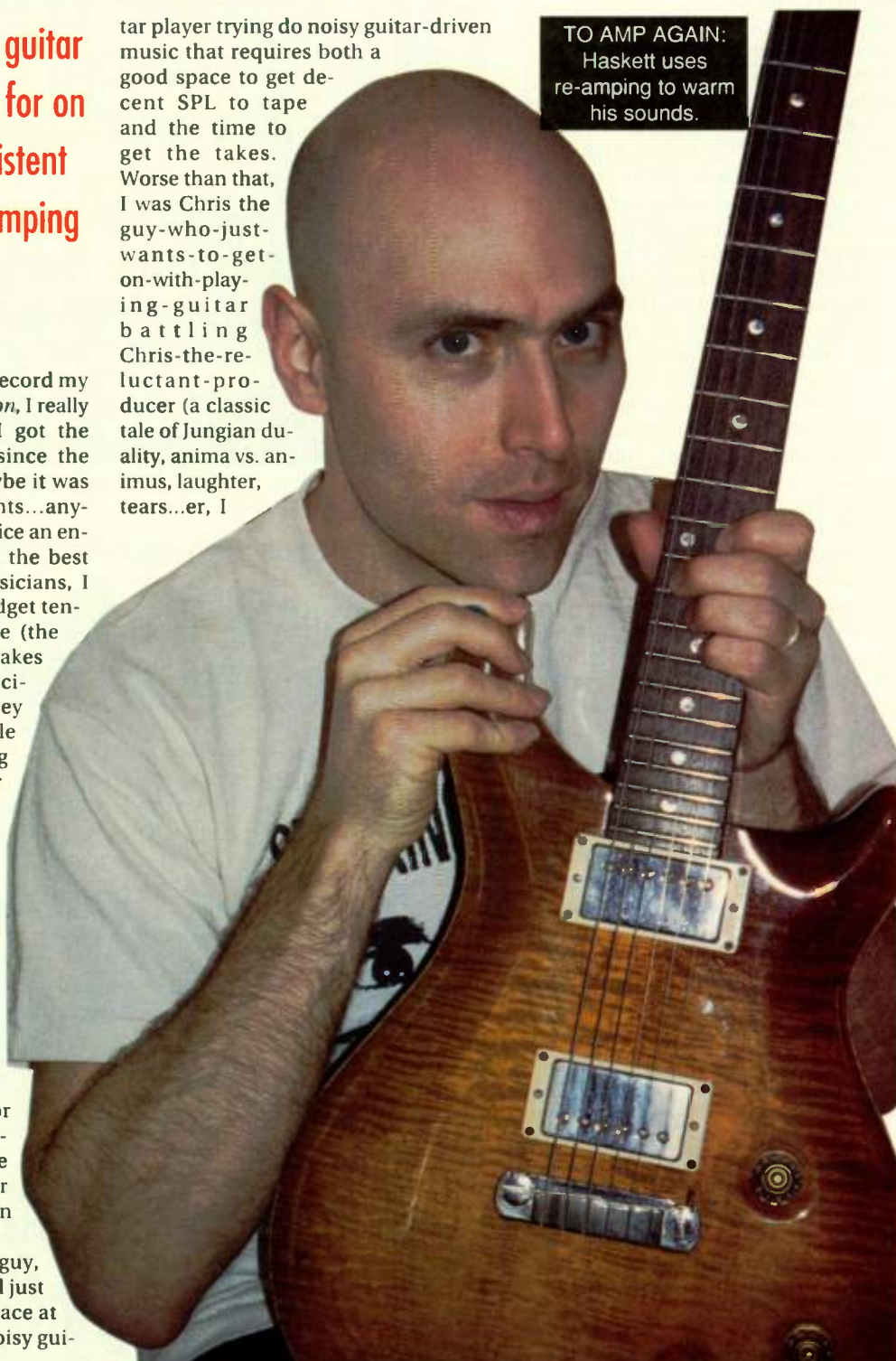


PHOTO BY STEVEN J. MESSINA

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CIRCLE 69 ON FREE INFO CARD

digress). I've driven quite a number of producers to distraction because I like to hammer away until I get a take right.

Usually, when somebody really has to bash their head against a wall to get a track, a lot of producer-types believe the artist should walk away from the track before they burn themselves out. And they're usually right. But I'm an exception. Rollins Band's last producer, Steve Thompson, will probably disagree with me on this, but when I'm going for a take, I tend to hone in by degrees — I'll usually get two or three pretty good takes, and after that, it's just work until I finally come out the other end of 20–30 takes with the one I want, the one with the 5 percent extra.

Especially with solos — I'm one of those people who just likes to keep on doing it. Sometimes it gets so frustrating and you get so flustered it almost feels like throwing spaghetti against the wall — you just keep on doing the take until you get it right almost by accident. It's the overdub-as-mantra technique. Unfortunately, this is not very cost-effective in a commercial studio. It's a lot easier in an environment that you've built for yourself and worked in a lot. So to compensate for all this and allow myself to allocate my limited resources to best advantage, I adopted a technique that helped me work more comfortably and at my own pace: re-amping. In a nutshell, it's this: running final guitar takes off tape into guitar amps miked in a live room and running *that* back to tape.

IN THE BEGINNING

When I began recording *Non-Fiction*, I went down to Washington D.C. and recorded the basic drum tracks to 2-inch with drummer Brandon Finley. I didn't have the room or the equipment to properly capture the basics in New York, and Brandon (a D.C. native like myself) is a tremendous go-go drummer, so I figured I'd give the tracks a home-court advantage.

The basics were done in two sessions (at WGNS and at Central). I recorded only drums and a few guide basses and guitars. The point was to dedicate all the resources of the studios to getting good drum sounds. I wasn't even thinking of trying to tie up time attempting guitar parts. When we were

finished there, I bounced rough basics down in stereo to DA-88 striped with timecode and brought the tapes back up to New York to record my overdubs. At that point, I could really work on the project more at my leisure. Chris-the-producer got out the way before Chris-the-guitar-player smacked him.

I ended up doing most of my tracks in the Rollins Band's rehearsal space and a few in my workspace at home. I'd get the guitar tone to pretty much just "ballpark," deliberately using slightly less preamp gain than I thought it needed (unless, of course, I had a tone that was so sweet that I knew that was "it"). I used only as much distortion as I needed to be able to feel the part, even if I thought it might ultimately sound better with a little more.

From there I really just worked to capture the performance, often going direct to tape, and not really sweating the final tone too much. Generally, once I've figured out which amplifier will give me the best basic tone, I'll experiment a little with speaker placement in the room and different mics. I'll find a combination that really works with the tune and then just walk away and start playing. I'm a big fan of "set and forget." The freedom to get it only as far as "usable" and leave "perfect" for later is great. I prefer to get going and keep going rather than getting hung up on finding the ultimate guitar tone in fear of losing the vibe. In general, I'll run the signal through my cabinet of choice, make it sound half decent, put a [Shure] Beta 57 on it, and it's fine. If I'm looking for a richer tone, I might use either an [Sennheiser] MD 409 or a [Neumann] U47 (if there is one), but more than likely I'll stick with the Beta 57 because it's a clean, simple mic.

Quite often when I'm writing I get the musical idea from the tone, rather than first having the idea and then saying, "I need to get a such-and-such tone for that song." Usually I just walk in, turn

everything on, plug in the guitar, and see what the guitar sounds like that day — what kind of mood *it's* in. I'm not an animist (Jung again!), but I find if I approach it that way, I'm more open to hearing new things, both musical and textural. So what goes to tape is usually already about 80-percent there because the take is based off that tone and since I know I'm going

to give it the other 20 percent later, I'm free to just do the take when the inspiration is fresh. Most of the time it just needs to be warmed up a little bit over some output tubes.

I don't really use the technique to do radical EQs or to add tremendous amounts of gain, though I have done that in the past as an effect. It's a poor-person's move, but it means that I can work quickly without getting distracted by the notion of what I'm doing is final. I fret over anything once I have to let it go — master tapes, mixes, whatever. Since I don't have to make final decisions while I'm doing the tracking, or even relatively final decisions, it leaves me freer to just push ahead.

Re-amping:
Running final
guitar takes
off tape into
guitar amps
miked in a
live room
and running
that back to
tape.

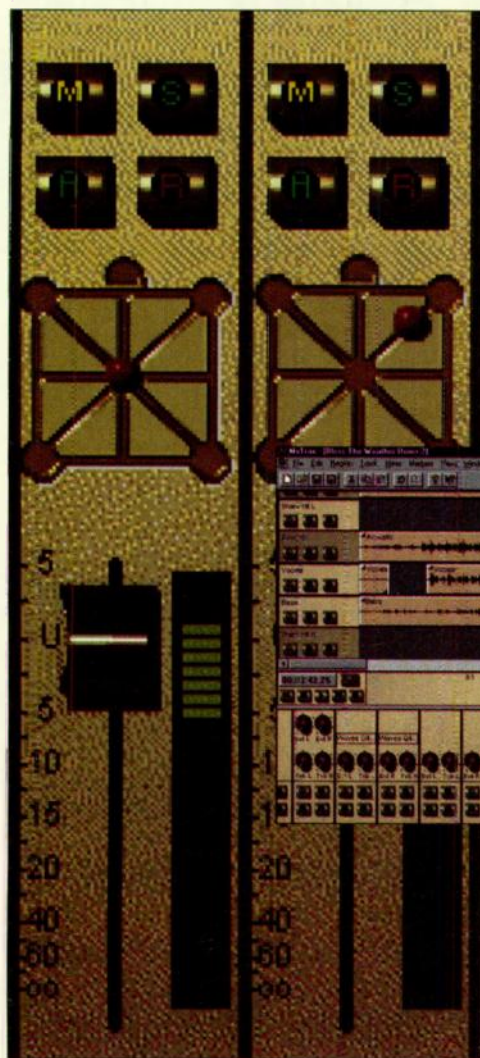
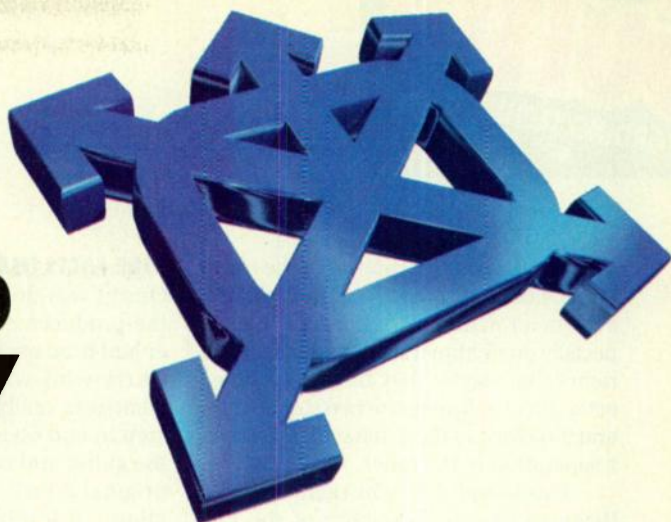
DOUBLING DOWN

I like to double all of my guitar tracks. When adding a solo to the piece it really makes it a little more stark by contrast because it's the only track that's a single track. I try not to do exact doubling. The way I do rhythm tracks is I start with one good "meat and potatoes" guitar sound and then I find something that complements it. So I'll find something that's got, quite often, a fairly narrow frequency band because when you add that track, as long as you're not panning them hard, it enriches the overall tone in a way that almost fills the holes.

As long as I have a good main sound, it gives me a lot of leeway on how I double it. Sometimes I'll use a slight amount of phasing through an MXR Phase 100, which adds a certain richness to the track. As long as you don't over-do it, you can blend the phased track back in and it adds

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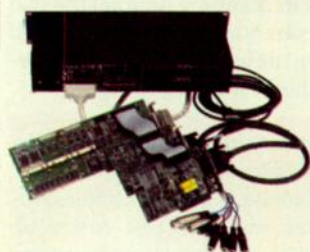
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World Radio History

a certain kind of “tingliness” to the track. I try deliberately not to be completely exact when I’m doing double-tracking, especially on rhythm tracks, because they’re richer that way — they have more character. I’ll usually pan the two signals at 3- and 9-o’clock so the listener can just hear a separation in the tones.

I’ve found that you really have to listen to the mono quality of the two tones — you’ll have the guitar on the left, the guitar on the right, and then you’ll have what’s like a third tone, which is the mono coupling of the two tones where they cross. You’ve got to be careful because the two tones on either side could sound great, but when you combine them, they could be stepping all over each other.

SOMETHING TO GAIN

Usually for solos, and certain types of rhythm tracks, you need the guitar to be responsive and it has to be in an environment where it’s responding to volume and gain and air. Playing direct to tape, no matter how good your preamp or processing is, will not let you do that. In the studio, the gain is definitely more important than the volume, whereas live, to get the guitar to really sing, you (well, OK, I) usually have to be playing at a certain ridiculous volume.

When you’re recording layers of guitars, you have to watch the gain because it really tends to subtract from the overall impact of the track after a while. I like to get my gain structure to the point where it sounds good and then back it off a little bit, under the assumption that when I get to a tone that sounds good to me in the room, it probably has slightly more gain than will work on tape. If you go back and listen to some of the great guitar tones, like Angus Young’s tone on *Back In Black*, it’s a great guitar sound, but it’s not tremendously distorted. It’s really rich, but it’s not utilizing a tremendous amount of gain. It’s got a certain pristine quality to it. What makes it sound so dense and so distorted is that it’s probably hit to tape really hard and really well produced. Saturating the tape with the warmed up signal is also another tool that I use to really beef up a track and make it sound bigger than it used to.

TRUE FACTS (MAYBE)

Once I was done with my dubs, Chris-the-producer and Chris-the-guitar-player had fired each other at this point and Chris-who-was-too-tired-to-know-what-was-really-going-on was asked to step in and take over the project. I flew the guitar and bass tracks back onto the original 2-inch, and what I had was an album of lovely, organic drum tracks, and weird sounding guitars and basses. There are a lot of things that you just can not do tone-wise with a mixing board, so to bolster the tone up to what I really wanted, I ran the recorded signal off the tape, from a tape-out on the board into the input of one of the amplifiers I was using, and miked and re-recorded that. I got the idea from a story I heard about George Clinton (the maestro) not being happy with a drum sequence sound: allegedly he ran 24 outs to 24 separate speakers placed on chairs in the live room and then miked *that* in stereo and ran it back to tape. I don’t know if it’s true, but it oughta be.

Anyway, my version was to run the tape-out of say, one rhythm guitar track out to a Fender Twin and another to a Mesa Boogie Dual Rectifier at the same time in the same room. At that point, I had the ability to do my tone fiddling and mic placement (and ambient miking) without having to worry about blowing the vibe or the take. The take was already done. It’s much more difficult when you-the-producer have to start and stop you-the-musician because you-the-engineer wants to change microphones, mic placement, or amplifiers. At that point you really run the risk of burning all three of yourself out.

It’s really more of an organic process, at a certain level, as opposed to trying to tweak the tone at the board or trying to tweak it with outboard gear. It’s almost like working with MIDI — the performance is already there. You have a little bit more leisure about amp placement, and miking and tone so at that point you can do a lot of work very effectively in a small project room and make it bigger later.

If you’re doing mainly guitars, you can do it to DA-88 (or even to a Portastudio as long as you don’t cut off too much frequency response!) because the bandwidth of most electric guitar tracks does-

n’t touch the extremes of digital frequency response. That is to say, a relatively clean guitar signal going into a gorgeous, warm, rich tube amp from an actual guitar doesn’t sound *that* different from a well-recorded, relatively clean guitar signal on DA-88. Not by the time it comes off the final 2-inch. But don’t use too much gain on the original tracks: leave yourself the ability to tailor the sound later out of the final amp/mic interaction.

The stuff I did at home was mostly on a DigiTech 2101 Guitar preamp/processor, straight to tape. I love DigiTech’s products, but, as with any preamps or effects I get my hands on, I *always* have to go through all the programs, reconfigure them, and rewrite the patches. I wrote some of the original patches for the 2101 and I still reconfigure them now. The speaker emulator on the 2101 is really good and it’s got XLR outs, so to me, that’s a real workhorse. I do almost all of my shorthand stuff on that and I did a lot of my overdubs with it as well.

I’ve also been using DigiTech’s VTP1 dual vacuum-tube preamp/ EQ/converter to warm up all of my signals. It’s got a nice A/D converter in it, so it helps make the jump to digital a warmer one. Remember when BBE’s [Sonic Enhancers] first came out and you put a little bit of it on a lot of stuff? I’ve been using the VTP1 a lot in the same way because it makes a really big difference in the nuance of a recording. It’s kind of like using salt in cooking: a little bit early on can make a big difference in the final outcome, but it really does add a certain body, especially for when you’re not working to 2-inch.

I work in a closet-sized studio and I just don’t have the space for a 2-inch machine. I’m getting material ready for my next record right now, and I’m planning on recording it, more or less, in the same fashion. Instead of using one drummer, I’m planning on tracking two drummers, simultaneously, to 2-inch, I’ll bounce them down to DA-88 with time-code, and then I’ll do my thing.

*In addition to being the guitarist for the bombastic Rollins Band, Chris Haskett has two solo albums, *Language* and *Non-Fiction*, under his belt. You can visit www.spacebros.com for more information on Chris or you can e-mail him at chaskett@spacebros.com with any questions.*

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TASCAM DA-98

Digital Recorder





An EQ Exclusive:
An inside (literally) look at
TASCAM's latest 8-track digital recorder

BY EDDIE CILETTI

TASCAM DA-98

Digital Recorder

I can tell you plenty about tape machines from the inside. But ask me about keystrokes for features I don't use and it's cheat-sheet time. TASCAM's new DA-98 solves this problem by adding a Menu Display that allows complete access to all parameters. The Menus are not quite as organized or intuitive as I'd like, but there's nothing more temporary than software. Besides, the DA-98 is loaded with features that everyone from post houses to project studios will love.

For the record — or film if that's your biz — the DA-98 is an 8-channel digital audio tape machine that uses Hi-8 video tape. The format is called DTRS. Before popping the hood, let's review some features.

CONFIDENCE MODE WHEN RECORDING TRACKS

The DA-98 is the first in the DTRS family with the ability to monitor the signal-from-tape while recording. Confidence Mode will take the stress out of remote recording and save precious postproduction time because it will no longer be necessary to make a second pass to confirm the recorded material.

Restrictions apply. Confirmation of tracks is grouped into pairs and — just like in the analog world — Confidence can not be used during punch-in or overdubs because there's a delay. It's not quite as simple as switching from source to tape on an analog machine, though, because you have to enter Confidence Mode *before* going into Record.

INDIVIDUAL INPUT MONITORING

In addition to ALL- and AUTO-Input modes, channels can be individually switched to Input. Under each LED level display are two rows of buttons: one set for Record



This is the first in the DTRS family with the ability to monitor the signal-from-tape while recording.

Enable (track arming) and another set labeled Input Monitor.

THE BUILT-IN SYNC IS NOT AN OPTIONAL CARD

Unlike the *à la carte* approach of the DA-88, the DA-98 has built-in sync. Timecode I/O is via XLR connectors. In addition to MIDI In, Out, and Thru connectors, there is a 9-pin RS-422 serial port as well as a 37-pin parallel control port. (RS-422 emulates all of the popular timecode and video machines such as the PCM-7050, BVH-2000, BVH-3000, BVU-950, BVW-75, DVR-10, and PCM-800.) Word In, Out, and Thru ports are provided, along with Video In and Thru, all on BNC connectors.

AUDIO: IN, OUT, AND SIDEWAYS

There are DB-25 connectors for both the analog I/O (+4, balanced) and digital I/O (TDIF-1). There are no RCA connectors on this machine! Like the DA-38, the DA-98 has a built-in digital patchbay. This, along with Auto Punch, is especially useful for doing vocal comps without leaving the digital domain.

20-BIT CONVERTERS AND DITHER

The 20-bit A/D converters deliver more information than the DA-98's 16-bit format allows. After connecting the DA-98 to a DA-88 via TDIF, then cranking the gain on my mixer, I was able to compare the entire converter chain of the DA-98 with the D/A side of the DA-88. The difference in the noise floor is obvious. The DA-98 wins hands down.

Without Dither, it's pretty quiet down there on "the [noise] floor." Then I applied a low-level, 32-Hz sine wave and heard a chirping sound as the wave passed through the "zero" line. By turning Dither "On," low-level signals slip in and out of the noise floor rather than



GET BACK: The back panel of the DA-98 offers many possibilities.

MANUFACTURER: TASCAM, TEAC Professional Division, 7733 Telegraph Road, Montebello, CA 90640. Tel: 213-726-0303. Web: www.tascam.com.

APPLICATION: Eight-channel digital audio tape recorder for postproduction and multitracking.

SUMMARY: Second-generation hardware runs cooler. Transport is a refined version of its predecessor with greatly improved access to the head assembly (for cleaning purposes). Plus, many new features...

STRENGTHS: Confidence mode; digital patchbay; built-in sync; 20-bit converters; three reference-level options; "jump" mode; individual input monitor switches.

WEAKNESSES: Blue silk-screening on panel is hard to see; menu system could be better organized.

PRICE: \$5999; remote meter bridge (MU-8824), \$999 (24 tracks)

EQ FREE LIT #: 172

creating additional noises as they toggle the 16th bit on and off. The Rectangular dither option is 3 dB quieter than Triangular dither. (The manual suggests reading John Watkinson's *The Art of Digital Audio* from Focal Press for more on the subject.)

LISTENING TEST

I honestly don't hear the massive differences between digital converters that some people claim they can hear. (That doesn't stop me from pushing for 96-kHz, 24-bit capability.) The closest I came to enlightenment was at the '97 AES convention, where Bob Katz had a 16-bit/24-bit demo set up and what I heard was a difference in "width," or what some people call the "soundstage," or stereo image. This assumes a high-fidelity sound source.

That said, I routed the digital output of my Technics CD player into a Soundscape workstation to take advantage of its TDIF port. After auditioning several CDs, I chose Lyle Lovett's *Joshua Loves Ruth*, recorded by George Massenburg and Nathaniel Kunkel. Because of its delicately crisp top-end and massively solid bottom, I had hoped listening to Lyle would help reveal the differences among four D/A converters: the DA-98, the CD player, the Soundscape workstation, and the Aardvark Aardverter. Guess what? They all sound the same to me. Speakers sound obviously different, microphones less, but most important is the performance.

HEADROOM AND METERING OPTIONS

Once upon a time, a mechanical VU meter at 0 VU meant that the nominal professional level, +4 dBu, would be present at the output connectors. Headroom was expected to be at least an additional 14 dB, yielding a maximum output of 18 dBu. Broadcast "nominal" is +8 dBm (it's meant to be terminated), so 16 dB of headroom would put the "brick wall" at +24 dBm. Of course, more headroom is always better.

In the digital world, 0 dB Full Scale (0 dBFS) is the maximum level. The DA-98 nominal, or Reference Level, can be selected via front panel for -16 dBFS (+20 dBu), -18 dBFS (+22 dBu), or -20 dBFS (+24 dBu). (Numbers in parenthesis indicate maximum output level.) And what better way to see what's coming and going than via the optional remote meter bridge

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TASCAM DA-98 Digital Recorder

— Model MU-8824 — which can display 24 tracks at once?

BUILT-IN TONE GENERATOR

The built-in oscillator (a feature shared with the DA-38) produces two frequencies: 440 Hz and 1 kHz. Now you can easily check level and signal polarity between the tape machine and the console. It is, incidentally, a good idea to "burn" the first five minutes of any tape with tone. Flame on! I do wish there were additional frequencies like 40 Hz and 15 kHz.

I used the oscillator when setting up the comparison between the DA-98 and DA-88. I noted that each machine takes a different amount of time when converting digital to analog. This means you can't flip phase and attempt to match level via cancellation. When making your own comparisons, use a mechanical VU meter or a digital voltmeter, such as the Fluke 8060A, to set levels.



The "Jump" feature can be a brain-saver by reducing the number of keystrokes.

THE MENU AND "JUMP/MACRO" MODE

The current software provides ten numeric Menu groups — 0 thru 9 — plus two "alpha" groups — E & F. Each Menu may have up to six "Item" selections. The "Jump" feature, listed in the index as "Function Key Mode," can be a brain-saver by reducing the number of keystrokes needed to access parameters. When the Shift key is pressed, a corresponding LED flashes. Any of ten "F" keys can be used to unearth a buried Menu, store additional Locate positions, or become numeric (1 thru 10) data entry buttons. RHSL and LOC1, for example, become F1 and F10, respectively.

Menu access via display is an asset. The DA-98's LCD has four rows of text that are not nearly as cryptic as those displayed via LEDs on the DA-88. Even so, the sheer numbers of tweakable parameters present an organizational challenge. Timecode options, for example, are

HEADPHONE MIX BREAKTHROUGH

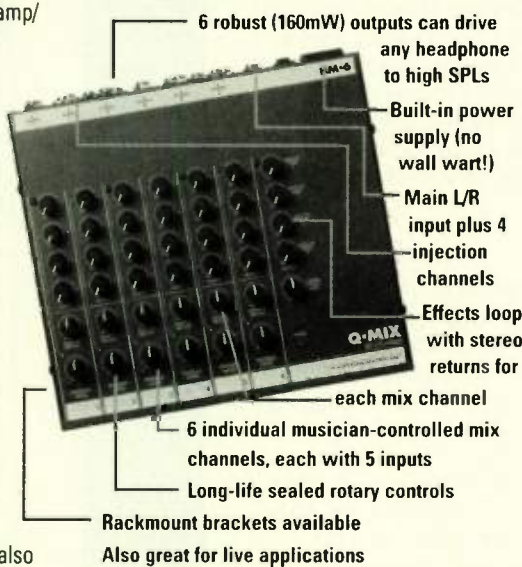
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PRO
TOOLS

TASCAM DA-98

Digital Recorder

spread across several pages, so don't even think of waiting until session time to start "programming." And, while you would think Dither and Word Length would be in the same Menu group, they're not.

I missed the Display button (on the DA-88) that stepped the LED display through ABS, Memo, Pitch, etc., each mode with a corresponding LED.

EVERYBODY (BUT ME) UNDERSTANDS THE BLUES

While the main button functions are silk-screened white, the alternate functions are printed with blue ink on a dark gray background. Even under bright fluorescent light I found this combination difficult to see. This won't be a problem in a bright machine room, but in the dimmer ambience of most control rooms, be sure to have your flashlight handy. Or perhaps I forgot to unpack the special 3-D viewing glasses....

THE OPERATOR'S MANUAL

The manual is generally informative and has large bold headings. Organization, however, is lacking. The first obvious error is in Section 2 — front panel controls. A number that points to a specific feature or button precedes each heading, but the image is located at the end of Section 3 — rear panel connectors.

MY FIRST PROJECT

To make a digital transfer from a Fostex RD-8 to the DA-98, I used the Apogee FC-8 converter. Since that "other" format (the one that uses S-VHS tape...) puts its Table of Contents at the head, any program is far enough away from the beginning of tape to make me feel safe. In order to minimize the possibility of dropouts or damage, I normally print tone over the first five minutes of any DAT or DTRS tape.

Missing from both the manual and the menu is Record Run — a feature that advances the [sync] clock at the moment Record is initiated. Attempting to put the DA-98 into record with the timecode generator "stopped" generated a message from the Menu display that was unmistakable. (The end-of-the-world is near!) It turns out that the DA-98 is not designed to do this. And so I had to settle for manually starting the clock. It is possible to output SMPTE from Absolute time with offset, but I didn't want to leave that to chance. [The DA-98 can stripe timecode by either starting the timecode generator *prior* to initiating the tape formatting process or by starting the generator *after* the format procedure



Both the DA-98 and the DA-38 differ from the DA-88 in two primary areas: power supply and head assembly. The DA-98 and the DA-38 use a "switching" power supply, which is lightweight, efficient, and requires no additional cooling device.

has begun. If you define a TC starting address and frame rate, but initiate formatting *prior* to starting the generator, the DA-98 will flash a message stating that timecode can not be written until after the initial 4 seconds of nonaccessible tape area passes.]

I also had difficulty while trying to enter Chase mode. Pushing the Chase button should have done the trick, but my trips from Menu 5 to Menu E to Menu 8 and that last message of doom may have been too much.

THREE'S A CHARM

Getting the DA-98 to chase SMPTE took a simple "power cycle" (On and Off) to purge the logic of an alien virus. (The "virus" undoubtedly arrived as a result of shipping stress.) The result? The DA-98 chases like nobody's business. I created a "stem mix" of four pairs of tracks: Drums and Bass, Guitars and Piano, Background Vocals, Lead Vocal/Double, and Effects. For the sake of the test, I did this in four passes. I am again "one" with technology.

INSIDE AND UNDER THE HOOD

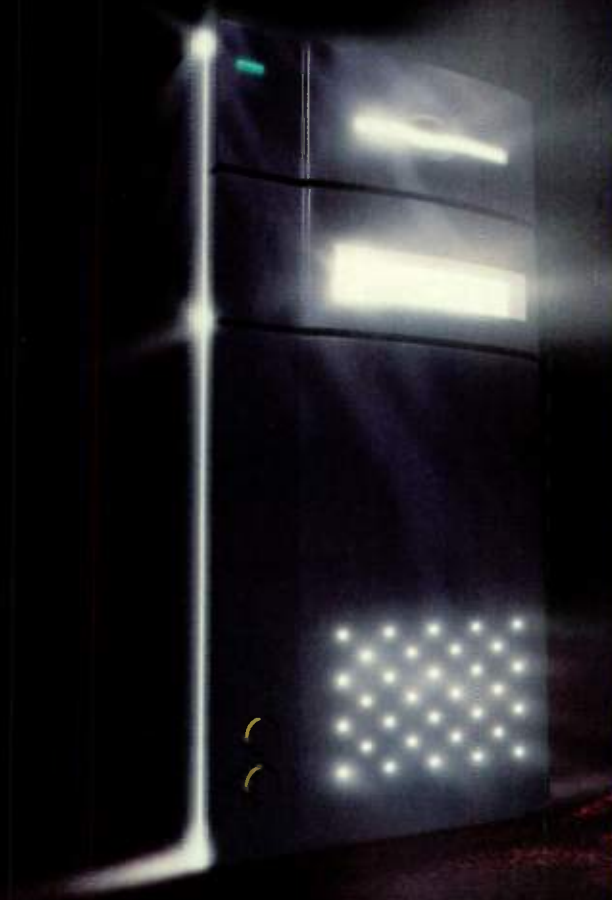
Now I can give you the inside scoop. Both the DA-98 and the DA-38 differ from the DA-88 in two primary areas: power supply and head assembly. The DA-88 has a Linear Power Supply, which is not particularly efficient. It also adds weight and heat, hence the built-in fan. The DA-98 and the DA-38 use a "switching" power supply, which is lightweight, efficient, and requires no additional cooling device.

The new head assembly uses a rotary transformer for both the record and the playback heads. (The DA-88 uses slip rings to connect the record heads.) All you have to know is that by eliminating the slip rings (and the fan), access to the head assembly for cleaning purposes is now extremely user-friendly. There are no metal or plastic obstructions to get in the way. Even the chassis cover has been redesigned. No longer a wrap-around U shape, the flat top has only five screws. There is also a built-in tape and head cleaner.

END OF TAPE

The DA-98 was made for those who say, "It would be a great product, if only it did...." Well, the DA-98 does! It's loaded with many user-requested features, not the least of which is the complete parameter access via the Menu display. The possibility of software revisions means there's a chance that Menu organization might eventually improve. Once familiar with the operating system, I was surfen' with the best of the programming geeks! Surf to www.tascam.com or to your local dealer ASAP. **EQ**

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ENGINEERING A DIGITAL BACKLINE

*(OR WHAT TO
DO WHEN
THERE'S NO
LIVE BAND...)*



CLUB PROFILE: PG 116

LIVE PERFORMANCE WITH A DIGITAL BACKLINE

BAND?
WHAT BAND?
ALL I'VE GOT IS
THIS TAPE AND
A VOCAL MIC...

By Mike
Sokol

A studio client called recently and wanted to remix a version of his latest CD with just the backline instruments and SFX tracks. This would allow him to "play along" with his studio tracks during a live show. If you're a performance purist, this may seem like a cop-out, but there may come a time in your live performance career when you (or the act you mix sound for...) can't do it all. Your latest studio recording may be too complicated or expensive to reproduce in a live setting. Still, you may need to come as close to that recorded sound as possible so as not to disappoint your audience.

If you've been doing all your basic tracks in MIDI, then you do have the option of using a sequencer to play back your tune via sound modules. But many acts use more traditional "live" instruments. For this exercise, we will assume you have a combination of live and possibly MIDI tracks that were previously mixed on the artist's album.

One option is to mix a backline track from your multitrack master that your band can play along with. This might include backing guitar parts, a basic drum track to sync up to, and special sound effects that would be difficult or illegal to do live (e.g., using a real Harley-Davidson for the SFX in the middle of your "Road Warrior" epic soundtrack might

be impractical in your local pub). The important thing to provide is enough continuity in the sound bed that you can successfully play along convincingly and without the embarrassment of getting lost in the tracks. This will, of course, take some practice. So don't try it live until you've got it happening in rehearsal.

Once you've got your backing-tracks mix done, how do you play it back in a painless fashion on the road? You could use ADAT/DA-88, DAT, recordable CD, reel-to-reel, cassette, or MiniDisc. Of course, the choice is dependent on budget and equipment availability, but certain choices will work, while others will be downright frustrating. Following are a few impor-

tant lessons that will help you to decide the playback media.

1. Random Access (...or a minute can seem like a lifetime): On stage is not the time to experience the joy of rewinding. You need to be able to access your next song in a heartbeat. Ideally, you could arrange your songs in a set list, and your next tune would be cued and waiting. This is only possible with a *nonlinear* media such as compact disc or MiniDisc. Reel tape can take minutes to rewind, and, of course, cassette has the fun of the "where-the-heck-am-I?" counter. ADAT/DA-88 and DAT have imbedded program numbers that allow you to seek to a song without keeping your finger on the Stop button, but they can still take a



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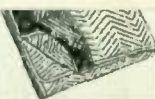
I would choose a MiniDisc player in either the 2-track consumer format or 4-track Portastudio™-type guise. Its ability to be edited in a noncomputer environment and provide instantaneous track-seeks puts it out ahead of all other formats — with the possible exception of the recordable compact disc.

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minute or more to find a song on the other end of the tape.

2. Cue-ability: Hey, who's doing the starting count for the next tune? If you have a background track that can be instantly started from pause via a foot pedal, then you can do a normal introductory count and hit the switch on the downbeat. If, on the other hand, you're using a linear



tapes with great S/N ratios can be made if noise reduction is used, so if open reel is your choice, don't forget the dbx or Dolby. DAT, ADAT/DA-88, and CD have excellent fidelity, with Mini-Disc a close second. In fact, many of my engineer friends say they can't tell difference between an original and first-generation MiniDisc recording. Since there is some lossy data reduc-



ROAD GEAR



JBL Eon M Series

MICS THAT FIGHT BAD BREATHS

JBL states that their new Eon M Series microphones have been designed with a particular emphasis on reducing handling and breath noise. Improved low-frequency isolation helps clean up vocal intelligibility and presence, allowing channel EQ to be used for

artistic control as opposed to "cleaning up" unwanted noise artifacts. The multi-stage wind screen has been redesigned to improve performance throughout the vocal region by reducing unwanted noise related to "p-pops" and "breath blasts." Leading the way in the new series is the JBL M100S dynamic microphone — a \$135 list-priced cardioid dynamic microphone that features a neodymium magnet system for extremely high output and high SPL handling with minimum distortion. A dual-density-type diaphragm is used to provide an extended and extremely flat frequency response, which significantly reduces feedback without coloring the acoustic signal. Other models range from \$69–\$99. For more information, contact JBL Professional, 8500 Balboa Blvd., Northridge, CA. Tel: 818-894-8850. Circle EQ free lit. #153.



Barbetta Model 32PA

BIG ON BASS

The new Barbetta model 32PA is a 15-inch PA cabinet with built-in power amplifiers that drive the speaker system with 200 watts RMS. The amplifiers are the biamp type with separate, independent power outputs for the woofer and the tweeter. The system also contains precision low-level active crossovers and Barbetta's exclusive patented Active Control Technology, which lowers distortion and produces tight, accurate bass response. A 4 x 10 inch constant directivity horn and driver combination produce the high frequencies and is driven by an independent power amplifier, featuring Barbetta's patented new MultiLoop feedback system. A 15-inch woofer drives the low frequencies. XLR balanced and 1/4-inch line inputs and outputs are provided. The total weight of the system including the built in power amps is 45 pounds, and the list price is \$849. For more information, contact Barbetta Manufacturing, Tel: 805-529-3607. Web: www.barbetta.com. E-mail: barbetta@earthlink.net. Circle EQ free lit. #154.

CLEAN FROM THE GETGO

GEPCO International has created a newly designed multipurpose musical instrument cable for use in all unbalanced audio applications. Passive pick-ups are susceptible to the loading characteristics of cables combined with the high input impedances of most amplifiers, but the GLC20 cuts high frequency

losses in half while maintaining low DC resistance. Characteristics of the GLC20 include a 20-gauge (41 x 36) fine stranded pure copper center conductor, insulated with a low-density polyethylene dielectric. A semi-conductive PVC layer is added to minimize the triboelectric effect caused by rough handling. The heavy, matte PVC outer jacket is designed to be both flexible and durable. This thicker than normal jacket eliminates most of the handling noise inherent in today's high gain audio circuits. For more information, contact Gepco International, 2225 W. Hubbard, Chicago, IL 60612-1613. Tel: 312-733-9555. Circle EQ free lit. #155.

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Peterson's line of maximum standard tuners address all the issues of stretch tuning, inharmonic instrument resolution, and conflict of tuning standards that make the difference between the well-tempered recording and that "something's amiss" feeling when tuning is just off, more than the ear can distinguish. Its Strobe Center 5000 includes shifted-octave features and adjustments for Bb, F, and Eb instruments, as well as accuracy at levels well beyond what the ear can hear. For more information, contact Peterson at 11601 South Mayfield Ave., Alsip, IL 60803-2476. Tel: 708-388-311. Web: www.petersonstuners.com. Circle EQ free lit. #156. **EQ**



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CLUB PROFILE: CHINA CLUB

WHAT YOU
SHOULD KNOW
WHEN WORKING
THE NEWLY
RELOCATED
HOT SPOT

By Steve
La Cerra

Ah, New York City — just like you pictured it. Lights, noise, weird people, and plenty of live music. And one of the more well-known venues for live music in the Big Apple is the China Club. Having recently moved to new digs at 268 West 47th street, the club also installed a new PA system. At the new location, the club occupies what used to be two floors of office space totaling approximately 16,000 square feet. Along with the new location came the opportunity for the club to install a PA that would accommodate their music requirements.

Supervising the design of the new system, as well as acting as China Club house engineer, is George Georgiades, president of Sound Communication Consulting. When asked about his main problem encountered at the old location, George says, "The old club was about 4000 square feet, and although I got by with that system, I was constantly battling the power situation. It was never a case where someone sat down and designed a system. Over the years we kept adding a little here and a little there."

For starters, the new China Club

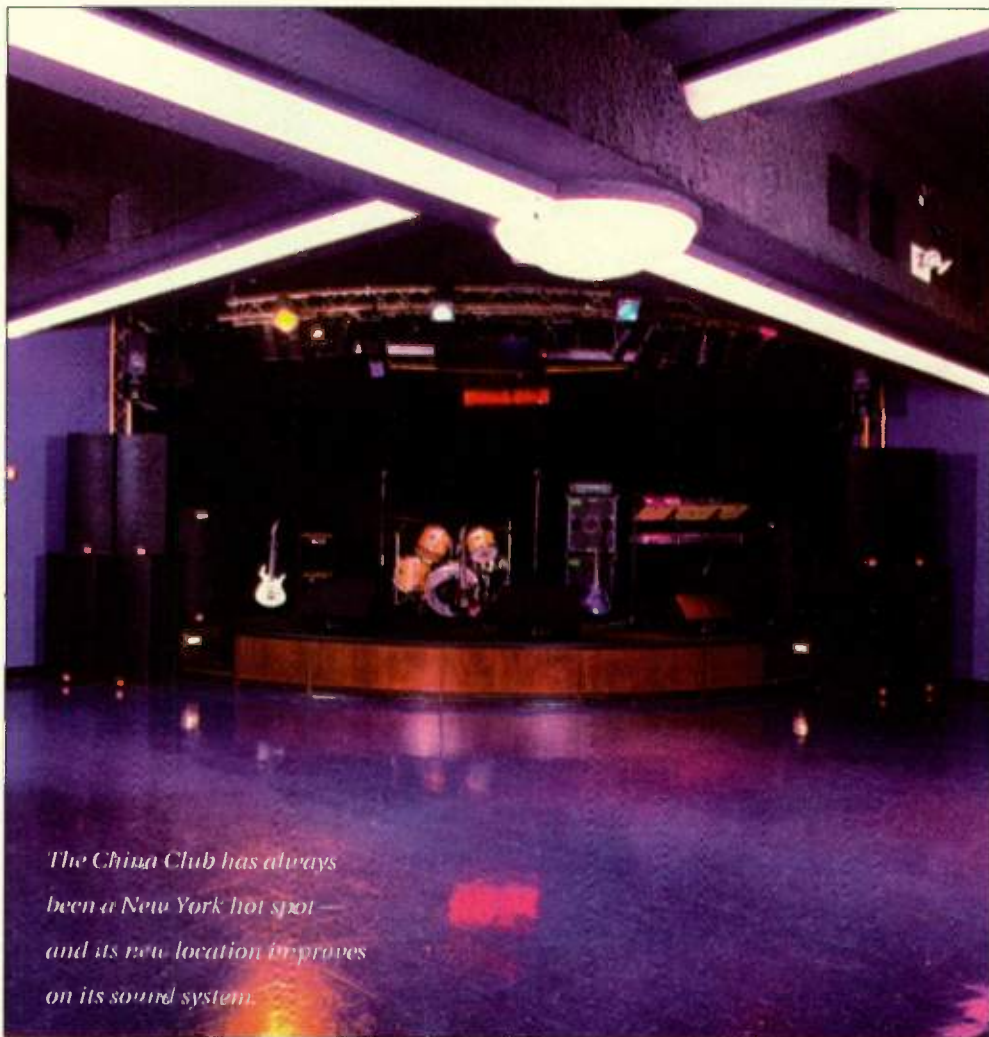
has an acoustical design by Al Fierstein of Acoustilog (New York). Central to that design is the room's ceiling, which is a double layer of sheet rock stuffed with fiberglass insulation and suspended via acoustic isolators. George explains, "Sometimes you experience a club where it feels like the walls are bursting when the PA is at full throttle. But here — when a kick drum lets loose in the PA — there's a bit of flex in the ceiling so that it acts as a bass trap. It's almost like a room within a room. The ceiling surface is covered with K13, which is a spray-on, Sonex-like material that absorbs high frequencies."

In addition to the ceiling, the upper three feet of the club walls were also sprayed with K13, further tem-

pering the high-frequency response of the room. An "I" beam running across the middle of the room was also sprayed with K13 to avoid odd acoustic reflections.

UNBOXING THE BOXES

Visually, the new China Club is reminiscent of its predecessor, with a pie-shaped stage of 18-foot radius. Behind the carpeted stage is a heavy velvet curtain that serves as a visual backdrop and absorbs some of the acoustic energy from the stage. George likens this room to a "grown-up version of the original club. We took a good thing and made it better, with the elevated VIP decks and the look of the bar. The same thing went for the PA."



*The China Club has always
been a New York hot spot —
and its new location improves
on its sound system.*

PHOTOS BY LOU MANN, INC.

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- 5 Control Room Section** controls I/O selection, master monitor level, and global muting.
- 6 Navigation Controls.** Scrub and shuttle wheel controls, timecode display, cursor controls, virtual "tape transport" buttons, window buttons for Pro Tools screens such as Mix, Edit and Transport, and keyboard shortcut buttons including Save, Undo, Edit Mode, etc.

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CIRCLE 74 ON FREE INFO CARD

Georgiades based the club's system around the JBL Sound Power Series of loudspeakers. Each side of the stage has a total of four floor-stacked cabinets for the house PA: on the bottom are a pair of Sound Power 128S subwoofers cabinets (each with two 18-inch drivers) and placed directly on top



area. In addition to the K-T, a JBL DCS260 digital processor is patched on the house mix, handling limiting, crossover, and EQ functions. Also available to visiting engineers for EQ'ing the triamped FOH system is a pair of Klark-Teknik DN3600's. Effects at FOH include a Klark-Teknik digital reverb, Yamaha

House mix position is on an eight-foot high platform, directly in the center of the room, opposite the stage and across the dance floor. An interesting technique that George has developed is that he uses a pair of "control room" wedges at the mix position. Placed above the mix position are a pair of



BSS OPAL DPR522 POWER GATE

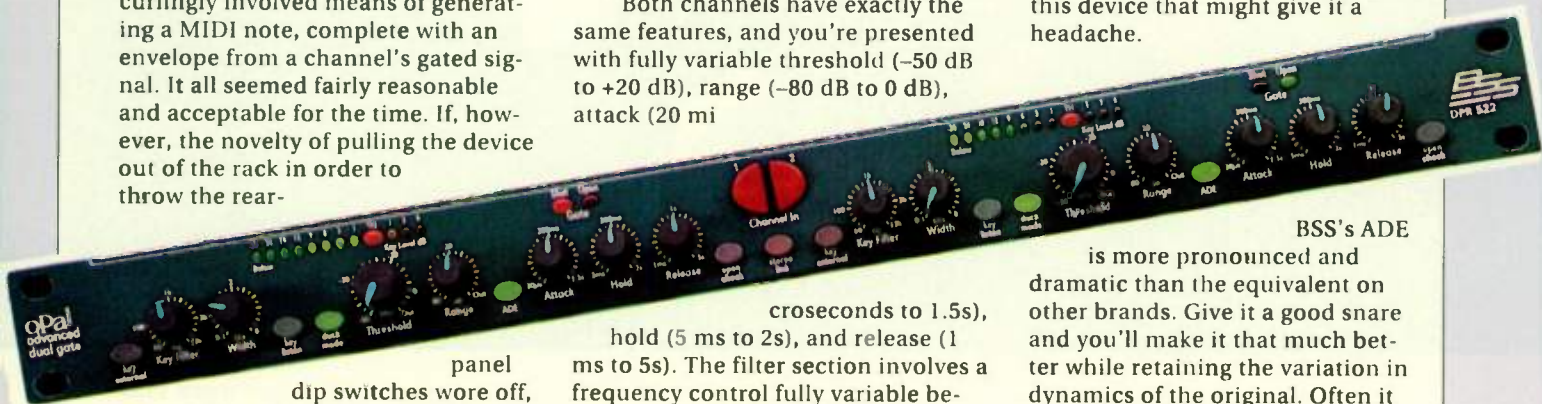
By ZENON SCNOEPE

BSS hasn't had a dual-channel power gate since the long-in-the-tooth DPR502. Somewhat ahead of the game, that unit employed a toe-curlingly involved means of generating a MIDI note, complete with an envelope from a channel's gated signal. It all seemed fairly reasonable and acceptable for the time. If, however, the novelty of pulling the device out of the rack in order to throw the rear-

LED always glows, whether exceeded or not, so there's never any doubt about how close to triggering the gate you are. Additionally, individual LEDs show the gate's open and closed states and extinguish in keeping with the created envelope. Excellent.

Both channels have exactly the same features, and you're presented with fully variable threshold (-50 dB to +20 dB), range (-80 dB to 0 dB), attack (20 ms

fires the envelope manually so you can inspect the process. This is a big-league processor with all the features. It's perfectly balanced and wonderful in its level of control. In practice, there really is nothing that you could throw at this device that might give it a headache.



panel dip switches wore off, then you could always resort to that unit's ADE (Auto Dynamic Envelope) button, which served as a means of accentuating the leading-edge information in the incoming transient and perking it up a bit. That feature earned unqualified respect, but you have had to wait until the release of the new Opal DPR522 gate to enjoy it again.

This new unit, which joins the company's compressor/de-esser in the more financially accessible Opal range, is handsome. It offers centrally positioned, illuminated, wine [colored] gum channel selectors. The box offers dual, fully featured noise gates with frequency assisted keying and stereo linking. The last of these combines signals from both inputs and hands the control of both signal paths over to the pots of Channel 1.

Metering is excellent, with a multicolored LED display showing the relationship between the threshold value set and the signal that is working it below and above it. BSS has always provided great metering, and the DPR522 arrangement helps a user to rapidly optimize a channel for the desired effect. The pivotal Threshold

croseconds to 1.5s), hold (5 ms to 2s), and release (1 ms to 5s). The filter section involves a frequency control fully variable between 60 Hz-13 kHz and an accompanying Width pot that works between 0.1 to 8 octaves. There's a Key Listen switch for monitoring the section and a button that injects the external key input arriving on a balanced jack.

Connectors are on balanced XLRs with the useful inclusion of a paralleled balanced output jack signal on each channel. For those who really like to knit their own connectors, each channel comes with an 8-pin socket for remotely such functions as gate opening. Other twists include a Ducking switch, for flipping a channel's modus operandi on its head, and Open Check, which

BSS's ADE is more pronounced and dramatic than the equivalent on other brands. Give it a good snare and you'll make it that much better while retaining the variation in dynamics of the original. Often it is all that is required to pull a track along. ADE is best suited to percussion, but it also has a use with bass and sharp rhythm guitar parts (provided you're prepared to accept that it doesn't always work creatively for these).

A really good dedicated gate is

ROAD TEST

MANUFACTURER: BSS Audio, 1449 Donelson Pike, Nashville, TN 37217. Tel: 615-399-2199. Web: www.bss.co.uk.

APPLICATION: Recording, post, and live sound.

SUMMARY: Dual-channel, fully featured "power" gate with ADE feature.

STRENGTHS: A definitive gate for those most difficult jobs; ADE adds an increased dynamic to leading edge information; manual control of all functions; superb metering.

WEAKNESSES: Not cheap; may be more than you need for a lot of general gating duties.

PRICE: \$799

EQ FREE LIT. #: 173

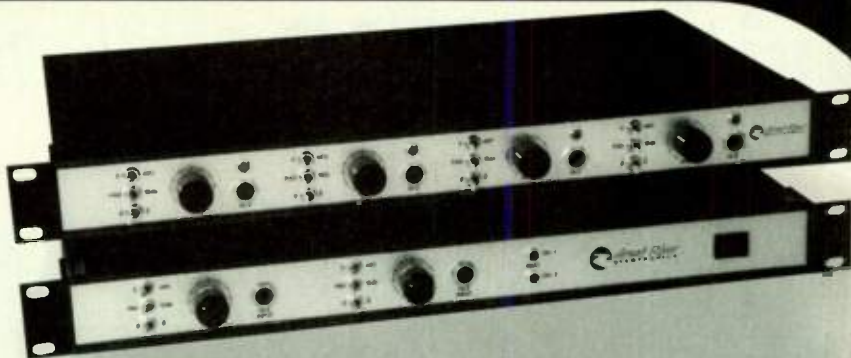
still quite a marvelous thing to behold, and the Opal stirs the memories with some features that have now been committed to history. Especially now that the popular trend is to auto-oriented boxes and simple gates that are just stuck on the end of a compressor chain to bolt down the inevitable noise build up. The DPR522 tugs at the heart strings with fully variable attack and hold — essential if you want to get serious — and the sort of razor-fine filter that can delve into complex program and produce unerring and repeatable triggering with uncanny precision. It's an arrangement that I find preferable to the high- and low-pass filter combo, although, theoretically, the results ought to be similar.

You can keep your multichannel, auto-time-constant devices on hand for those rudimentary gating duties, but no rack is complete without at least a couple of channels of clever stuff. BSS's new "power gate" qualifies with flying colors. This is the unit that the original DPR502 should have evolved into, and you've got to wonder why it has been such a long time coming. If you want extended gating control, then this box should be high on your list. The Opal DPR522 is up there with the best-established processors of its type.

SPECIFICATIONS

General Input Impedance: 10 kohm balanced or unbalanced
Input Headroom: > +20 dBu
Input CMRR: > -50 dB (30 Hz-20 kHz)
Max Output Level: > +20 dBu into 600 ohms or greater
Output Impedance: <50 ohms unbalanced or unbalanced
Frequency Response: 10 Hz-80 kHz (± 3 dB)
Noise: -96 dBu (22 Hz-22 kHz)
Dynamic Range: > 117 dB
Cross Talk: > -85 dB (20 Hz-20 kHz)
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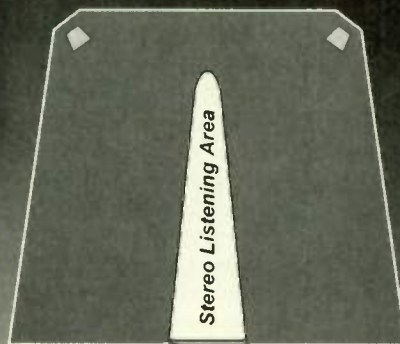
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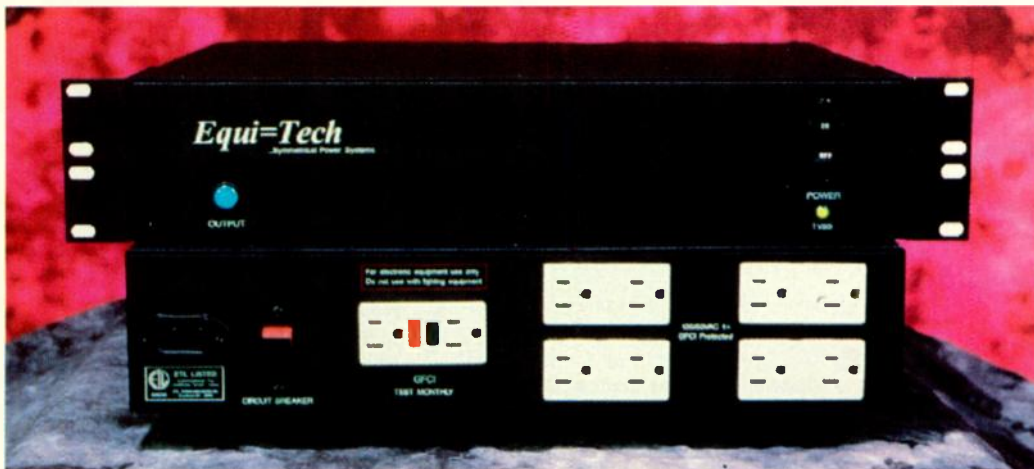
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Equi=Tech ET1R *Symmetrical System*



The answer to your
project studio's power
problems

BY DAVID FRANGIONI

Power is serious business.

EQ readers who own studios are well familiar with the problems caused by inconsistent, unreliable and "unclean" power. That's right, not all A/C is created equal, I mean equal. Martin Glasband, owner and chief designer of the Equi=Tech Corporation, studied the effects that poor A/C can have on a sensitive environment such as those housing audio and video gear. His findings technically diagnosed precisely what studio owners have been battling with for years. That is, that poor quality electricity in the form of little or no (isolated) ground, "back-feed" of noise re-entering the line from dirty chassis conditions, and other forms of electrical contamination can result in excessively noisy and unreliable equipment operation.

Equi=Tech power units feature what's called balanced power. (For those of you unfamiliar with the Equi=Tech electrical treatment, please read Roger Nichols's article on balanced power featured in EQ's July 1996 issue.) The theory behind bal-

anced power is that both the neutral and the hot leg of a conventional A/C outlet deliver 60 volts. Usually, the hot leg sends 120 volts, while the neutral, because it is tied to ground, presents 0 volts. Additionally, balanced power (or "tech power," as it is often referred to) also flips the phase of the neutral leg so that any noise present on any of the three legs will be canceled out — thereby eliminating any possibility of electrically induced noise. Having used Equi=Tech products in many studios I have built, I can tell you first-hand that, yes, it does indeed work.

There are several problems that crop up when interfacing many different pieces of equipment in a studio. These problems surface due to improper or poor cabling (float the ground, connect the ground, etc.),

ungrounded equipment, or gear that exhibits the "dirty chassis" syndrome. This syndrome occurs when the 3rd pin of an electrical ground does not coincide with the chassis ground on a piece of gear (as it should). Therefore, you need to ground the chassis to the ground on the connectors that's attached to said piece of equipment. The ground that you connect, however, needs to be the same ground that all of the other equipment in your studio is referencing or it doesn't work.

Equi=Tech released their first line of products over two years ago and quickly developed a strong following of engineers and studio owners. Their line originally consisted of rack-mount power units ranging from 15 amps to 50 amps, as well as wall-mount units up to 100 amps in custom-designed housings (beware, they're great but weigh a hefty 250 pounds each). The release of this new 10-amp unit marks their first real product for the masses. Considering that this unit sells for under \$1000 and offers a convenient solution for portable live setups, small project studios, or guitar rigs, the ET1R is just what the noise doctor ordered.

EQ LAB REPORT

MANUFACTURER: Equi=Tech Corporation, P.O. Box 249, Selma, OR 97538. Tel: 541-597-4448. Web: <http://www.equitech.com>

APPLICATIONS: Studio, clubs, theaters, musicians' racks, remote broadcasting, test equipment, production suites, and anywhere clean power is imperative.

SUMMARY: Great technology in power conditioning at an affordable price.

STRENGTHS: Great reduction in noise; 10 outlets; compact size; good price.

WEAKNESSES: None really, but users should realize it's not necessary for every application.

PRICE: \$879

EQ FREE LIT. #: 158

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In a world of "me too" products, Peavey brings something truly new to the table. In our 30 plus years of satisfying the needs of working musicians like yourself, we've learned the difference between useful features and fluff.

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Little things can make a big difference when mixing sound. Little things like meters and inserts on the subs. "I don't care what the headroom specs are, I want clip lights on my bus meters!" Little things like assign capability on all 4 stereo returns. These and a bunch more add up to make a big difference in the real world, where the mixer meets the music.

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Need to pad an input, or fix a phase cancellation on a drum solo? Why pay thousands of dollars for features that you don't need on every channel? (uhh) Peavey gives you pad and polarity on two "Super Channels™". It's just common sense. Let's see how long it takes them to copy this.

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Low Noise Mic Preamps

"Low Noise" is old news to any one skilled in low noise design (how about 30 years worth?). Lower is not always better. A 200 ohm microphone wants to see a "bridging" (10x) input. Go too low and you reduce the signal, hurting signal-to-noise-ratio. Our preamps are within 2 dB of theoretical; only a perfect preamp could sound quieter and there's no such thing.

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Combining tens of sources causes the summing amp's self-noise to be significant. Using low impedances can only reduce part of the noise. The SRC uses discrete transistor summing amps instead of opamps. We know you'd spend a few dollars more when it makes such a big difference in dynamic range.

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As far as whiz-bang types of features are concerned, there really isn't a lot to talk about (or write about, for that matter). The ET1R contains five dual outlets on the back. It is a 2-space rack-mount unit (16" x 12.5" x 3.5") weighing in at 29 pounds. What makes this product special is the balanced power technology that it employs inside. That's right, now the benefits of balanced power are available to a studio of any size. Noisy guitar racks? No problem. Noisy synth racks? No problem. Noisy studio electricity...you get the idea. There really isn't a downside; there is, however, some other information that you need to consider.

First, if your A/C is quiet and you are experiencing no problems, such as digital jitter, hums & buzzes, inconsistent behavior and performance from gear such as hard drives, digital tape decks, etc., then there may not be any need for this product. Also, if you do experience problems from gear such as keyboards or effects processors, then the Equi=Tech power is only one part of the equ=ation (last time, promise). The other ingredient is a device such as an Ebtech Hum eliminator. This unit is an isolation transformer that safely separates the ground from the signal; thus eliminating any loops or problems associated with improperly grounded gear. You would simply insert the transformer between the output of the gear and the input of the mixing console and most of your noise will be gone. Of course, there are circumstances when some gear just won't keep quiet; however, most gear will sound cleaner with the isolation transformers. Now, for the record, if you try using the Hum Eliminators without the Equi=Tech, there may not be much of a positive effect. The reason for this is that if your ground is clean and solid, then most other variables will be controlled.

Finally, thanks to Equi=Tech, there's no more guessing as to what grounding schemes may or may not work. That's a huge relief for most studio owners.

David Frangioni is a studio builder and digital audio consultant. He recently finished studios for Tommy Shaw of Styx, Olivia Newton-John, and Anton Fig of The Late Show. Check out David's Web site at: www.audio-one.com.

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Designed by John Molyneux



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obtained at the console. The speaker outputs handle any 8 or 4 ohm guitar cabinets — and built-in speaker loads allow silent recording.

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CIRCLE 36 ON FREE INFO CARD

Elektroson's GEAR *CD Burning Software*

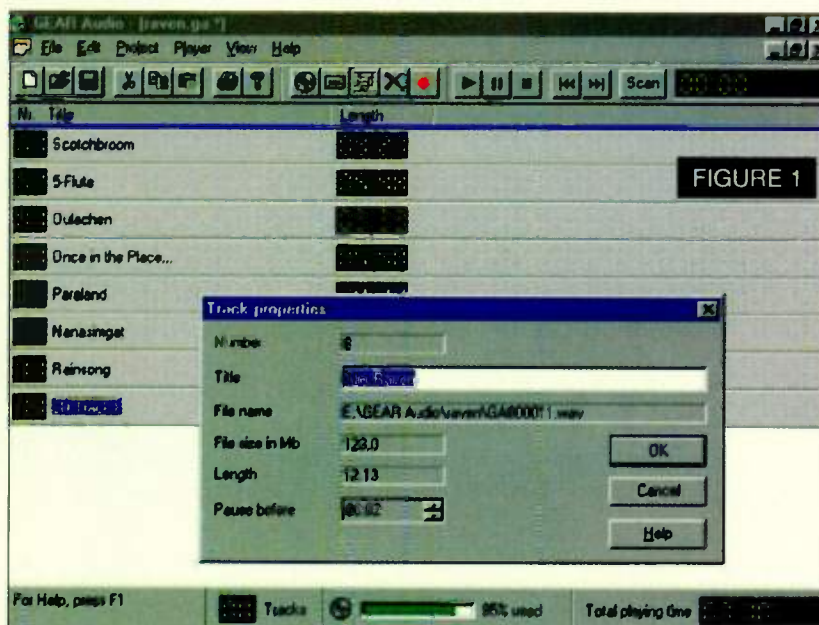


FIGURE 1

If you are in the market
for a quick and easy
CD burner, look
no further

BY DAVID MILES HUBER

Considering the number of CD recording programs and general burning applications hitting the market these days, it's become obvious that it's big business. One CD-audio burner that's geared to the general consumer, but has caught the eye of professionals as well, is GEAR Audio from Elektroson. Here's the scoop!

Upon opening up the program, the first thing that you'll want to do is create a new project or call an existing project up from disk. Creating a new project will make a new directory of the same name into which all imported CD-audio files, WAV files, and project files will thereafter be saved. Once done, the next step is simply to put stuff into that project. This can consist of audio that's imported from existing music CD tracks or from 44.1 kHz, stereo

hard-disk tracks (in WAV, AIFF Red Book, or Sound Designer II formats).

Importing tracks from an audio CD is easy. All you do is mark all the files on the list, make sure they are going to be transferred to the right disc and directory, and press OK. It began

reading at my CD-R's fastest read speed (6X) and then entered each song into the project list in its original order. If this feature is what you're after, look no further, as I haven't found a program that's easier. Just put in the disc, click "Add all tracks," and GEAR Audio does the rest.

Entering hard-disk tracks into a project is just as easy. You simply search your drives for the files you want and select either of two options: "Create link(s)" or "Copy file(s)." The former will link the soundfile's data directly to the track in the current project, while the latter will make a separate copy of that file and place the copy in the current project directory. This feature, for example, lets you copy WAV files from a burned data CD or you can copy any file and edit it, while leaving the original intact.

Speaking of edited soundfiles, GEAR Audio has provisions for automatically linking imported WAV files to your favorite sound-editing program, where they can then be edited and saved back into the project list.

Once all of the tracks have been



LAB REPORT

MANUFACTURER: Elektroson, Inc., 2105 South Bascom Avenue, Suite 160, Campbell, CA 95008. Tel: 408-371-4800. Web: www.elektroson.com (demo).

APPLICATION: A Win95 or NT program that lets you mix and match prerecorded songs from CD-audio or hard-disk tracks to create your own custom CDs.

SUMMARY: An easy-to-use application for those interested in creating their own audio CDs on the PC. (Don't worry, a Mac version is expected later this year.)

STRENGTHS: This program is reliable and easy to use. I've stopped making test burns and haven't yet created a coaster.

WEAKNESSES: I miss the waveform display I get when using my other burning software, but hey, this program's a lot less expensive. At the initial load up, the manufacturer turns off lots of cool options that make this program easier to use and learn. If they're going to "hide" all of these features (such as the Pause Before display and Track display), they should have a section in the manual explaining what has been disabled and how these functions could make life easier for you. Unable to scan transition times between tracks.

MANUAL: Short, concise, and helpful (except for my above comment).

SYSTEM REQUIREMENTS: CD-R (supports a ton of them); 486-based PC or higher; Windows 95 or NT; 16 MB RAM or higher. Approximately 800 MB free disk space for file storage and 12 ms or less HDD.

PRICE: \$149

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- RECORDING
MAGAZINE



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MAGAZINE



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- PRO AUDIO
REVIEW



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entered into the project list, you can then go about the task of editing the list into a final project for burning to disc. This process is fairly simple. Files that have been entered into the list can easily be rearranged by dragging them up and down the list until you've found the perfect order. Auditioning this order can be done in several ways. The entire project can be listened to whenever no tracks are highlighted and the Play button is pressed. Individual tracks can be played by simply highlighting the specific track. In addition, you can preview the first few seconds of each track by selecting a Scan option.

I couldn't find a way to audition the transition times as they pass from one track to the next without listening to the entire project. For most production folk, these transition times play an important role in setting the feel and pace of a disc. It would certainly be nice to audition them. I highly recommend that Elektroson program an option into the Preferences window that would let us scan the transition as it moves from the previous song through to the first few seconds of the current song (in user-definable time lengths.)

The above-mentioned transitions are inserted between each CD track via a "Pause Before" setting that can be changed by right double-clicking (why not just right-clicking?) on a track and then calling up the Track Properties

window. GEAR is shipped with the pause-between-track defaults set at two seconds and a resolution that can only be changed at 1-second intervals. By calling up the Project/Preferences window, a new default pause time can be entered in and the resolution can be increased — so that you can enter pauses down to the frame or percentage-of-a-second range.

I found it helpful that GEAR Audio lets you see the Pause Before time settings in the Main Project window. As shipped, the program will only display the Track Length; however, the Start/Stop times and Pause Before displays can be turned on from the Project/Preferences window. Without these viewing options, it would be extremely easy to make a mistake and burn a coaster that would have the wrong pause times between the tracks. My wish here would be that the program have a right-click option that would let you change the track pause settings without having to go through the hoops of calling up the Preferences window.

QUIT YOUR SCRATCHING

If a selected or imported track is a bit too scratchy for your liking, Elektroson has bundled a de-click and de-scratch utility directly into the program. This quick-n-easy cleanup tool (which is in reality a 1.0 version of Sound Laundry from Al-

gorithmix) can be called up from the omnipresent Track Properties window by selecting the "De-click track" option.

As there are no de-click option variables, all you can do is process the track and hope for the best. The process got rid of most program clicks and scratches, but in the process it also created some pretty offensive "crunchy-pops" that weren't even in the original soundfile. You're better off using a better sound editor to do this job.

BURN, BABY BURN!

Once the project has been assembled and the project file is saved to disk (hey, system crashes do happen), as is customary, all you need to do is press the red (burn it!) button. Writing is about as easy as you can get. GEAR Audio will give you all the statistics (such as the disc's total playing time, burning speed, and estimated test and burn times. Simply press "Test and Write" or "Write" and sit back and watch the musical notes scroll across your screen in a neat little graphics show.

Oh yeah, I almost forgot, this program gives you the option of printing out an index list that can be slipped into the CDs jewelbox. On the downside, Elektroson chose to include only the title and track length in this list. Hey folks, isn't the useful part of an index list the track start and stop times so you can reconstruct the list from the original files at a later time should something happen?

MY 2 CENTS...

Despite my downside quibbling, this is an extremely easy-to-use program that's very useful for grabbing sounds from disc or from disk soundfiles. It is also extremely reliable as a burning tool. I've even stopped testing the discs (something that I can't truthfully say about any other editor I've dealt with!). Very sophisticated users will want greater flexibility, but this program is about ease and simplicity.

Elektroson might think about working on the CD reading tool so that it could play CD tracks out to speakers from the Add CD Track(s) Window. This oversight means that I have to leave GEAR Audio, listen to the tracks that I want to add to the list, and then open it up again! You also can't copy a range of audio from the CD to a WAV file.

All beefs aside, I still give this program a big thumbs up for simplicity and reliability, two very important points in my book.

EQ

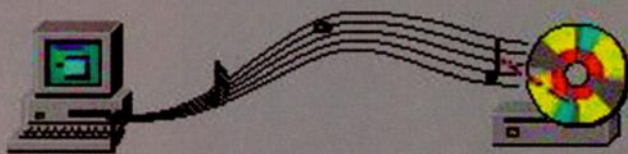
Writing to CD-R

This CD will be recorded with PHILIPS CDD2600.

GEAR Audio is creating your CD.

Please try to keep your system load as low as possible.

FIGURE 2



Info

Writing speed 1x

Action Finishing disc...



00:00:03 left (total 00:00:03)



Digital Audio Labs' Grand Unified Theory.



BIG BLOCK

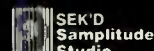
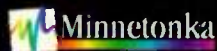


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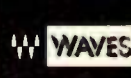
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Arboretum *MetaSynth 2.0*

Create some
interesting sounds
through a unique
graphic design

BY TIM TULLY

Arboretum Software's MetaSynth (for the Macintosh) is one of the most intriguing, elusive, and powerful software applications I've ever used. Designed by Eric Wenger, MetaSynth is reminiscent of Wenger's magnum opus, MetaTools Bryce2, the cult fave landscape-creation software. Both are clearly products of a deep and passionate analysis of computer-generated imagery and the many dimensions in which it can be manipulated. But while both applications provide tools for creating images, MetaSynth turns a surprising corner to transfer those images into manipulations of audio. By dint of this operating metaphor, it offers so many ways to shape and play a sound that I can only cover the basics here.

MetaSynth is oriented toward sound creation rather than performance. It can help you create digital audio files suitable for loading into a sampler or audio sequencer (e.g., Studio Vision, Pro Tools, etc.). It can make one-shot, percussion-style samples, but cannot set loop points for sustaining a portion of a sound. It can also create longer files for use as pads or larger compositional elements, and its output would provide excellent and unusual sound effects for movies or games. Most importantly, it can make unique and dynamic sounds.

Offering tools and serving goals somewhat similar to Digidesign's Turbosynth, MetaSynth offers even more — and certainly more unexpected — ways to manipulate an au-

dio sample via a much less literal graphic interface. If you're used to sound design programs like Sound Forge, Peak, or even Turbosynth,

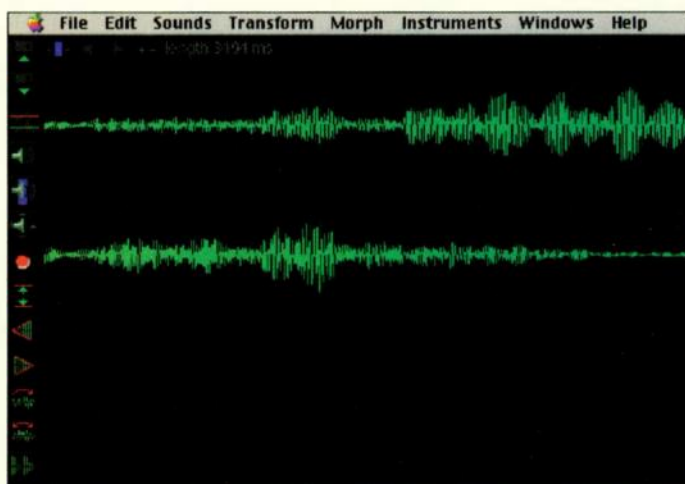


FIGURE 1: MetaSynth can load an AIFF or SDII file and allows such basic traditional editing as cut, copy, paste, merge, and insert.

MetaSynth will take you down an entirely different rabbit hole.

Though MetaSynth makes some use of the traditional graphic waveform display (fig. 1), the bulk of its controls use a more complex and subtle metaphor. In fact, one difficulty in learning MetaSynth is that its manual tends to focus more on the interface's novelty than on procedures. This is somewhat understandable, as the interface is so fun to use that the program could pass muster as a computer game. But MetaSynth is much more than just a game.

OPERATION

To work in MetaSynth, you begin with a single sound. This can be an AIFF or SDII soundfile that you load into the Sample Display Area; a waveform you design in either the Wave Table palette or the Procedural Synth (FM synthesis) palette; a section of white, narrow or fractal noise you can generate from a menu; or a MetaSynth instrument — a collection of samples keymapped across a frequency range like a multisampled sampler patch.

The main (but certainly not only)

EQ LAB REPORT

MANUFACTURER: Distributed by Arboretum Systems, Inc., 75 Aura Vista, Pacifica, CA 94044. Tel: 650-738-4750. Web: www.arboretum.com.

APPLICATION: Mac sound design software.

SUMMARY: Unique interface manipulates sound file via abstract graphics.

STRENGTHS: New and different techniques for sound design that produce novel results; attractive interface and multiple functions.

WEAKNESSES: Steep learning curve; difficult to get controllable, predictable results; operation often not standard to Mac interface, terminology often not standard audio terminology; occasional inconsistent operation from window to window.

MINIMUM SYSTEM REQUIREMENTS: Power Macintosh (601, 604, or 603e processors with 120 MHz clock speed), System 7.3 or later (OS8 compatible), QuickTime 2.0, Sound Manager 3.1, 16 MB RAM (allows 18-second stereo file, 60 MB is "a good working size"), 1.5 MB free disk space for application plus additional space for files (audio in Sound Designer II format), 256-color (8-bit) display (32-bit recommended), built-in Mac audio hardware or cards from Digidesign, Event, Korg or Lucid.

PRICE: \$249

EQ FREE LIT. #: 174

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107	E-mu Systems	27	408-438-1921	76	Studer	77	818-703-1100
35	Ensoniq	98	610-647-3930	91	Syntrillium	57	602-941-4327
49	Event Electronics	30	805-962-6926	57	Tannoy	84	519-745-1158
28	FMR Audio	81	800-343-9976	22-23	TASCAM/TEAC America	58	213-726-0303
63	Fostex	28	310-921-1112	14	Taxi	68	818-888-2111
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135	HHB Communications	32	310-319-1111	12	Whirlwind	73	716-663-8820
42	Hohner Midia	33	707-578-2023	13, 95, 119	Yamaha	69, 74, 75	714-522-9011
89	Hot House	89	914-691-6077				

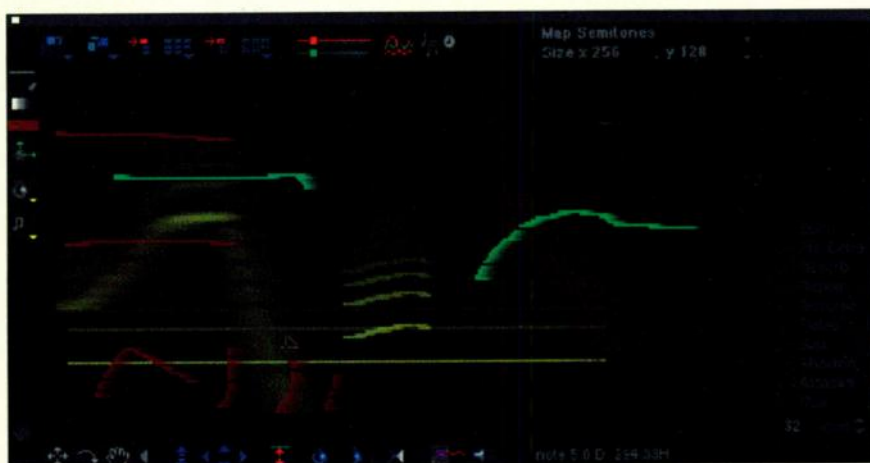


FIGURE 2: The Image Synth palette is MetaSynth's principal workspace, where images play the selected sample.

work area is the Image Synth palette (fig. 2), which lets you draw in its main window with one of eight brush tools similar to those found in graphics programs. You can draw lines, airbrush patterns, blobs, and all sorts of abstract images, as well as import any PICT file.

The program's essential uniqueness is that when you click the Play button in the Image Synth, each one-pixel-high point drawn in this window triggers

playback of the selected sample or waveform. Points drawn at a certain height in the window play the sound at its natural pitch. Those drawn above or below that point play the sound transposed up or down, respectively. Points that are extended horizontally play for a longer duration by looping a short waveform or playing more of a longer one. Brighter images play the sound louder than those with less luminance

do. You can set the duration of a pixel in this window from 0.04 to 300 milliseconds or more, depending on system memory, and while the manual says you can get two or more minutes of playback from a 512-pixel-wide window, I could only get a maximum of 69 seconds in a Mac with 160 MB of RAM.

A pop-up color bar graduated from red to green selects the brush stroke's color, which in turn indicates the resulting sound's stereo placement (although you have to "render" the synth image to the current sample to hear it in stereo). A pop-up menu lets you map the pixels to a wealth of different tunings or scales, including major, whole tone, semitone, quartertone, or a custom scale (choose from 4 to 64 notes per scale and linear, exponential, or randomized interval ratios). Another menu filters the image-to-note mapping of images already drawn to conform to major, relative, or harmonic minor or chromatic scales.

The brush palette offers brushes that modify the sample's envelope characteristics to get fast or slow attacks or

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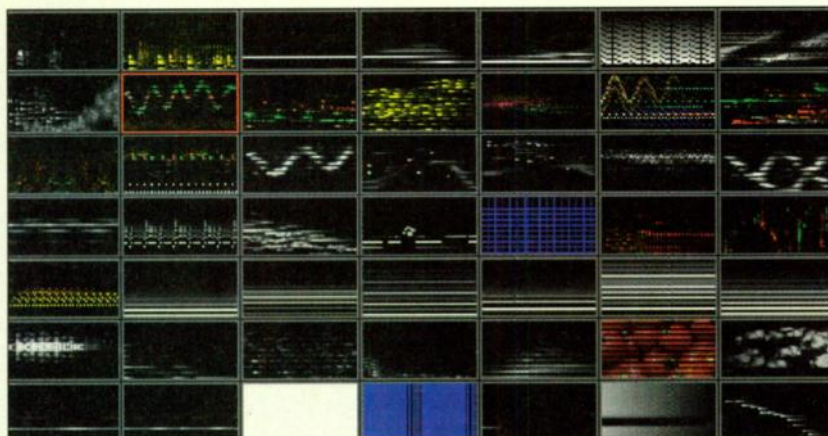


FIGURE 3: The Presets palette provides a set of pre-drawn PICTs, to which you can add your own favorites.

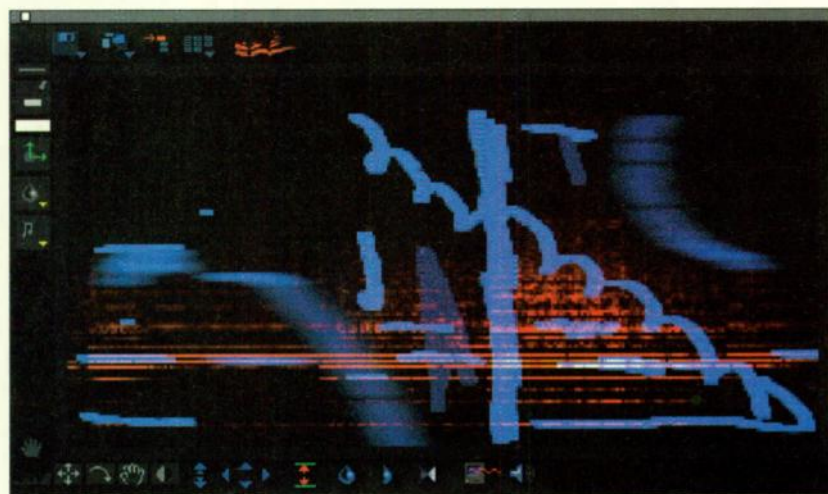


FIGURE 4: The Filter palette displays harmonics that you can play or mute by painting on them.



FIGURE 5: The Procedural Synth creates a sound via frequency modulation synthesis, where a sound, or "carrier," is mathematically modified by a second waveform, or "modulator."

releases, and brushes that put playback at a specific pitch or a diffuse number of pitches. Brushes can be set in different modes to create long notes, staccato notes, pitch-shifted copies of notes, paint a fundamental plus harmonics, and filter existing images to alter attack, decay, and other parameters. You can change the brush size from a single pixel high to the height of the window, and other controls let you transpose, rotate, blur, filter, emboss, and otherwise alter the image — and resultant playback — in ways in which days of exploration gained me only a limited familiarity.

For help getting started, a pop-up of 49 different preset PICTs is available, ranging from abstract to a bowl of cherries (fig. 3) that make sounds varying from the wholly arbitrary to coherently rhythmic and melodic.

The right side of the Image Synth palette offers ten effects buttons including echo, reverb, repeat, and others.

FILTER PALETTE

The Filter palette looks and operates quite a bit like the Image Synth, with two principal differences. To use the Filter palette, MetaSynth must first create an FFT analysis of the current sample (the resulting frequency bands play only when you paint on them) or, if you first invert the color of the palette, only unpainted-on frequencies play (fig. 4). The manipulations you do here are added to those in the Image Synth, and amount to an odd kind of additive synthesis method, which, among other effects, can easily render sounds with a resonant-filter-like character.

THE WAVE TABLE

The Wave Table palette is one of MetaSynth's most impressive elements. It displays a single-cycle waveform and 11 different wave-shape buttons. Clicking and dragging on any of the buttons smoothly morphs the current wave into the one on the button as it plays in real time. Other buttons rotate, blur, filter, and otherwise manipulate the wave. You can save the results as an audio file, or click the Wave Table control in the Image Synth to use the wave in that

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window. In addition to its use within MetaSynth, the Wave Table palette is a remarkable tool for creating single-cycle waveforms that could easily be stretched for use in samplers, remix software, and other applications.

OTHER GOODIES

The Effects palette implements 14 different effects, including chorus, EQ, echo, reverb, stretch, and others. Selecting an effect, then clicking the Preview button, plays the Image Synth while allowing you to apply the effect in various amounts by dragging the mouse.

The Procedural Synth is an easy-to-operate 2-op FM synthesizer (fig. 5) that creates characteristic FM waveforms and allows crossfading two different waveforms in almost unlimited ways. Surprisingly, this window lacks an undo function, which seriously cripples its usability.

The Envelope Window, oddly hidden as a menu item, lets you alter the sound's envelope in a host of ways, but is also severely limited by the lack of an undo function.

WRAP

Like Bryce, MetaSynth's power is the flip side of a relatively limited functionality. For example, while it does offer cutting, moving, pasting, and merging audio, it is not optimized for them as well as other programs.

Its power is more esoteric, and for this power, MetaSynth exacts a toll. Its very depth creates a concomitantly steep learning curve, its uniqueness of interface demands a new work model, and its basic metaphor — mapping audio events to comparatively unrelated visual elements — is penetrable only by a lot of time and/or an open mind free of preconceptions. If this sounds like I'm suggesting the ideal MetaSynth user is a ten-year-old boy who likes to stay indoors, that may not be far from the truth. MetaSynth also throws you the curves already mentioned: inconsistency in presence or operation of functions — such as undo and preview — from window to window. Its terminology is occasionally inconsistent and a number of operations are not well documented.

Nonetheless, these are all the kinds of faults that disappear in later versions, and above all, MetaSynth is downright brilliant in conception, striking in execution, and produces wonderful sounds. **EQ**

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GEAR-AT-A-GLANCE

continued from page 37

Quasimidi: The *Sirius* synthesizer (under \$1700) includes step and real-time sequencing, onboard drum machine, vocoder, beat recognition system, arpeggiator, and two built-in effects processors. It also features fast edit macros, random sound creation, 49-key keyboard, and 22 real-time controls. Contact Quasimidi, 1119 N. Wilson Ave., Teaneck, NJ 07666. Tel: 201-836-7671. Web: www.quasimidi.com. Circle EQ free lit. #160.

Roland: Roland and Fender have collaborated on a *Roland-Ready Stratocaster* with Roland divided pickup for \$599...The *SC-880* 64-Voice Synthesizer Module packs 1,117 internal tones, 42 rhythm sets, 4 individual outs, and 256 patches into a 1U module capable of delivering 32-part multitimbral sounds with 64-voice polyphony. Effects include reverb, delay, EQ, and 64 different multieffects algorithms including distortion, 3-D processing, and guitar amp simulations. Contact Roland Corporation U.S., 7200 Dominion Circle, Los Angeles, CA 90040. Tel: 213-685-5141. Web: www.rolandus.com and www.roland-groove.com. Circle EQ free lit. #161.

SampleHeads: *Pocket Syndrome* (\$99.95 audio CD, \$149.95 CD-ROM) consists of over 700 license-free guitar loops, each at multiple tempos and keys. All phrases are pre-looped, calculated to 1 or 2 bars, and ready to use. Contact SampleHeads, 1600 Broadway, Suite 704, New York, NY 10019. Tel: 212-262-3488. Web: www.sampleheads.com. Circle EQ free lit. #162.

Sek'd: *Samplitude 24/96* (\$1499) brings 24 bit/96 kHz multitracking and mastering to Windows 95. It also accepts DirectX plug-ins and performs CD burning...The *24/96 ADDA Converter* (\$3990) uses 24-bit/96 kHz converters to provide 123 dB signal-to-noise ratio, and can also record 24-bit/96 kHz audio onto a regular 16-bit DAT recorder. I/O includes balanced analog and digital as well as TOSLINK optical. Contact Sek'd, PO Box 5497, Santa Rosa, CA 95402. Tel: 707-578-2023. Web: www.sekd.com. Circle EQ free lit. #163.

Sonic Foundry: For loop-based music, *Acid* (\$399) for Windows is a pretty incredible program. Drag-and-drop loops into the main editing screen and Acid matches tempo and key in real time. Acid allows real-time changes to pitch and tempo with control over volume, pan, and effect envelopes. It also accepts DirectX plug-ins for real time processing, and links to Sound Forge for editing. Contact Sonic Foundry, 754 Williamson St., Madison, WI 53703. Tel: 608-

256-3133. Web: www.sonicfoundry.com. Circle EQ free lit. #164.

Sony: The *MDM-X4MKII* (\$895) is an upgraded version of the MDM-X4 Minidisc-based 4-track recorder. It allows simultaneous locking of multiple MDM-X4MKIIs, or chase locking to an external sequencing program. It also incorporates V4.5 ATRAC compression technology...The *DPS-V55* multieffects processor (\$550) uses the same DSP engine as the DPS-V77 and provides 45 different effects algorithms, search function, and 200 factory/200 user presets. Contact Sony, 1 Sony Dr., Park Ridge, NJ 07656. Tel: 800-635-7669. Web: www.sony.com/professional. Circle EQ free lit. #165.

Steinberg: *WaveLab 2.0* (\$499, upgrade from 1.6 \$99) provides direct sampler support with detailed looping functions, improved audio file analysis and editing functions, VST plug-in support, 2 new plug-ins (Peakmaster "soft" real time compressor and Puncher for giving more attack to over-compressed rhythmic material), and support for MPEG 1 Layer 3...Cubase VST for Windows will be integrated with the Lexicon Studio System and support the Yamaha D2416 "DSP Factory." Contact Steinberg, 21354 Nordhoff St., Suite 110, Chatsworth, CA 91311. Tel: 818-993-4091. Web: www.us.steinberg.net. Circle EQ free lit. #166.

Syntrillium: The *Cool Edit Pro* hard-disk recording program mixes up to 64 tracks, supports MIDI/SMPTE sync and DirectX plug-ins, integrates automatically with Cakewalk, and includes volume/pan envelopes and snap features. Contact Syntrillium, Box 62255, Phoenix, AZ 85082-2255. Tel: 602-941-4327. Web: www.syntrillium.com. Circle EQ free lit. #167.

T.C. Electronic: The *Gold Channel* digitally enhanced mic preamp (\$2,500) provides 24 bit converters and can connect to AES/EBU, S/PDIF, analog mic level, analog line level, word clock, and ADAT. It also includes 96 kHz internal EQ as well as various DSP tools. Contact T.C. Electronic, 790-H Hampshire Rd., Westlake Village, CA 91361. Tel: 805-373-1828. Web: www.tc-electronic.com. Circle EQ free lit. #168.

Waves: The *Waves DeEsser* plug-in reduces high-frequency "ess" sounds in voice or vocal tracks. It supports DirectX on the Windows platform and the Adobe Premiere format for the Mac. Contact Waves, 6716 Central Ave. Suite 8, Knoxville, TN 37912. Tel: 423-689-5395. Web: www.waves.com. Circle EQ free lit. #169.

Yamaha: The *EX5 Synthesizer Workstation* (\$2695, EX5R rack version is \$2195) features a full-sized 76-note keyboard and 128-note polyphony. Contact Yamaha Corporation of America, Box 6600, Buena Park, CA 90622. Tel: 714-522-9011. Web: www.yamaha.com. Circle EQ free lit. #170.



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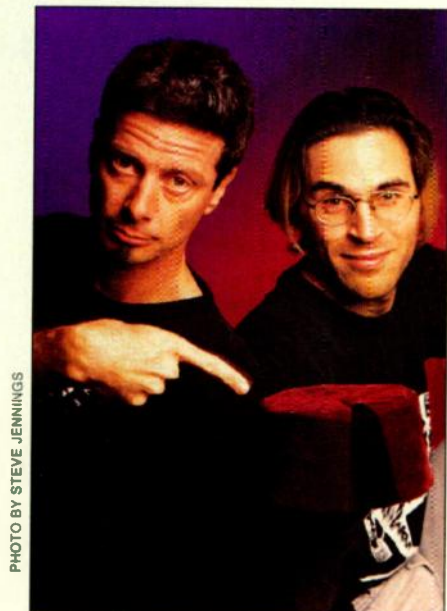


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We will serve no
algorithm before it's time

BY JON LUINI & ALLEN WHITMAN

Recently it was brought to our attention that a tutorial on the much-touted MP3 format would be useful. Why MP3? Well, it's the "People's Encoder." Unlike other proprietary formats (such as Dolby Laboratories' AC-3; the guts of Liquid Audio and RealAudio) MP3 is an authentic open standard. It's not licensed and owned by a privately held company. Anyone can use it.

The MP3 codec "sounds" better too. And, because it's an open standard, MP3 can be used, hacked, and modified to perform in pretty much any Internet audio application. How can this be? I can have it for free and it's a superior product? Why don't I know about this? That's what we're here to find out.

The scientific name of the MP3 audio compression algorithm (codec) is: MPEG 1 (and 2), Layer III. MPEG stands for Moving Pictures Expert Group, a bunch of honest-to-God scientists under the joint direction of the International Standards Organization (ISO) and the International Electro-Technical Commission (IEC). The MPEG group is re-

sponsible for implementing standards for the coding of "moving" pictures and audio. MP3 was specifically designed for "good" quality audio compressed for transfer over lower bit rates (i.e., phone lines). Layer II wouldn't compress below 32 kbs, and that meant 28.8 kbs modems weren't going to be fast enough to actually stream real-time audio. Soundfiles were simply too big to fit through that little telephone connection. MP3's compression makes it possible to not only stream audio over a 28.8 kbs line, but also provide near-CD quality at higher bit rates in a download-and-play environment.

The real beauty of MP3 is that it's an approved industry standard available to anyone. A "for-profit" organization (say, Microsoft) can purchase the specifications from the standards committee and create their own player and encoder with attendant features, or an individual (say, you!) can download any number of shareware applications and create their own streaming audio files on a personal Web site. This is what "open-standard" is all about.

Let's take a quick look at the current state of MP3 encoders. Fraunhofer Institute for Software and Systems Engineering, which created basic MP3 compression software, has forced the freeware applications that were using its software without permission to remove these unauthorized copies from the 'Net. Windows users can, for a fee of around \$200, purchase the Fraunhofer code and enable many of the freeware front-ends. They can also use another application, mpegEnc, to create higher-bit rate (for download-then-play) files. For information on the Fraunhofer code, e-mail layer3@iis.fhg.de. Macintosh users who have a copy of SoundEdit 16 (available for \$419 at www.macro-media.com) can freely download and use the ShockWave Audio (SWA) export plug-in to easily create files at all bit

rates. In this column, we're going to take you through the process to create a Web-ready, near-CD quality 112 kbps MP3 file with mpegEnc. So let's download it and fire it up.

GETTING AN MP3 ENCODER

We're going to assume that, like us, you have access to a PC running Windows95/NT with a sound card (such as a Soundblaster). A 100 MHz Pentium or better with 32 MB (or more) of memory is recommended, as slower computers may have you nodding off at the keyboard while it sluggishly encodes your music — or worse, it just plain doesn't work. A great resource for Windows encoders is www.layer3.org/software/encoders.html. MpegEnc is freeware and only takes a few minutes to download over a 28.8k modem connection. Unzip it, and make sure you can launch the extracted MPG.EXE application.

First, choose and queue up an audio excerpt of about 10 seconds to test with. Select a clip that is representative of the dynamic range and instrumentation. This way you'll be able to become comfortable with the encoding process, quickly trying out different encoding options and hearing the different results.

Most MP3 encoders don't encode in real time. You first must encode to a raw WAV or AIF file, and then use the encoder to compress that to MP3. This allows your computer to do its best while compressing, deciding which pieces of the music aren't needed. Real-time encoding limits the quality of the final compressed file to how fast your computer can think — something you want to avoid unless you have no alternative (such as live broadcasts).

OK, make sure you've got your source (cassette, DAT, live, etc.) plugged into your sound card's line input and set your levels. If possible, throw a compressor into the chain and get the highest level you can while avoiding peaks

THINGS THAT ARE NEW

RealAudio encoder 3.1 was recently released and it seems to sound better! Available on their Web site (www.real.com). Perhaps in a latent response to Microsoft's acquisition of V-Xtreme, Real Networks also announced the acquisition of Vivo Software, Inc. This is unlikely to have any effect on Real's audio quality, however, RealSystem users may find in the near future it improves the visual image you send with your music.

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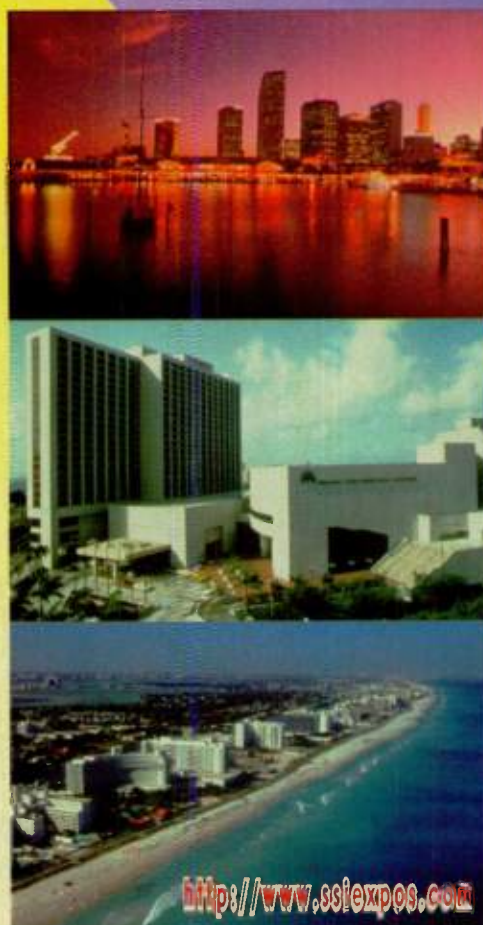
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MP3 RESOURCES

There are resource sites dedicated to MP3 on the Web. Here are a few we suggest you take a look at. The "Original" MP3 Resource:

www.layer3.org

The MPEG Audio Layer 3 Directory:

www.mpeg3.org

MPEG Audio Consortium:

www.audioconsortium.com

Macromedia's SoundEdit16:

www.macromedia.com

Audioactive's MP3 solution:

www.audioactive.com

into the red danger zone. You can then use a program (we use CoolEdit95, www.syntrillium.com/cool.htm) to create your WAV file. If you are encoding directly from a CD in your CD-ROM drive, mpegEnc allows you to bypass this step and compress directly!

Launch the encoder application and select the WAV file as your input file (or source). Choose the bit rate you'd like to compress your clip down to: we're using 112 kbps. Make sure "Layer III" is selected in the "Compression

Layer" option. Your resulting output file will be named file.mp3, where file.wav is your source. Click "Encode" and go make yourself a hot cup of coffee while it does its work. Macintosh SoundEdit16 users will choose the "SWA" option in the Xtras menu to set the desired bit rate and then select the "SWA File" option in the Export menu (under the File menu) to export it to an SWA/MP3 file.

You are publishing your work to the Web and want your audience to have the best experience possible listening to it. We FezGuys always test our soundfiles before placing them on the Web, and you should too! Choose a player, test your bouncing baby MP3 file, and recommend it on your Web site along with your music. We're using WinAmp, available from www.winamp.com. If you are Mac-based, a version is available at macamp.lh.net (Power Mac only). Spend some time trying other players out there (check our MP3 Resources sidebar for where to find them) and compare features and ease-of-use yourself.

Just because it's an MPEG encoder doesn't mean that they all create compressed audio files of the same quality. The technical wizardry behind compressing the ones and zeroes of your music into fewer ones and zeroes is a complex art. Why pay money for an encoder when there are freeware versions available? A company's staff of well-paid geeks and scientists are going to create an encoder that not only creates a better sounding file, but also is quicker, and even comes with support if you have problems! Also evaluate whether it's worth a one-time investment that will result in an ongoing payback of spending time in the studio rather than drinking those cups of coffee staring at your screen as it compresses.

There is a running reputation amongst the music industry folks associating MP3 with pirate sites getting sued by organizations such as the RIAA. As it has been said, a tool is only as useful as he/she who wields it — your task is to wield MP3 well, legally, and help dispel this association. The more people who apply MP3 in a productive useful way promoting their work in a legal way, the more accepted MP3 will become to the industry as a whole.

After spending last month answering our questions backlog, we're taking this month off! Send us your questions/comments to us at fezguys@fezguys.com or join in our community areas at www.fezguys.com.

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TUGA and Other Monsters

The problems of dealing
with poor user
interfaces: we're not go-
ing to take it anymore



BY EDDIE CILETTI

Nothing is more disruptive to the creative process than a "tool" lacking an intuitive user-interface. While sound "quality" may be our primary target (see the sonic sidebar), many great products fall by the wayside because they are hard to use. With all of the potential digital signals now flying around our control rooms, greater emphasis must be placed on products that not only recognize problems, but also have the ability to offer a solution. (Incidentally, while I love my digital workstation, the pointing device alone is not the answer.)

CONTROL FREAK

A microprocessor-based product has increased power, memory and features when compared to its analog counterpart, yet the number of dials and switches [on the former] will — almost without exception — be fewer. The ability to write software and create hardware is a true gift, even if, from the user-perspective, this is not immediately ap-

parent from the control panel. Here's an example of logic, in the form of a simple "If/Then" statement, that we can all understand:

If a control surface lacks a sufficient number of knobs, buttons and "feedback," then that product has failed its primary mission — ease-of-use. The result of which can be especially aggravating to freelancers, reviewers, and users who get stuck with a new piece of gear on the first day of an important session. (Reading a poorly written operator's manual is also a challenge when you are in a hurry.)

As for "feedback," I'm talking about the ability to communicate — *mano a macchina* — via indicator LEDs and real alphanumeric and graphic display panels. Granted, our business is extremely cost-driven, forcing manufacturers to take every step to minimize non-essential hardware...but it goes both ways, ya know.

TUGA CITY

Just imagine — for a horrendous moment — The Ultimate Guitar Amplifier (TUGA) as designed by a company specializing in digitally based products. TUGA would have a single data-entry knob to modify all parameters — Bass, Treble, Volume, etc., — selected by a pair of "arrow" buttons. TUGA's display window would deliver cryptic error messages like: "bslWY@'VÖ - 41." After looking up the error code, you'd find that the combination of bass and treble settings is illegal.

TUGA might have a sense of humor and possibly the ability to humiliate. Picture this. You are in the middle of a great solo when, all of a sudden, a blinding light show begins that is completely out of sync with the tempo. You turn around to determine the cause of the problem just as TUGA's LCD projector flashes a 60-foot error message that reads: "leDZEp eRRoR '69" or "InsuF-Ficient Grunge." It then interrupts the feed to the house with the "voice" of a phone answering machine, that states: "Out-of-memory-error. Please-play-last-note-of-solo-and-press-ENTER." TUGA would have a back-up battery and enough memory to replay highlights of your worst performances at the next rehearsal.

HELLO DUMMY!

Because microprocessor-based products are so powerful, there's no excuse when such products generate error messages without the ability to solve at least some of their own problems. C'mon. When was the last time your computer threw a tantrum because it couldn't find a file? Doesn't it know how to use the "File Find" utility?

Computers do keep a log of sorts — altered mission-critical system files are renamed and dated. (If not, they should be.) Yet, if you attempt to change a parameter that could potentially foul the system, there are few, if any, warnings. Worse still — when the computer won't boot — it isn't smart enough to know how to go back to the "Last Known Working Configuration." Even when Windows 95 boots in SAFE mode, it rarely tells you why. And why is it that no one at tech-support has ever had "your problem?" Perhaps a computer's modem should be integrated into the BIOS so that, regardless of whether the operating system can boot, the computer could still be interrogated by tech support.

HOLLANDAISE TUNNEL

This leads me to repetitive stress. When was the last time sitting at an analog mixer or open-reel tape machine gave anyone carpal tunnel syndrome? I'm sorry, but no matter how intensely you hold a grease pencil or a razor blade, the only damage is the possibility of a poked eye or a serious cut. These are not repetitive stress issues — make the mistake once, and it's not likely to happen again. As workstations become our primary tools, the interface will become more important to our health as well as productivity!

THE GAT AGREEMENT

In Guitar Amplifier Territory (the internationally acclaimed GAT agreement...), the basics are all that's needed. Turn a knob, something happens, and there's no ambiguity. Is it any surprise that some of the most popular products are vintage or retro reissues? Their sonic contribution may be the primary reason for popularity, but no one was ever stumped by an LA2A or a Fender Deluxe. That's why we need to

SONICALLY SPEAKING

If you couldn't tell, my soapbox for the year is "The User Interface." I hope to chair a workshop on this topic at the '98 AES. With luck, people from Mackie, P&G, JL Cooper, Peavey, and AMEK will be there.

Sonic pleasure is an extremely personal issue. Notice that I did not choose words like "sonic accuracy" or "sonic precision." We judge sound with our ears and emotions; performance is measured with test equipment. While occasionally the measured specs and our ears concur, quite often, people who crave warmth are lacking Vitamin D — harmonic enrichment via *Distortion*.

Without over generalizing, there aren't many vacuum tube/transformer-coupled products that can deliver precision. Designs that emphasize "transformerless" and "discrete transistor" circuitry are more likely to deliver the "nutrients without the fat." (Isn't it funny that "fat" always tastes better!) Hey, you might even be surprised to know that some op amps can deliver the goods.

One particularly frustrating issue is "copycat ignorance." One case in point: A real conversation I had concerning the description of two rival digital tape machines; one's relative warmth when compared to another. As I probed to learn the details of this "observation," it took no time to unearth a great flaw in this person's nonscientific method. The "comparison," made in two different studios on two different projects, was an extrapolation of hype and hearsay. (Excrement by any other name is just as

pungent.) At no time were both machines in the same room!

It should come as no surprise, then, that I take this matter of "sonic yenta" very seriously. When reviewing a single product, there is little opportunity to make comparisons except via memory. It sounds great or doesn't — but neither decision can be attributed solely to the device under observation. Further, what works for me may not work for someone else.

The next time you are about to say that one product sounds better than another does, consider your method of evaluation. In order to make accurate comparisons, it is necessary to feed the same signal to all devices under test, adjust so that all operating levels are optimized and equal, then be able to listen to the same source over and over again while having someone else throw the switches. Realizing how difficult it is to make accurate comparisons is humbling. (Notice that you rarely see a "shoot-out" in EQ.) It may even permanently alter your speech patterns.

I openly admit to not hearing sonic discrepancies that some golden ears proclaim "obvious as night and day." Am I deaf? A fool? Does the emperor have no clothes? Does my system suck? Am I listening to the type of material that will reveal the flaws?

Perhaps the differences are extremely subtle and it is *the ability* to hear such subtleties that is being proclaimed as momentous. I will soon be upgrading my monitoring system in order to find answers to some of these questions. Stay Tuned!

merge "back in the day" with "Y2K."

In the future, the favored devices will be those that re-integrate dedicated intuitive knobs and buttons to our control surfaces. More than just a Monday or even one person's birthday, the upcoming Millennium is a global milestone. We must not passively cross the threshold, but boldly strive to make high-tech products more human.

I urge all readers to voice their needs to the manufacturers. Yes, I know the phone lines are busy or you're put on hold forever, but keep trying. Audio creativity must not take a back seat to a geek-a-zoid interface.

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EQ

To Insure *The Future*

How well are you covered if the unthinkable happens?



BY MARTIN POLON

Well, it's insurance and tax time again. Despite warnings from virtually all quarters (including this journalistic one), project studio operators continue to default on their insurance coverage to their own or their parent's homeowner policies. This route is fraught with jeopardy for those embarked on it, with a net savings measured in the hundreds of dollars against proper protection for studio investments in the five or six figures!

A. Insurance adjusters no longer respond as though they are newly fallen off of the proverbial turnip truck concerning project studio claims. There are after all, nearly one million project studios in the United States and, by now, at least a few have suffered some kind of calamity.

B. The first question any insurance adjuster will ask of the project studio claimant is, "Do you have any primary or even ancillary income, or is the studio used to prepare a musician (including yourself) or (your) group for album performances related to record release?"

C. The second request from any competent insurance adjuster will be to see your appropriate income tax return for the last tax year applicable.

D. The adjuster's (and the insurance company's) bottom line will be that if there is any tax relief granted to a studio by virtue of being able to "write down" equipment purchased and/or if there is any sign of income or the potential for

the production of income based on the studio's operation (such as a record contract and CD release based on album preparation in a project studio), there will in all probability be no financial adjustment from homeowner's insurance based on fire, floods, theft, earthquake or other catastrophe. The insurance community's bottom line is that you are in business in your project studio and that you are no different from the thousands of claims they reject for coverage every week for home businesses of every kind!

E. If on a homeowner's policy a previous studio problem has been successfully adjusted to the project studio owner's satisfaction, you can bet your bottom dollar it will not be easily adjusted again.

The problem of proper insurance coverage for a personal and project studio recording environment is rather easily solved. Specifically:

1. Keep a file with all your purchases for your studio over the years. One assumes such a file exists for tax purposes, but it is never safe to say never, and probably equally unsafe to assume anything!

2. Using a film camera, photograph everything you own in your studio.

3. Using a high-quality copier, copy all your receipts and color copy all your photos and keep them in a bank safe deposit box. That way, you will have records of your investment that will survive any untoward occurrence. Recognize that, compared to insurance adjusters, Internal Revenue Service (IRS) examiners all emulate Rebecca of Sunny Brook Farms.

4. Bring in a qualified estimator who will identify the replacement value of your studio if the amount and scale of your investment demands it.

5. Go to your insurance underwriter armed with all of the information collected above and obtain a commercial insurance policy for the studio.

Always insure your equipment for "full replacement value" rather than set-

tle for a depreciated figure. The insurance company will tell you that depreciation coverage allows them to sell you a less expensive policy and that you are taking tax write offs anyway. However, project studios seldom, if ever, employ chartered CPAs (Certified Public Accountants) from the "Big Seven" accounting firms and "bank" their depreciation funds for future replacement. It makes more sense to try and obtain the most complete replacement coverage available to you.

6. Having achieved commercial insurance status, you will then be able to continue to use the tax code to write off new equipment purchases each year and, in fact, you will have provid-

ed another argument for the IRS as to the legitimacy of your doing so. You will also move out of the double jeopardy zone of homeowner policy coverage with any of your tax strategies serving to invalidate any insurance claim.

7. Many project studio owners/operators respond that they fear commercial insurance coverage as a dead giveaway to their operating illegally within an otherwise restricted zoning and/or business continuum in their residential neighborhood and/or community.

The fact is that their much more prevalent practice of filing business income tax forms with the Federal IRS and with the appropriate State tax bodies has significantly more risk of exposure to local authority review and enforcement than does insurance activity — although, in both cases, privacy issues usually prevail.

(Of course, as has been stated in these pages again and again, there is no real economic or other justification for operating a studio commercially as though it were still a residential "hobby" operation. As with insurance, the entire practice is a false economy that should be avoided.)

Always insure your equipment for "full replacement value" rather than for a depreciated figure. It makes sense to obtain the most complete replacement coverage available.

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FEATURES-

- Integrated semi-open air design.
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- 15Hz-20kHz, 600Ω



SONY MDR 7506 Pro Headphones

The Sony 7506's have been proven in the most trying studio situations. Their rugged, closed-ear design makes them great for keyboard players and home studio owners.

FEATURES-

- Folding construction
- Frequency Response 10Hz to 20kHz
- 1/4" & 1/8" Gold connectors
- Soft carrying case • Plug directly into keyboards



beyerdynamic

DT 770 Pro Pro Headphones

These comfortable closed headphones are designed for professionals who require full bass response to complement accurate high and mid-range reproduction.

FEATURES-

- Wide frequency response
- Durable lightweight construction
- Equalized to meet diffused field requirements
- Padded headband ensures long term comfort



SENNHEISER

HD 265/HD580 Pro Headphones

The HD-265 is a closed dynamic stereo HiFi/professional headphone offering high level background noise attenuation for domestic listening and professional monitoring applications.

The HD 580 is a top class open dynamic stereo HiFi/professional headphone that can be connected directly to DAT, DCC, CD and other pro players. The advanced design of the diaphragm avoids resonant frequencies making it an ideal choice for the professional recording engineer.



MIXING BOARDS

Panasonic RAMSA

Stop dreaming about your digital future, it's here! The Panasonic/Ramsa WR-DA7 digital mixer features 32-bit internal processing combined with 24-bit A/D and D/A converters as well as mixing faders, instant recall, surround sound capabilities, and much more. Best of all, it's easy to use, and it's available NOW!

FEATURES-

- 32 inputs/6 AUX send/returns
- 24-bit converters
- Large backlit LCD screen displays EQ, bus and aux assignments, and dynamic/delay settings.
- 4-band parametric EQ
- Choice of Gate/Compressor/Limiter or Expander on each channel
- 5.1 channel surround sound in three modes on the bus outputs
- Output MMC
- Optional MIDI joystick



MACKIE.

8 Bus Series Mixing Consoles

Since its introduction, Mackie Designs' 8-Bus Series consoles have proven that excellent sonic quality, practical features and extreme durability can be affordable. All 3 versions offer extensive monitoring, 4-band EQ, accurate, logarithmic taper faders, and expansive headroom. The 24x8 and 32x8 can be expanded using Mackie's 24-E Expander console which consists of 24 input channels and tape returns and may be daisy chained to provide 128 or more total input channels.

FEATURES-

- Each channel includes Mackie's well-known Mic preamp and a -10/+4 switchable tape return
- 8-assignable submasters and a L/R mix master
- 4-band EQ with true parametric (3-control) Hi Mids, Lo Cut filter
- Extensive routing capabilities
- Available in 16, 24 & 32 channels
- Optional Meter Bridges available
- Optional 24-E Expander console available
- Rugged all-metal chassis
- In-line monitoring effectively doubles your input channels



MS1202VLZ 12-Channel Compact Mic/Line Mixer

- Gain control, pan, 3 band EQ, and 2 Aux sends.
- 4 mono, 4 stereo channels (12 inputs total).
- Great for "extra inputs" on the fly.
- Phantom power.



MS1402VLZ 14-Channel Compact Mic/Line Mixer

- Mic preamps w/Trim control (channels 1-6).
- 60mm "long" faders.
- Mute switch routes to alt 3&4 bus.
- Low-cut filter. • Phantom power.



CR1604VLZ 16 x 4 x 2 Mic/Line Mixer

- 7 Aux sends; 3 band EQ.
- Large 10-segment LED mixer.
- Lowest noise/highest headroom.
- 16 studio grade mic pre's.
- 3 different setup positions.
- Low-cut filter. • Phantom power.



The MS-1202, 1402, 1604 & SR Series all include VLZ (Very Low Impedance) circuitry at critical signal path points. Developed for Mackie's acclaimed 8-Bus console series, VLZ effectively reduces thermal noise and minimizes crosstalk by raising current and decreasing resistance.

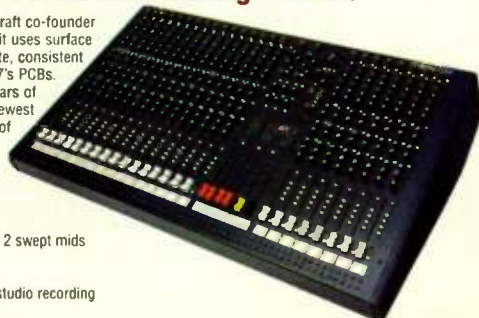
SPIRIT

LX7 Professional Mixing Console

The LX7 was designed by Soundcraft co-founder Graham Blythe. Built in the UK, it uses surface mount technology to ensure accurate, consistent insertion of all components into LX7's PCBs. Roadworthy construction and 25 years of audio console experience put this newest addition to the Spirit line at the top of the heap.

FEATURES-

- 24 Ultramic preamps
- 100mm ALPS faders
- 7 bus outputs
- Comprehensive 4-band EQ includes: 2 swept mids and 15dB of boost or cut
- Separate stereo input section
- Use in FOH applications as well as studio recording
- Internal power supply



MONITORS

MACKIE.

HR824

These new close-field monitors from Mackie have made a big stir. They sound great, they're affordable, they're internally bi-amped. "What's the catch?" Let us know if you find one.

FEATURES-

- 150W Bass amp, 100W Treble amp
- Full space, half space and quarter space placement compensation
- Frequency Response 39Hz to 22kHz, ± 1.5 dB



SPIRIT

Absolute Zero

Absolute Zero monitors maintain a wide frequency response at high and low listening levels, both on and off-axis for consistent results every time.

FEATURES-

- High definition linear phase design
- Wide, controlled dispersion
- CAD optimized, low loss crossover
- Custom designed drivers
- Long throw 170mm LF driver
- 25mm soft come HF unit on proprietary waveguide



TANNOY

PBM 6.5II

The PBM 6.5 II is the industry standard for studio reference monitors. They provide true dynamic capability and real world accuracy.

FEATURES-

- 6.5" low frequency driver and 3/4" tweeter
- Fully radiused and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass.



JBL SPECIAL

4206 & 4208

The 4206 & 4208 studio reference monitors are 6" and 8" respectively. Both offer exceptional sonic performance, setting the standard for today's multi-purpose studio environments.

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MIC PREAMPS

dbx

Blue Series 786 Precision Mic Pre-amp

The dbx Blue Series 786 is a top quality mic-preamp featuring the dbx MB module. It's ultra-pristine signal path reveals the true characteristics of any microphone.

FEATURES-

- Ultra high-drive transformer coupled outputs.
- 20dB pad, phase invert
- +48V phantom power
- Super-low Z input switch
- dbx Type IV Conversion system digital output option



Focusrite Green 3 "Voicebox"



The Voicebox provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice, and full Focusrite dynamics. Use it as a stand alone unit for direct-to-digital recording, or as an upgrade for the input section of a console.

FEATURES-

- Same mic pre section as found on the Green Dual Mic Pre includes: +48V phantom power, phase reverse, and a 75Hz high-pass filter. Mute control and a true-VU response LED bargraph are also provided.
- EQ section includes a mid parametric band with frequency and gain control as well as a gentle bell shape to bring out the character of the voice.
- Dynamics section offers important voice processing functions of compression and de-essing combined with a noise reducing expander.
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu

APHEX

107 Tubessence 2 channel Mic Preamp



The 107 delivers outstanding sonic performance. It features Tubessence technology, front panel balanced inputs on both channels and LED metering, all in a single rack space.

FEATURES-

- 2 independent channels with front panel XLR inputs
- Up to 64dB of gain available
- 20dB pad with red LED indicator, 2 LED input meter
- Full 48V phantom power with red LED indicator
- Low cut filter for 80Hz, 12dB/octave
- Polarity inversion switch with LED indicator
- Individual channel remote mute capability
- Switchable +4dB/-10dB output with 1/4" TRS phone jacks

COMPRESSORS

dbx

"Blue Series" 160S Stereo Compressor

The dbx 160S combines the best features of all the great dbx compressors in a well-built unit where the craftsmanship is as stunning as the engineering is innovative. This is truly a desirable compressor.

FEATURES-

- 127dB dynamic range • Program dependent "Auto", or fully variable attack and release
- Hard knee/OverEasy switchable



ALESIS

3630 RMS/Peak 2Ch.Comp/Limiter/Gate



The 3630 is a dual-channel compressor that offers Ratio, Threshold, Attack and Decay controls to handle the toughest signals. It also offers a choice between RMS and Peak compression styles, plus Hard and Soft Knee dynamic curves for every application from subtle gain control to in-your-face punch. Ideal for use in applications from studio recording and mixing to live sound reinforcement and broadcast.

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Lexicon

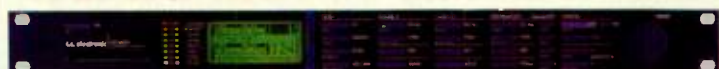
MPX-1 Multi-Effects Processor



Lexicon's latest addition to their Digital effects family, the MPX-1 features top-quality effects in an easy to use, 1 rack space unit. With 56 Pitch, Chorus, EQ, Modulation, Delay, and world-class reverb effects accessible from the front panel, as well as TRS and XLR balanced I/O and complete MIDI implementation, the MPX-1 creates a new standard for cost and quality in a multi-effects device.

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ULTIMATE SOUND MACHINES

Wizard M2000 Studio Effects Processor



The M2000 features a "Dual Engine" architecture that permits multiple effects and 6 different routing modes making it a great choice for high-end studio effects processing.

FEATURES-

- 250 factory programs including reverb, pitch delay, chorus, flange, phase, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement
- 20-bit A/D conversion, AES/EBU and S/PDIF digital I/O.
- "Wizard" help menus, 16-bit dithering tools.
- Tap and MIDI tempo modes.
- Single page parameter editing, 1 rack space.

SONY

DPS-V77 2 Ch. Master Effects Processor



Sony's latest effects processor, the DPS-V77 yields excellent sonic quality combined with realtime control, a digital I/O and many more features that will put a smile on the face of any discerning studio engineer.

FEATURES-

- 198 preset & 198 user-definable programs
- Control up to 6 parameters in realtime via MIDI information and an optional foot pedal
- Use the AES/EBU & SPDIF digital I/O to link multiple V-77s together & when working with digital mixers
- 10-key pad input
- Shuttle-ring equipped rotary encoder allows for quick patch changing.
- A noise gate circuit is provided ahead of the input for guitar players and other instrumentalists who want top quality effects without sacrificing tone.

EQUALIZERS

Focusrite

Green 2 Focus EQ



The Green 2 Focus EQ is suitable for a variety of applications combining a Focusrite equaliser section with a multi-source input section. Use it as a high-quality front end for recording applications or patch it into the send/return loop to upgrade a single channel of console eq, either way, it sounds great.

FEATURES-

- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
- EQ section derived from the Red and Blue range processors for superb audio quality.

APHEX

Model 109 Parametric EQ with "TUBESSENCE"



The Aphex 109 is an extremely versatile and high performance parametric vacuum tube EQ with unique features, flexibility and sound. Great for "warming up" digital signals.

FEATURES-

- True tube circuitry in the output stage.
- Dual (stereo) 2 band or mono 4 band EQ configuration offers flexibility from general sweetening to critical problem solving.
- Operates in the EQ flat mode yet still passes signal through the Tubessence vacuum tube stage.
- 1/5 octave to 2 octave bandwidth adjustment • Switchable -10dBV/+4dBu operating level.

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FEATURES-

- Up to 32 channels of digital audio
- Complete mixer with up to 128 EQs
- 2 full-featured effects racks
- All Realtime. Every action can be automated.
- **CUBASE SCORE** adds professional score printing and layout functions
- **CUBASE AUDIO XT** adds support of Digidesign DAE compatible interfaces such as the ProTools System.



emagic LOGIC AUDIO 3.0

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Logic Audio integrates Digital Audio Recording & Editing, MIDI Sequencing, and Professional Scoring into a leading-edge music composition and production system. The new Version 3.0 features extended real-time editing and manipulation options along with numerous detailed solutions for use in professional studio environments.

FEATURES-

- Custom window setups can be assigned to keys for instant recall, up to 90 screensets per song
- Interactive Editors such as Event, Hyper, Score, Matrix, Arrange and Environment are all linked
- Realtime DSP effects
- Highest resolution available, 960ppq
- Environment window provides knobs, faders, buttons and other virtual objects that can be defined to send out any type of MIDI data
- New bus system, Punch on the fly, & Cycle Mode
- Support of Adobe Premiere and Digidesign Audiosuite plug-in formats



Mark of the Unicorn Digital Performer 2.11

MIDI Sequencer for Mac

Digital Performer contains all of the sequencing capabilities of Performer V.5 and adds Digital Audio to the picture. Apply effects such as Groove Quantize, shift, velocity scaling and more- **ALL IN REALTIME.**

FEATURES-

- MIDI Machine/Control, Quicktime Video playback
- Sample rate conversion
- Spectral effects, pitch correction
- Real-time editing and effects processing
- Full featured Notation section
- Virtual automated mixing

HARD DISK RECORDING



A Division of Avad Technology, Inc.

With Pro Tools Project you get 8 tracks of digital audio & 64 virtual tracks! The Pro Tools Project system includes an audio card as well as award winning Pro Tools software. You choose either an 888 or an 882 I/O to complete the package. Random access, non-destructive digital editing keeps your precious recorded material in its original form as you process and play with it, allowing you to take chances on tweaking a performance without risk. Project also features MIDI recording and playback as well as Quickpunch™ punch-on-the-fly & a direct upgrade path that lets you move to a full Pro Tools system when you're ready.

REQUIRES-

- Qualified NuBus or PCI Macintosh CPU
- Hard Drive, system software 7.1 or greater
- 24MB RAM minimum
- 14" monitor (17" recommended)

ProTools Project™

Digital Audio for Macintosh



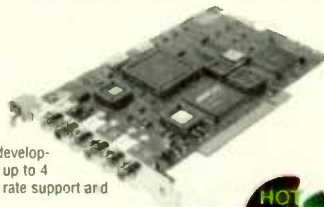
888 & 882 I/O Audio Interfaces

The 888 and 882 I/Os each provide 8 channels of high quality A/D, D/A I/O for connection to Pro Tools Project and Session 8 PC systems. Choose the 882 and get an affordable audio interface featuring 1/4" balanced/unbalanced ins and outs in a single rack space. For more high-end applications, the 888 provides features such as XLR balanced analog ins and outs, 8 channels of AES/EBU I/O for direct digital transfers of tracks, high resolution LED metering & individual input/output level trims.

Audiomedia III

Digital Audio Card

Available for both Macintosh and Windows OS systems, Audiomedia III will transform your computer into an powerful multitrack workstation. Compatible with a wide variety of software options from Digidesign and Digidesign development partners, Audiomedia III features 8 tracks of playback, up to 4 tracks of recording, 24-bit DSP processing, multiple sample rate support and easy integration with leading MIDI sequencer programs.



TDM BUNDLE

If you're already familiar with the Waves TDM bundle, you'd better take another look! This great package is now even fatter with the addition of 5 new processors, at the SAME PRICE! TDM owners can now maximize their power with plug-ins including the famous TrueVerb virtual-space reverb, the Q-10 EQ, C1 Compressor/Gate, S-1 Stereo Imager, PAZ-Psychoacoustic Analyzer, L1-Ultramaximizer as well as MultiRack, WaveConvert and TrackPac Pro applications.



DIGITAL MULTI-TRACK RECORDERS

TASCAM DA-38

Digital Audio Recorder

The DA-38 was designed for musicians. Using the same Hi-8 format as the highly acclaimed DA-88, the DA-38 is an 8 track modular design that sounds great. It features an extremely fast transport, compatibility with Hi-8 tapes recorded on other machines, rugged construction ergonomic design and sync compatibility with DA-88s.

FEATURES-

- Hi-8mm tape format
- Next generation 18-bit A/D and 20-bit D/A converters with Delta-Sigma oversampling
- Digital track copy for simple assembly composite edits

- Built in Digital patchbay
- Track advance and track delay
- Easy to use interface



ALESIS ADAT XT20

Digital Audio Recorder

The New ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

FEATURES-

- 10-point autocalc system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
- Remote control
- Servo-balanced 56-pin ELCO connector

- Built-in electronic patchbay
- Copy/paste digital edits between machines or even within a single unit. Track Copy feature makes a digital clone of any track (or group of tracks) and copies it to any other track (or group) on the same recorder.



MIDI HARDWARE



Mark of the Unicorn

MIDI Time Piece™ AV

8x8 Mac/PC MIDI Interface

The MTP AV takes the world renowned MTP II and adds synchronization that you really need like video genlock, ADAT sync, word clock sync, and even Digidesign superclock!

FEATURES-

- Same unit works on both Mac & PC platforms
- 8x8 MIDI merge matrix, 128 MIDI channels
- Fully programmable from the front panel
- 128 scene, battery-backed memory
- Fast 1x mode for high-speed MIDI data transfer

Digital Time Piece™

Digital Interface

Think of it as the digital synchronization hub for your recording studio. The Digital Timepiece provides stable, centralized sync for most analog, digital audio, and video equipment. Lock together ADATs, DA-88s, ProTools, word clock, S/PDIF, video, SMPTE, and MMC computers and devices flawlessly. It ships with "Clockworks" software which gives you access to its many advanced features and remote control of some equipment settings such as record arm.



Studio 64XTC

Mac/PC MIDI Interface

The Studio 64XTC takes the assorted, individual pieces of your studio-your computer, MIDI devices, digital and analog multitracks and even pro video decks, and puts them all in sync.

FEATURES-

- 4 In / 4 Out, 64 channel MIDI/SMPTE interface/patchbay with powerful multitrack & video sync features
- ADAT sync with MIDI machine control
- Simultaneous wordclock and Superclock output, 44.1kHz or 48kHz for perfect sync with ADAT, DA-88 and ProTools
- Video and Blackburst in (NTSC and PAL)
- Cross-platform Mac and Windows compatibility

MIDI Translators

MIDI Interfaces

The MIDI Translator II™ and MIDI Translator Pro™ are the next generation portable interfaces. The MIDI Translator Pro™ provides twice the processing power of the MIDI Translator II and both let you switch between MIDI or peripherals with a flip of the THRU-switch - NO CABLE SWAPPING!

TRANSLATOR II FEATURES-

- 1 IN and 3 MIDI OUTs • 16 MIDI channels
- Small size fits anywhere - no power supply required!

TRANSLATOR PRO FEATURES-

- 2 MIDI INs x 6 MIDI OUTs, Supports 32 MIDI channels
- 2 MIDI OUTs accessible on front panel
- Self powered - no power supply required



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KEYBOARDS & SOUND MODULES



XP60 & XP80 Music Workstations



The XP-80 delivers everything you've ever wanted in a music workstation. An unprecedented collection of carefully integrated features provide instant response, maximum realtime control and incredible user expandability. The XP-80 features a pro-quality 76-note weighted action keyboard while the NEW XP-60 features the same sound engine in a 61-note keyboard.

XP80 FEATURES-

- 64-voice polyphony and 16-part multitimbral capability
- 16 Mbytes of internal waveform memory: 80Mbytes when fully expanded (16-bit linear format)
- 16-track MRC-pro sequencer with direct from disk playback. Sequence: hold; approx. 60,000 notes
- New sequencer functions like "won-stop" loop recording and refined Groove Quantize template

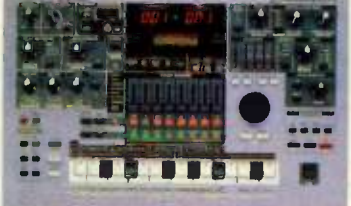
- Enhanced realtime performance capability with advanced Arpeggiator including MIDI sync and guitar strum mode and Realtime Phrase Sequence (RPS) for on-the-fly triggering of patterns
- 40 insert effects in addition to reverb and chorus
- 2 pairs of independent stereo outputs, click output jack with volume knob
- Large backlit LCD display

MC-505 groovebox

The MC-505 groovebox builds upon the success of the MC-303 as a self-contained, retro-styled dance music sequencer and sound module with newly upgraded sounds and powerful, futuristic features. Among these new features are the revolutionary D-Beam controller and a MegaMix function for intuitive realtime mixing of beats and patterns making the MC-505 a DJ, hip-hop, techno or dance music artist's dream come true. It's Wanderlust in a box.

FEATURES-

- 64-voice polyphony, steeper filters, ADSR envelope for editing sounds, powerful effects
- 714 onboard dance music patterns developed by cutting edge sound designers worldwide
- 512 built-in sounds, 26 rhythm sets
- Three independent, synchronized effects processors
- Powerful onboard Arpeggiator



- SmartMedia slot accepts external 2MB and 4MB SmartMedia cards for unlimited pattern and patch storage and direct pattern playback



QS6, QS7 & QS8 Pro Keyboards



Alesis QS synthesizers all provide true 64-voice polyphony, and a huge sound library that is constructed of 16-bit linear samples. With their powerful computer and digital audio interface capability, built-in 4-bus Multi-effects and expressive performance features, there is sure to be a QS synth perfect for you.

FEATURES-

- 16-bit 48kHz sample ROM
- 64-voice polyphonic
- 512 preset, 128 user internal program memory
- 400 preset, 100 user mix memory
- RS422, RS232 port formats • ADAT interface
- 4 outputs (2 main, 2 aux)

- 16MB internal, 16MB expansion memory (32MB total possible)
- SoundBridge Sample software for importing almost any sample from your Mac or PC
- QS6 - 61 key synth, QS7 - 76 key synth
- QS8 - 88 weighted keys
- Available on QS7 and QS8 only



SGproX



The SGproX features newly-sampled stereo pianos recorded with attention to every detail. Carefully crafted velocity switching provides tonal changes and dynamics that come alive under your fingers and the 88-note weighted keyboard has been designed as both a stage piano and master controller.

FEATURES-

- 88-note, weighted action keyboard
- 64-voice polyphony, 24MB ROM

- 64 user-definable programs
- 12-types of stereo digital multi-effects
- Master Controller functions, Backlit LCD display



K2500 Series Music Workstations

The K2500 series from Kurzweil utilizes the acclaimed V.A.S.T. technology for top-quality professional sound. Available in Rack mount, 76-key, and 88 weighted key keyboard configurations, these keyboards combine ROM based samples, on-board effects, V.A.S.T. synthesis technology and full sampling capabilities on some units.

FEATURES-

- True 48-voice polyphony
- Fluorescent 64 x 240 backlit display
- Up to 128MB sample memory
- Full MIDI controller capabilities
- 32-track sequencer
- Sampling option available
- Dual SCSI ports
- DMTI Digital Multitrack interface option for data format and sample rate conversion (Interfaces with ADATs or DA-88s)



MicroPiano™ Piano Module



The MicroPiano is a half-rack sound module featuring Grand Piano and other sampled sounds, plus built-in digital effects. Together there are 32 available presets, chosen from Kurzweil's highly acclaimed sample library making the MicroPiano the ideal sound module for any player who demands great sound quality at an unprecedented price.

SAMPLING



E-mu Systems, Inc.

E-6400 Emulator Sampling Rack

The e-6400 offers the power of E-mu Systems' renowned Emulator Operating System (EOS) and superb audio quality in a package perfect for the budget-minded professional. The e-6400 comes with stereo sampling, 4MB of RAM and is fully upgradeable to E-mu's top of the line Emulator sampling synthesizers, the E4X and E4XTurbo.

FEATURES-

- 64 voice polyphony (expandable to 128)
- 4MB sound RAM
- 2 CD-ROM's included (400MB of sounds)
- 8 balanced analog outputs



- Onboard graphic waveform editing
- Load while play
- Stereo phase lock time compression



MPC2000 MIDI Production Center

Whether you're producing rap or hip-hop, sequencing a rack of MIDI modules, or performing live, the MPC2000 gives you powerful tools to make your music shine. It's the NEW MPC!

FEATURES-

- Large 248 x 60 LCD Graphic display
- 64-track, 100,000 note sequencer with linear drum machine style programming
- 16-bit, 32-voice stereo sampler
- Standard SCSI interface
- Soft keys, Data/Digit wheels, cursor control and more
- Keypad for directly entering sample points
- Note variation slider gives you realtime control of any sound's tuning, attack, decay, or filter frequency
- Floppy Disk Drive
- Powerful expansion options turn your MPC2000 into an MPC2000 STUDIO, the ultimate MPC!



S-Series Samplers

Starting with 64X oversampling, Akai's S-Series Samplers use 28-bit internal processing to preserve every nuance of your sound and the outputs are 18- and 20-bit to ensure reproduction of your sounds entire dynamic range. These three new samplers add powerful capabilities, ease-of-use, expandability and affordability to set the standard for professional samplers.



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FRANKFURT PRODS

continued from page 31

aiming for deliveries in October.

The main demonstrations were of software synthesis, the most interesting aspect being that SCOPE provides "modules" that you can string together with "software patch cords" into complete synthesis engines, then overlay whatever graphics you want. Creamware demonstrated the "miniscope," a Minimoog-type clone with polyphony, hard sync, and other goodies not available on the original; a single-oscillator bassline type of synth; a radically new type of "commutator" synth, based on granular synthesis (you had to be there); and a vocoder. The screen shot shows an analog synthesizer emulation toward the upper left, step sequencer to the upper right, some of the modules used to provide synth functions toward the middle, and, in the background, the mixer module. This could be a very hot product — stay tuned. Contact Creamware at 800-899-1939. Web: www.creamware.com. Circle EQ free lit. #176.

For more information on the Frankfurt show, see next month's issue of EQ. **EQ**

TO DI FOR

continued from page 76

a lot of one-nighters in a club. Both guitar and bass sounded slightly compressed through the EDB 1. The box is bit on the noisy side, which we feel makes the EDB 1 more appropriate for the stage than critical studio applications. Contact: Peavey Electronics Corp., 601-483-5365. Circle EQ free lit. #187.

RADIAL ENGINEERING JDV CLASS-A DI

When we heard it was Class-A, we had to open it up. There are actually four discrete transistors in the JDV, as well as a Jensen transformer, and it's wired with what looked like Mogami wire — build quality is awesome. This rugged box runs on either phantom power or a 9-volt DC adapter, but will not run on batteries (no surprise there!). A merge switch allows the thru output to act as a second input. We simultaneously plugged in a bass and guitar, and the unit had no problem with the disparate signals. We were a bit confused as to why there was a (momentary) battery check switch when the unit had no provision for running on batteries.

Since the JDV has a line output (in addition to the standard mic output), it can be run directly into a tape machine. MSRP: \$249.00 Contact: CableTek Electronics, Inc., 800-939-1001. Circle EQ free lit. #188.

RETROSPEC JUICE BOX

Definitely one of the most striking DIs we have ever seen, the Juice Box is housed in a white, oblong, perforated metal case. The unit features a single-channel design, with tube circuitry, a toroidal power transformer, and wire retainers holding the tubes in place. The Juice Box's front-panel gain switch is very nicely constructed. When we upped the gain on the bass, it reminded us of the bass sound from an old live Mountain record — kind of a meaty growl. The variable gain knob offers a wide possibility of tone. Unfortunately, when you switch the gain control, you get a very nasty pop that could easily blow up a speaker. We threw a few ground problems at the Juice Box and it had no problem dealing with them. With the ADA MP-1, the unit made a good complement for clean tones, though we found it a bit bright for distorted programs (again, this may be due to the fact that the Juice Box *does not* load the pickups down). It handled the Jackson's single-coil pickups really nicely, and when we dropped to the bridge position and kicked in the Tube Screamer, the Juice Box purred like a kitten. Overall, the unit is generally quiet, but it did pick up a bit of noise from our computer monitor. The tone is very warm, but also has a bit more brightness than you'd expect from a tube unit. MSRP: \$595. Contact: Retrospec, Inc., 914-688-7329. Circle EQ free lit. #189.

ROLLS RED SQUARE DI/EXCITER

This little demon has got a killer retro look to it and a simple, screened layout. The unit offers a 1/4-inch input, an XLR output, a pushbutton switch to kick it into active mode, and center-detent knobs that control Input, Bottom (which controls low-frequency cut/boost), and Definition (which controls the amount of sonic clarity and sound spread), as well as a power-indicating LED. The Red Square handled the Jackson's single-coil pickups quite nicely. We cranked up the bottom and tweaked with the definition and got a nice round sound. We also got some really interesting tones with the bass. The Definition control added an interesting crystalline sound to the upper harmonics of the individual bass notes. The box was a little noisy, but it would probably sit in a mix pret-

ty quietly. MSRP: \$80.00 Contact: Rolls Corporation, 801-263-9053. Circle EQ free lit. #190.

SANS AMP BASS DRIVER

You might not believe the tonal possibilities this box can produce with its active circuit and tone controls (bass, mid, treble, presence, blend, and drive). With the treble cranked down and the bass cranked up, it's instant dub. Flatten the tone out, wind up the drive, and you've got something that sounds more like Queensryche. The Blend knob adjusts the balance between the dry and processed sound, so you can add as much (or little) of the process as you require. Intelligent design features include the gain structure — no matter how much EQ you apply, the output level will be the same when the box is bypassed (very clever). It can be powered by phantom, batteries, or a wall wart, but the box will not go active until a cable is plugged into the input (saves batteries). We didn't like the fact that the ground lift and phantom power were on one switch, making it impossible to simultaneously run the box from phantom and lift the ground. We even tried it on guitar, and it was better than some of the guitar rigs we have recorded. The slightly compressed sound that it adds to a guitar tone is a real plus. We dialed up everything from a really sweet AC-30-type tone, to a hot-rodded stack-type tone within minutes. We give it a big thumbs up. MSRP: \$225. Contact: Tech 21, Inc., 212-315-0825. Circle EQ free lit. #191.

WHIRLWIND MIC ELIMINATOR

An interesting box with a way cool purple anodized finish, the Mic Eliminator simulates the sound of a microphone placed in front of a 12-inch speaker. It works with either a single 9-volt battery or 48-volt phantom power. We tried it with Rob's Jackson guitar through an Ibanez Tube Screamer and a Stringer Whine-O Wah, and the rig sounded very cool. It actually did a good job of simulating the chunk of a speaker moving air in the "dark" setting. We like it better for dirty sounds than for clean, and on bass it sounded much better on the dark setting as well. There were no noises when operating any of the switches. We also ran a chunky signal from the output of Rob's ADA MP-1 preamp, and the Mic Eliminator rocked — you could hear the air moving and see the control room monitor woofer (KRK 7000B's) flapping in the breeze. MSRP: \$95.00. Contact: Whirlwind, 888-733-9473. Circle EQ free lit. #192. **EQ**

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Demo Queen Meets Gear Slut



The Demo Queen takes over this space for an interview with recent Grammy-winner Roger Nichols

Deciding to inhale, I found myself in New York City at Radio City Music Hall attending the 40th Grammy Awards Et Al Le Grande Gala Show — an event for the “to-be and/or nearly-to-be canonized” music wiz people who electrify and spice up our lives. Speaking of which, where were those fashionable Spice Girls and their stylish shoes?

Testing my knowledge of Feng Shui, I placed myself close enough to the Hansons and Puff Daddy to impress my kids, yet near enough to the exit for a quick exhale. With seats fitting for a Queen and within spitting distance of Mr. Soy Bomb (the gormless guy who danced into Bob Dylan’s stellar perfor-

mance), I basked in the overwhelming greatness of her Most High Diva-ness and Holy Vocal Chords Made of Steel Aretha Franklin as she wailed through the Puccini aria to fill in for Mr. Pavarotti, who called in sick an hour into the live telecast. Long live the Queen.

As fate or just dumb luck would have it, I literally bumped into current Grammy winner Roger Nichols at the ululating Sony party that pumped on into the wee hours at the Manhattan Center. The following is an interview at his hotel room the following day.

Demo Queen: Did you in your wildest moments think the *All Aboard* album you produced for John Denver would get this much attention, let alone win you a production Grammy?

Roger Nichols: So... umm...let me think about that.

If you could map out the rest of your life, would you choose to spend the majority of your time in the studio or scuba diving or flying a plane or riding your aerodynamically correct titanium bike?

Sounds good to me.

Could you explain why certain credits on certain albums refer to you as Roger “The Immortal” Nichols?

I could.

Do you have any ideas for a sensitive songwriter, such as myself, on how I get my songs heard by the right people, namely famous singers who don’t write their own material and will let me pitch to and/or write with them?

Why don’t we discuss it later.

If you had your life to do all over again, would you do anything different?

If I had to do it all over again, I’d do it all over you. Great song title.

Can I join your Gear Slut club or do I need to go through some elaborate initiation ritual like spend all my excess cash on Pro Tools or more ADAT machines?

We’re always looking for new members. What advice would you give young engineers? Would you tell them to spend money on an engineering school, intern for free and live under a bridge, spend all their inheritance money on gear to build a studio in your basement and do demos for friends, or run for political office?

Show biz, politics...all the same to me. Multiple sources inform me you have a penchant for puns ad nauseam. I looked it up, and reliable psychologists cite this terrible habit as a way to escape reality. Do you agree?

Yeah, I thought about getting into realty. Your bio says you have a wife and two teenage daughters. Where do you find the time for family life?

Gee, they’re teenagers now? Well, that’s one good thing about the music business: it’s either feast or family.

Once and for all, would you explain why I need to set my DAT machine on 44.1k?

¿44.1?

Is it true you met the Steely Dan duo at the bottom of somebody’s pool in Studio City?

No.

Have you read any good books lately?

Yeah... *The Hippo Family Club Guide To Fourier Transforms*.

Why do you think Richard Feynman, the developer of the mathematical theory of particle physics, went to court to defend a topless restaurant in Pasadena? He claimed to use it frequently to work on physics.

I never saw him there.

I understand you are currently working with the *a cappella* group Take 6? Is it difficult recording without instruments?

Dave Brubeck was only up to Take 5.

I recorded 32 tracks on ADAT for a demo I wrote for Enrique Iglesias, and I’m having trouble getting the mixes to sound right. Any suggestions?

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- Reduced Diffraction and Reflection

New multichannel formats are challenging old monitor concepts. While traditional stereo is still prevalent, 4, 5 or more channels are being monitored in modern production environments, daily. The LSR Family applies new technology to meet these requirements. By going beyond traditional design techniques with Linear Spatial Reference performance, JBL has literally redefined how a system is created. The LSR concept helps to dramatically expand the listening area, creating a larger, more accurate mixing space.

The LSR32 introduced the world to the Linear Spatial Reference philosophy. This 12" 3-way mid field monitor offers maximum performance in both vertical and horizontal configurations.

The LSR28P is an 8" bi-amplified near field monitor, ideal for multichannel mixing in small to medium-size production environments.

The LSR12P is a 12" powered subwoofer that easily integrates into a wide variety of stereo and multichannel formats, and complements both the LSR32 and LSR28P.

LSR12 Subwoofer (Vertical)



LSR28P



LSR32 (Horizontal)
Mid field Reference Monitor



LSR32 (Vertical)
Mid field Reference Monitor

For more information on the LSR Family
www.jblpro.com

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