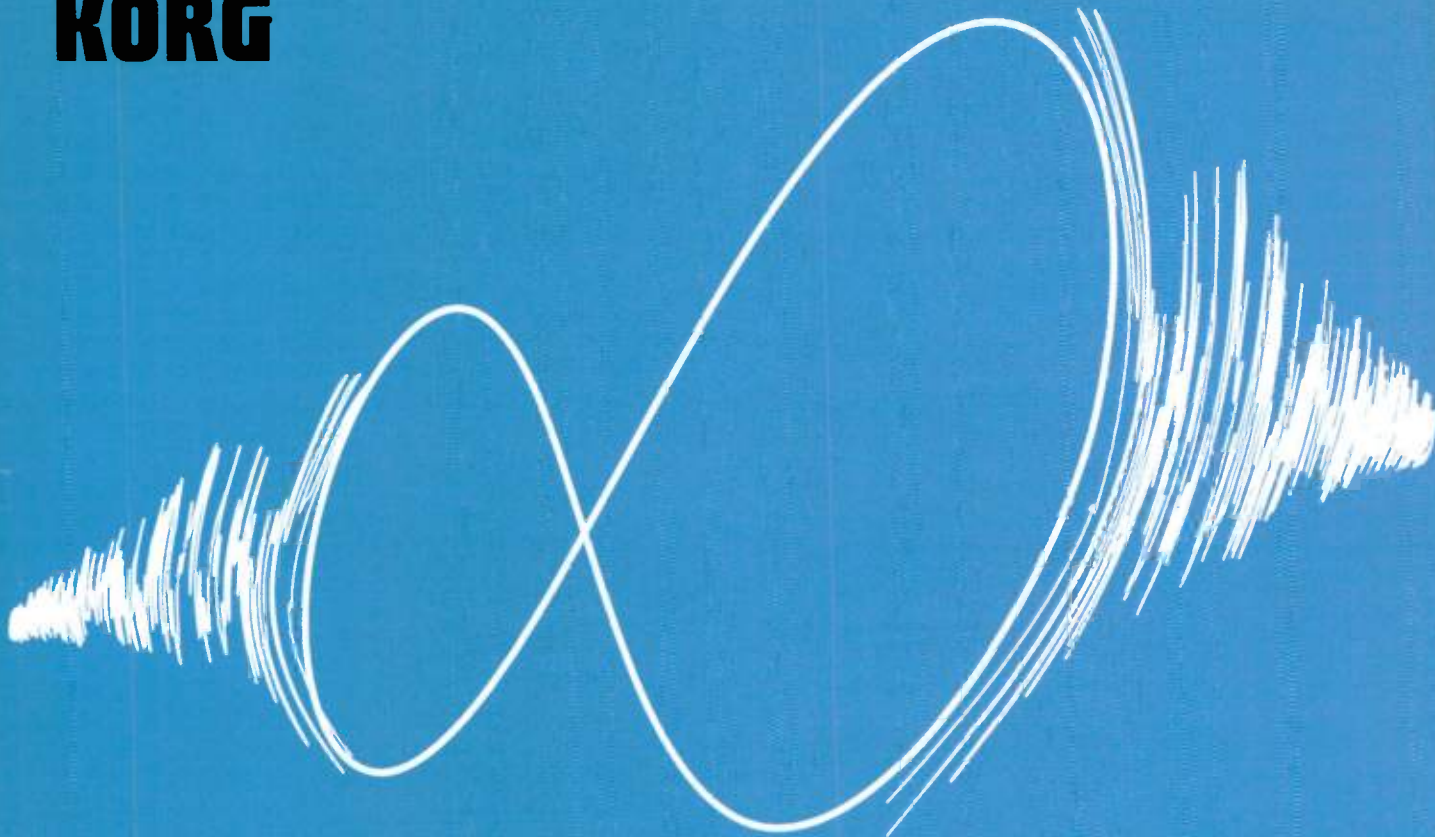


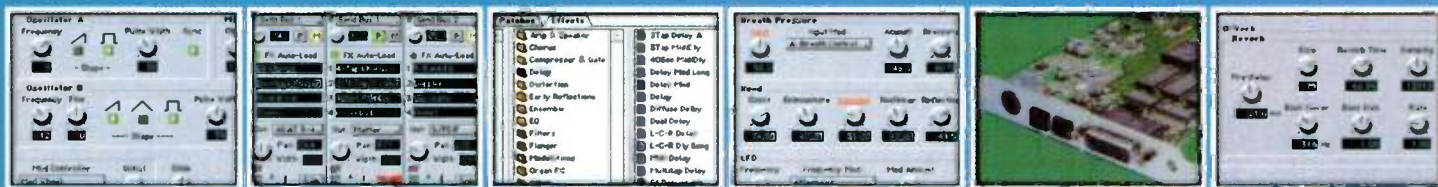
KORG



> INFINITE POSSIBILITIES DESERVE INFINITE CAPABILITIES.

Music is infinite. Endless. Eternal. We don't just hear it with our ears. We hear it with our hearts. Our souls. Our whole bodies. It hits us on every level and takes us to new levels of experience.

OASYS PCI is hi-tech with a higher calling. It takes you from here to eternity with professional quality synthesis, effects processing and computer audio input and output. A professional PCI audio card that delivers true-to-life, full-bodied organic sounds. The perfect complement to any software sequencer or digital audio workstation.



- 28 synth plug-ins – analog, physical modeling, digital synthesis and more
- Over 130 effects plug-ins including accurate MIDI tempo delays, new reverb design and unique special effects
- Over 1000 synth and effects Programs designed by the legendary Korg Voicing Team and professional recording engineers
- Open architecture design, ready for new synth and effects plug-ins from Korg and third parties
- 12 channel submixer to process synthesis programs, audio inputs or hard disk audio tracks

- Chains of up to 4 effects each on channel inserts, 4 send busses, and 6 stereo output busses
- Supports ASIO, FreeMIDI, GMS and Windows audio and MIDI standards
- 24-bit stereo analog, S/PDIF and ADAT optical input/output
- PCI card with 5 Motorola DSPs providing 480 MWPS of synth & audio processing power
- Works with all major sequencing and digital audio programs
- Available for both Mac (now) and PC (late Spring, 2000)

OASYS PCI ONLINE AT www.korg.com/oasyspci.htm

WANT AN INTERACTIVE CD-ROM FEATURING KORG'S OASYS PCI CARD? SEND \$3.00 S&H TO:

©2000 KORG USA, ATTN: OASYS CD, 316 S. SERVICE ROAD, MELVILLE, NY 11747-3201 • FOR INFO VIA FAX BACK, CALL: (516)393-8530 DGC #4104



CIRCLE 31 ON FREE INFO CARD

WRN



stacks of synths



thousands of knobs



total control

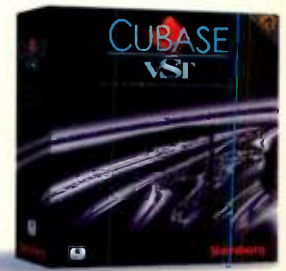
instant inspiration.

Cubase. Now with virtual studio instruments.

From the people who emulated every component of the studio with Cubase VST[®], comes another vital link in the virtual recording process: Virtual Studio Instruments. Now a synth, sampler, or drum machine is as easy to use as a plug-in. You want synths? Every new Cubase comes with Neon[™], an awesome mini-synth plug-in*. Of course, with Cubase's open VST architecture you can add more plug-in instruments and effects any time you like.

Want more control? No problem. Every one of the 96 audio channels inside Cubase now comes with full dynamic processing, including gating, compressing, limiting, and more. Cubase. Get inspired.

For more info on Cubase, check out our website at www.us.steinberg.net



Steinberg
Creativity First[™]

www.us.steinberg.net • U.S. (818) 678-5100 • Fax: (818) 678-5199 • Fax On Demand: (800) 888-7510 • Canada: (416) 789-7100 • Fax: (416) 789-1667

* The Model E plug-in shown is sold separately.

CIRCLE 42 ON FREE INFO CARD



EQ

PROJECT RECORDING
& SOUND TECHNIQUES
VOLUME 11, ISSUE 7
JULY 2000



ON THE COVER:

Bruce Swedien and
Andres Levin at Swedi-
en's Westviking Farm
studio. Photo by Wes
Bender.

FEATURES

- THE POWER AND THE BEAUTY** *By Bruce Swedien as told to Steve La Cerra*..... **64**
Bruce Swedien shares his thoughts on working in Cuba, the analog versus digital debate, and his project studio. *Bonus:* Look inside Bruce's classic mic locker.
- MINORITY RULE** *By Howard Massey*..... **83**
Sylvia Massy Shivy fights the odds and helps heavy rockers such as Tool and System Of A Down reach the top.
- TANGERINE DREAM: INDEPENDENCE DAY** *By Jonathan Miller*..... **88**
The legendary and prolific German electronic ensemble tell how they use multiple project studios to maintain creative freedom.
- REVIEW: LEXICON 960L EFFECTS PROCESSOR** *By David Frangioni* **98**
Lexicon processing enters the new millennium — this time in surround.

TECHNIQUES

- BONZAI BEAT: TUCK & PATTI** *By Mr. Bonzai* **42**
- MASTERING: CUTTING VINYL WITH DAVID CHEPPA** *By Bobby Owsinski* **48**
- BUSINESS: EXCEEDING EXPECTATIONS** *By Jim Bordner*..... **52**
- MASTERING: FAQ** *By Scott Hull*..... **58**

REVIEWS

- FOCUSRITE ISA430 PRODUCER PACK** *By Mitch Gallagher* **104**
- HERMAN MILLER AERON CHAIR** *By Mitch Gallagher* **108**
- EVENT 20/20/15 SYSTEM SUBWOOFER** *By Mitch Gallagher* **110**
- YAMAHA CDR1000 CD-R/CD-RW AUDIO RECORDER** *By Howard Massey* **114**
- APHEX 1100 STEREO TUBE MIC PREAMP** *By Rich Tozzoli*..... **120**
- TERRASONDE AUDIO TOOLBOX** *By Bobby Owsinski*..... **124**
- ACCESS VIRUS MODELED SYNTHESIZER PLUG-IN** *By Mitch Gallagher* **128**
- JENSEN ISO-MAX KIT ISOLATION TRANSFORMERS** *By Rob McCaughey*..... **130**

COLUMNS

- INDUSTRY INSIDER: PROJECT MASTERING IN THE DIGITAL AGE** *By Craig Anderton*..... **132**
- KOOPER'S KOUCH: VICTORY FOR VINYL VICTIMS** *By Al Kooper*..... **136**
- THE FEZGUYS: MORE PERSONALITY! NEW! BRIGHTER BOX!** *By Jon Luini & Allen Whitman* **138**
- ACROSS THE BOARD: ON THE LEVEL** *By Roger Nichols*..... **162**

DEPARTMENTS

- FIRST LOOK: TASCAM US-428 DESKTOP AUDIO CONTROLLER** **28**
- FIRST LOOK: AUDIO-TECHNICA ADAPTIVE-ARRAY MIC SYSTEM** **30**
- ROOM WITH A VU: THE BLASTING ROOM** **34**
- ROOM WITH A VU: DEAD SPACE STUDIO** **36**
- MICROPHILE: NEUMANN KM 841** **38**

- FROM THE EDITOR** **6** **EQ NEWS** **18**
- LETTERS TO EQ** **10** **PRODUCT VIEWS** **22**
- EQ&A**..... **12** **AD INDEX** **131**

EQ (ISSN 1050-7868) is published monthly plus Buyer's Guide in December by Miller Freeman PSN Inc., 460 Park Ave. south, 9th fl., New York, NY 10016-7315. Periodicals postage paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to EQ, P.O. Box 0532, Baldwin, NY 11510-0532. SUBSCRIPTIONS: U.S. \$29.95 for 1 yr. (13 issues); CANADA add \$10.00 per year for surface; other countries add \$15.00 per yr. for surface; All add \$30.00 per yr. for Airmail. All subscriptions outside the U.S. must be pre-paid in U.S. funds by International Money Order, checks draw from a bank located in the USA Visa, Master Card or American Express. Back-issues \$5. Printed in the U.S.A.

MASSIVE PASSIVE STEREO TUBE EQ



A PICTURE IS WORTH A THOUSAND WORDS...

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

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

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

GOT THE PICTURE?



Craig 'HUTCH' Hutchison designed these monsters...

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

Contact us for your nearest authorized MANLEY dealer.

MANLEY



MANLEY LABORATORIES, INC.

13880 MAGNOLIA AVE.
CHINO, CA. 91710 USA
TEL: (909) 627-4256
FAX: (909) 628-2482
emanley@manleylabs.com
<http://www.manleylabs.com>

CIRCLE 36 ON FREE INFO CARD





Chapter Two: In Which I Emerge Victorious

When last we met in these pages, I had been soundly defeated in my efforts to upgrade my Mac to OS 9. As I carried on with my various editorial duties in the days that followed, I became aware of a burning sensation on the back of my neck — the baleful gaze of my Mac. At first I thought the computer was depressed at my inability to consummate the update. Then I realized that the computer wasn't depressed, it was trying to hide the fact that it was smirking smugly — and probably clandestinely e-mailing its buddies about my incompetence the whole time. I can just hear them as they tip cold beverages at the seedy Silicon Wafer Bar: "You think your user is a loser? Let me tell you about the humiliating techno-gooper I'm stuck with...."

A showdown was clearly required. I put on my best Clint Eastwood squint and girded my loins for battle. (If you've never girded before, I highly recommend it.) After two days of combat, I'm happy to announce that I emerged battered but victorious. There were heavy casualties and devastating carnage on each side, and I was ultimately forced to break out the heavy language. (Mommy, I thought his computer was a Macintosh, what's a *bleeping bleep* of a *bleep-bleeping bleep* computer?)

Post-battle, as I basked in my own triumphant radiance, I regaled a variety of industry friends with somewhat inflated tales of my heroics. I found that some others were having similar problems to mine — people were either able to upgrade easily or it was a nightmare. If you fall into the latter camp, the key seems to be to start from ground zero, do fresh installs of everything, and make sure that you have the very latest extensions and drivers. Oh, and use only pine branches blessed by Steve Jobs for the fire as you sacrifice your pre-update lamb.

Notice a new light, airy vibe around here? It's more than just my mood since winning the update battle, it's EQ art-mavens Greg Gennaro and Marshall Moseley's ongoing efforts to improve the look of your favorite project-recording mag. Tons of small graphic improvements have been implemented, we've re-arranged things a bit, and in general spiffed things up. Thanks guys! Look for many more improvements in the coming months, including the introduction of a brand-new column in the August issue.

I recently returned from Nashville, where I moderated one of the eStudio Summit discussion panels. What's an "eStudio Summit"? It's a conference co-sponsored by EQ, Pro Sound News, Surround Professional, SPARS, AES Nashville, and others, bringing together top-name engineers, producers, and industry representatives to discuss the future of studios in the Internet age. You can read the full story in the EQ News section in this very issue. But here's something to think about before you flip the page: It's clear that the times, they are a-changin' (to coin a phrase). Studios, both commercial and project, are having to rethink their place in the industry pantheon, as well as how they're approaching clients, delivery mediums, even what it means to *be* a studio. How Internet-ready is your studio? If it's not, do you care?

We're on the cusp of a new era: MP3, Napster, Gnutella, the Rocket Network, high-bandwidth consumer Internet access, and other things all point toward a major paradigm shift in the coming years. Will your studio be ready for the changes or not?

I came away from the Summit very excited about where things are headed; studios that are ready for upcoming changes will likely find a world of exciting new opportunities awaiting them. The time to start learning and preparing is now — to wait will be to struggle and possibly to be left behind.

—Mitch Gallagher
gallagher@psn.com



Vol. 11, No. 7
July 2000

JOHN HURLEY
Publisher

EDITORIAL

MITCH GALLAGHER

Editor

ANTHONY SAVONA

Managing Editor

CRAIG ANDERTON

Technology Editor

STEVE LA CERRA

Senior Editor

ROBERT GRANGER

Associate Editor

MICHAEL SANCHEZ, SCOTT ARUTI

Editorial Assistants

JIM BORNDER, AL KOOPER, JON LUINI,
HOWARD MASSEY, JONATHAN MILLER,
ROGER NICHOLS, BOBBY OWSINSKI,
RICH TOZZOLI, ALLEN WHITMAN

Contributing Editors

MR. BONZAI

Editor-At-Large

EXECUTIVE

PAUL GALLO

President

MARTIN PORTER

Senior Vice President/Publishing Director

TIM WETMORE

Editorial Director

SALES & MARKETING

ANDY MYERS

Tel: 914-271-3334, Fax: 914-271-3773

International Sales Manager

MICHAEL MATHIESON

Tel: 631-493-9470, Fax: 631-462-9650

East Coast Sales

TARA ESPOSITO

Tel: 212-378-0456, Fax: 212-378-2158

Midwest Sales

LEN KEELER

Tel: 909-672-8059, Fax: 909-672-8058

HOLLY O'HAIR

Tel: 909-693-9598, Fax: 909-693-9598

MARGARET SEKELSKY

Tel: 212-378-0491, Fax: 212-378-2158

West Coast Sales

CHRISTINE VELA

Tel: 631-547-1180, Fax: 631-547-1181

Manager of Specialty Sales/Classified Sales

CRISTINA GALLO

Director, Special Projects & Events

DANIELLE CIARDULLO

Marketing Specialist

ART & PRODUCTION

MARSHALL MOSELEY

Art Director

GREG GENNARO

Associate Art Director

RIVA DANZIG

Creative Director

FRED VEGA

Production Manager

ANNETTE GOLLOP

Circulation Manager

PUBLISHED BY MILLER FREEMAN PSN, INC.

Editorial Offices: 6 Manhasset Ave., Port Washington, NY

11050. Tel: 516-944-5940. Fax: 516-767-1745

Email: eqmagazine@aol.com

Subscriptions: EQ Magazine, P.O. Box 0532, Baldwin, NY

11510. Tel: 212-378-0449. Email: circulation@psn.com

Article Reprints: Tel: 212-378-0438. Email: reprints@psn.com

Administrative/Sales Offices: 460 Park Ave. South, 9th Floor, New

York, NY 10016-7315. Tel: 212-378-0400. Fax: 212-378-2160

Web Sites: www.prosoundnews.com www.eqmag.com



EQ (ISSN 1050-7868) is published monthly plus Buyer's Guide in December by Miller Freeman PSN Inc., 460 Park Ave. S., 9th Fl., New York, NY 10016-7315. Periodicals postage paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to EQ, P.O. Box 0532, Baldwin, NY 11510-0532. SUBSCRIPTIONS: U.S. \$29.95 for 1 yr.; CANADA add \$10 per yr. for surface, other countries add \$15 per yr. for surface; All add \$30 per yr. for Airmail. All subscriptions outside the U.S. must be prepaid in U.S. funds by International Money Order, checks drawn from a bank located in the USA, Visa, MasterCard or American Express. Back issues \$5. All product information is subject to change; publisher assumes no responsibility for such changes. All listed model numbers and product names are manufacturers' registered trademarks.

Printed in the U.S.A. Miller Freeman
A United News & Media company

IF ONLY YOUR YAMAHA CONSOLE COULD SOUND LIKE AN APOGEE.



NOW IT CAN.

YOUR YAMAHA digital system can now offer true 24-bit Apogee-quality conversion, with our new AP8AD and AP8DA converter cards for YGDAI and Mini-Y-equipped Yamaha systems.

The 8-channel AP8AD A/D and AP8DA D/A cards add Apogee's true 24-bit digital audio conversion to any Yamaha digital system equipped with either large (O2R) or small (O1V etc) expansion card slots.

Each card occupies a single slot, delivering Apogee's superb sound

and many other benefits, including the Apogee Ultra-Low-Jitter Clock, for maximum conversion integrity. The A/D features our exclusive Soft Limit® circuitry for hotter levels without overs.

The cards also support standard sample rates up to 96 kHz*.

Apogee's AP8AD and AP8DA cards are available from Apogee authorized dealers, and from selected Yamaha dealers.

Hear the Apogee difference.

APOGEE ELECTRONICS CORPORATION, 3145 Donald Douglas Loop South, Santa Monica, California 90405-3210, USA.
Tel: +1 310/915-1000 Fax: +1 310/391-6262. Email: info@apogeedigital.com. See our Web site for full details.

*Subject to host system's software capabilities. Soft Limit and Apogee are trademarks of Apogee Electronics Corporation.
Yamaha is a trademark of Yamaha Corporation. O2R photo used by courtesy of Professional Audio Systems Division, Yamaha Corporation.

Apogee

ELECTRONICS

www.apogeedigital.com

CIRCLE 5 ON FREE INFO CARD

Step into the
cakewalk

Pro Suite™

Cakewalk Pro Suite is the complete Windows workstation for multitrack recording, real-time mixing, and hard-disk based sampling. Once inside, you're free to produce professional music and sound projects entirely in the digital domain.

The Pro Suite provides an arsenal of software tools for today's recording musician. It combines essential recording and sampling software technologies into an integrated studio solution. There's nothing else like it available today.

CAKEWALK PRO AUDIO™ 9



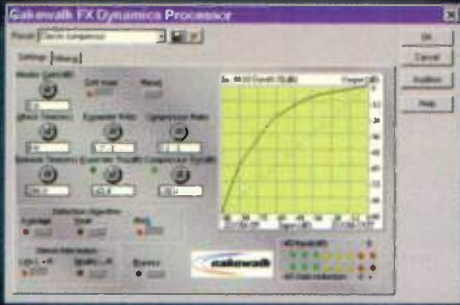
- Record and mix up to 256 tracks of digital audio and MIDI
- WavePipe™ low-latency audio mixing and playback using standard Windows audio cards
- Supports 24-bit/96 kHz audio hardware
- Exports audio to MP3, RealSystem G2, and Windows Media formats for Internet delivery
- Notation with guitar tablature, fretboard editing
- Sync to film and video; import digital video
- Non-linear, graphical editing of audio and MIDI
- Supports real-time DirectX plug-ins
- Supports real-time MFX MIDI plug-ins
- StudioWare™ for MIDI-based studio automation

NEMESYS™ GIGASAMPLER™ LE

- Hard disk-based sampler
- Integrates with Pro Audio 9 as virtual synthesizer
- Provides gigabyte-size sample sets
- Loads samples in seconds, not minutes
- Save and load entire performances
- Fast, tight note-on responsiveness for live playing
- Sample instruments with full natural decay
- Full looping implementation (although looping is not necessary)
- 32-bit audio signal processing
- Reads GigaSampler, .WAV, and Akai™ Libraries
- Includes GigaPiano™ Sample Library CD-ROM



GigaSampler is a registered trademark, and NemeSys, GigaPiano and the NemeSys logo are trademarks of NemeSys Music Technology, Inc. Cakewalk is a registered trademark, and Cakewalk Pro Suite, Cakewalk Pro Audio, Cakewalk Audio FX, WavePipe, Musician's Toolbox and the Cakewalk logo are trademarks of Twelve Tone Systems, Inc. Other trademarks mentioned are the property of their respective owners.

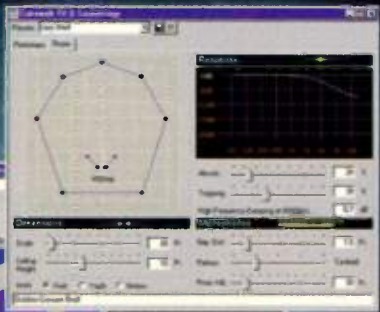


CAKEWALK AUDIO FX™ 1 DYNAMICS PROCESSING

- Compressor/Gate maintains audio signal levels at user-defined levels
- Expander/Gate increases dynamic range of audio
- Limiter prevents audio signals from exceeding user-defined threshold

CAKEWALK AUDIO FX™ 2 VINTAGE TAPE AND AMP SIMULATION

- Advanced processing algorithms add classic sound and warmth to "dry" and "cold" digital audio tracks
- AmpSim adds guitar amplifier sound to digital audio; choose and modify amp model, speaker cabinet, overdrive, EQ and other parameters
- TapeSim adds tape saturation and natural warmth associated with analog magnetic tape decks



CAKEWALK AUDIO FX™ 3 SOUNDSTAGE DESIGN FOR CUSTOM REVERB

- Design virtual rooms in which to process digital audio tracks
- Add and move walls, adjust ceiling heights, define surface absorption properties
- Choose microphone types and placements
- Assign audio tracks to different "performers"
- Use and modify predefined spaces, like jazz club, arena, and cathedral presets

All Cakewalk Audio FX plug-ins provide:

- 32-bit, floating point effects processing
- DirectX-compatibility, the Windows standard
- Real-time effects processing and off-line editing

MUSICIAN'S TOOLBOX™ III

- 2 CD-ROMs of multimedia content and tools
- Digital audio loops and samples
- Professional MIDI drum patterns
- Digital video images
- SoundFont instruments
- Advanced Pro Audio 9 tutorials
- More



Cakewalk Pro Suite is available worldwide.
For more information, visit www.cakewalk.com,
or call 888-CAKEWALK (617-441-7870 outside U.S.).



CIRCLE 10 ON FREE INFO CARD



OBJECTIVE LISTENERS

I agree that checking the analog output for single bit accuracy would be difficult or impossible [Across the Board, March 2000]. However, if there were audible differences, I would expect the errors to be 1 percent or more, which should be detectable by measuring the difference between the soundfiles. I propose a test, conducted by the Boston Audio Society. Mr. Nichols would send us a DAT (not a CD-R!) of two samples each of music from the CD that showed audible differences. One would be from a high-grade CD player that shows no errors. The other would be from his portable that sounds different. If the portable has a digital output, that would be great, but an analog copy will do. We would listen for differences and test objectively for measured differences.

David Hadaway
President
Boston Audio Society
via Internet

DVD — THE FUTURE?

It seems "MP3 media" is to become the standard for portable music. In and around the music business, there has been a lot of talk about pirating issues and the future of CDs. Also, big labels, of course, are concerned about profit losses due to downloadable music.

But what of DVD? This format offers musicians the chance to incorporate videos as well as high-quality surround sound to their music projects. This expands the possibility for creativity and expression, as well as offering depth to

the musician with the video format.

I think this begs the question: What kind of DVD production gear, software, etc., is available now for the home project studio? I would love to see this technology addressed. As for me, I'm heading there, baby!

Dwayne
via Internet

MICROPHILE, THE PLATINUM EDITION

Greetings from mid-winter in the Antipodes! I've been reading EQ since 1992, and one of my favorite columns is "Microphile." Have you ever considered colating these into a single volume either as an EQ supplement/special or perhaps as a CD-ROM like you once did with back issues? Either way, it is a valuable resource.

Keep up the good work.

Nigel Russell
via Internet

[What do you say, readers? Is there interest in a Microphile collection?]

HE'S THE MAN

Mitch Gallagher, you are the man! I am glad someone understands the "gear scene" like you. I totally appreciate your recent editorials because end users just read so much crap on the Web or from "Company X" advertisements that they feel the need to nit-pick gear down to the bone. Give it a rest! There is a ton of great gear out there at reasonable prices. Dealers don't want to carry every single piece on the market, because there is often a competitive product in inventory for around the same price that is just as good, if not better! I am glad there is someone like you able to get the message out to end users out there. Thanks again and keep up the great work.

Matthew Craig
via Internet

HE'S NOT THE MAN

I sure wish you folks would show a little courage and take a stand against copy-protected software. In the June issue of EQ, Mitch Gallagher explains how copy protection not only wasted four days of his time, but ultimately prevented him from upgrading his programs and operating system. Then, in the EQ&A column, you allow reps from Steinberg and Waves to defend their use of copy protection, as if it were normal and acceptable. Most experienced audio professionals know

that copy protection is lame, ineffective, and insulting to legitimate users.

The pathetic claim that without copy protection these companies can't make money is belied by the success of Microsoft, Symantec, IQS, Cakewalk, PG Music, and countless other successful software publishers. There are many excellent audio programs available that do not use copy protection, and the sooner we stop buying protected software, the sooner we all can get back to making music instead of wrestling with challenge codes and the order in which six dongles have to be inserted.

Ethan Winer
via Internet

CONQUER YOUR FEARS

After reading your June 2000 editorial, I have become deeply hesitant to try to upgrade my G3 300 to G4 400 or better with an accelerator. Given the hassles I experienced riding the first wave of Yosemite, I think I might wait a spell still before I try doing something like this. By the way, did you leave the ZIF card in, and, if so, is your machine behaving well at its new speed? In other words, is there hope?

Wes Morden
via Internet

[Mitch Gallagher replies: The G4 upgrade card I mentioned in my editorial will be covered in an upcoming review. For now, let me say that it has been trouble-free and the computer is now behaving well (see my editorial in this issue for more details). The problems I experienced were due to the OS 9.x upgrade and particular software installs/copy protection I was dealing with, not the hardware upgrade.]

CORRECTION

In the May issue of EQ, the photos of Bad Religion and Todd Rundgren in Hawaii were attributed to Jacob Rosenberg, when, in fact, the photographer was Walter St. Clair.

WRITE TO US

Send your letters to:
EQ Magazine • Editorial Offices
6 Manhasset Ave.
Port Washington, NY 11050
Fax: 516-767-1745
E-mail: EQMagazine@aol.com
Web: www.eqmag.com

HDR24/96. 24-TRACK 24-BIT HARD DISK RECORDING. ADVANCED WAVEFORM EDITING. NO EXTERNAL COMPUTER NEEDED. \$4999 SUGGESTED U.S. RETAIL.



HDR24/96 editing features include 8 takes per track with non-destructive comping, non-destructive cut/copy/paste of tracks, regions or super-regions, drag-and-drop fades & crossfades, 1x/2x/



4x/8x/24x waveform views, true waveform editing with pencil tool, bi-directional cursor scrub, unlimited locators and loops, DSP time compression/expansion, invert, pitch shift & normalize and much, much more... with unlimited undos — but without requiring an external computer!

- Built-in 20-gig Ultra-DMA hard disk plus front panel bay for additional easily available pull-out drives
- Intuitive analog tape deck interface and monitoring
- Syncs to SMPTE, MIDI, Black Burst, PAL & NTSC without extra cards
- Unlimited HDR24/96 linking! Sync 48, 72, 96, 128 or more tracks
- 96kHz upgradable via software
- Uses Digital 8 • Bus I/O cards
- 3.5-inch disk drive for software upgrades & tempo map importing
- Fast Ethernet port built-in
- Optional SCSI port
- Remotes available.

New hard disk recorders were all over the place at this fall's AES convention. A fair amount of the buzz was at the Mackie booth.

The HDR24/96 was the only recorder with built-in non-destructive graphic waveform editing. Just plug in a mouse, keyboard and SVGA monitor to view all recorder parameters on screen in real time. And enjoy complete editing control with unlimited levels of undo, drag-and-drop crossfades with 9 preset combinations plus fade/crossfade editor, DSP time compression/expansion, pitch shift and lots more.

The HDR24/96 was the only recorder that uses pull-out Ultra-DMA hard drives, so affordable that you can keep one for each project — over 90 minutes of 24-track recording time costs less than a reel of 2-inch tape!

The HDR24/96 was the only recorder with built-in 100Mbps Ethernet. And of course the only one that interfaces directly with the Digital 8 • Bus.

No wonder *Pro Audio Review Magazine* gave it a "PAR Excellence" Award right on the spot.

Call toll-free or visit our website for preliminary info on the new HDR24/96. Shipping soon from Mackie Digital.

MACKIE
Digital Systems

www.mackie.com • 800/258-6883

CIRCLE 29 ON FREE INFO CARD



DIGITAL MACROBUS
FACTORY IN
WINDYVILLE, WA, USA

ON THE BOARDS



Ed Cherney



George Massenburg



Roger Nichols



Al Kooper

[The EQ Boards have been bustling with activity over the last few months. If you haven't visited them yet, you are missing out on a great opportunity to have your questions answered by Ed Cherney, Al Kooper, George Massenburg, and Roger Nichols. Here are some recent highlights from the Boards.]

LIVE ORCHESTRAL LAYERING

I'm preparing to record some live orchestral parts for a pop recording on a budget. I will record in a great-sounding, large room using either spaced pair omnis or a Royer S-12 stereo in Blumlien.

Will I be able to create the illusion of a single orchestra playing if I leave the mics in one stationary position, then record the strings, woodwinds, and brass as three separate layers mixed together? Each section will be positioned on stage where I want them in the final mix. —Tim

I suppose the answer is, yes you could. When we've done this, we've been able to make it sound like it's one big orchestra without too much trouble, and I understand where you'd have a lot of control over the mix. But the big question is: Are you losing more than you're gaining?

One great benefit of having a lot of people record live is the tremendous presence of that many players interacting with each other and the ensemble sound, which, in the right room, can be impressive.

Granted, the big challenge in a live orchestral recording is, among many other things, getting the balance right, and the clams out of the score. You'll want to learn how to do these things eventually anyway, and what better way to learn than blowing \$20K or so for three hours of gnawing your teeth and ripping your hair out trying to extract a great performance from the most reluctant, the most obstreperous primadonnas in anyone's imagination? I'd say, go for it! —George Massenburg

If you have the tracks, you might consider putting up a few spot mics. You don't have to use them, but you might want the option when you mix. My initial thought is that by recording each section with room mics only and then mixing them together, you're going to have a lot of room sound. Especially for a pop recording. —Tiny_G

Actually, Tiny_G has the clue. I neglected to mention spot mics, the use of which is pretty much always the case for large orchestral recording. —George Massenburg

FAKING OLDER REVERB/ROOM SOUND?

Anybody have any success artificially re-creating a big old-time nasty R&B room sound? (Without having the room, of course!) To clarify, I'm looking to get a sound similar to old blues tunes where everyone is in one room, probably with one mic.

Due to economics, all material was recorded separately, close-miked in a tiny bedroom. I've been toying with sending a mono submix to a dedicated reverb, but the results have been pretty fake sounding. Any ideas are appreciated. —D. Gauss

Blast the mix out to a "nasty room" via some NS10's and blend in compressed mics pointed into the corners away from the speakers to the mix.

A chum doing a jazz soundtrack found a Dixieland-style section too posh and hi-fi, so they it blasted it through an old Tannoy 18-inch speaker and picked that up with a valve mic. That did the trick for them for that particular scene. —Jules

Your home close-mic overdub situation sounds like the main problem. You need to at least simulate the bleed and mix that comes from a bunch of mics in a room.

Depending on how you ask and what kind of music you're doing, you could get/rent a decent room (try a local church, dance hall, public function room) for a few hours.

Play your mix through good speakers, mic 'em with two good condenser mics — think the best you can get. Try different distances — as close as one to two feet could sound fine. Bring 'em back on a couple of tracks — in sync, of course. Try *not* to use the room as just a 'verb unit with your dry tracks as the main mix. Let the air in the room mix your stuff.

BEQ BOARD

ONLINE STUDIO COMMUNITY

W W W . E Q M A G . C O M

FEATURING: ED CHERNEY • GEORGE MASSENBURG • AL KOOPER • ROGER NICHOLS
GET YOUR QUESTIONS ANSWERED BY THOSE WHO KNOW. TALK WITH YOUR PEERS. LOG ON TODAY.

WHY BUY GEAR AT SWEETWATER?

YOUR SOURCE FOR

RECORDING

MONITORS

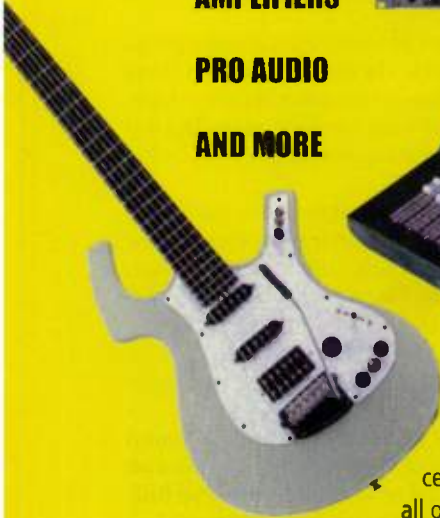
GUITARS

KEYBOARDS

AMPLIFIERS

PRO AUDIO

AND MORE



"The only place I will buy gear from anymore — forget "music stores". Sweetwater has changed the way I think about purchasing equipment." *Jon Wolfson*

"What a totally 'class' operation you guys are. Sweetwater treats us like valued clients, like professionals, and like friends." *Tim Snyder*

"What a GREAT web site! I'm amazed. I've actually been able to find what I needed, without spending great gobs of time to do it." *Jack Jacobsen*

"I only buy new equipment from Sweetwater. The level of customer service is the reason I have stayed with Sweetwater over the past 5 years." *Chris Hultz*

"Thanks again for making this such a pleasurable sales experience. As far as I'm concerned, you've EARNED a customer for life. For all of our future audio needs, Sweetwater will be my first and only call." *Nevin Davidson*

"Best service of any mailorder company I have tried." *Dan Graybill*

"Thank you for your extremely informative inSync Newsletter and other valuable time and cost saving references. Your services...provide a bridge to help professionals in the industry to up-date and keep abreast on a weekly basis." *Chris Mar*

"You guys are 'the' pro's (and I live in 'Music City')." *Denny Elliott*

"You guys never cease to amaze me, your staff is so knowledgeable and helpful and it's always a pleasure dealing with you folks. Thanks!" *Craig DelCasino*



Sweetwater

music technology direct

800.222.4700

www.sweetwater.com

(219) 432-8176 • FAX (219) 432-1758 • sales@sweetwater.com • 5335 Bass Road • Fort Wayne, IN 46808

CIRCLE 44 ON FREE INFO CARD

WRN

api 7600

THE WORLD'S FIRST
HIGH END CONSOLE YOU BUILD
ONE STRIP AT A TIME!



The API 7600 is the first complete high-end 4 Buss Console in a 1U strip that can be expanded and linked with additional 7600s and a 7800 Master module to build a complete console of any size. Users can now achieve a level of sound quality equal to the +\$200,000 API Consoles so much a part of the history of American rock n roll.

OUTPUT

Channel Buss Assign 1/2/3/4 • Pan Enable • Output Meter • Stereo Bus

API 212L PREAMP

Same Preamp Used on Current API Legacy Consoles • Mic/Line Switch • 48v Phantom • Polarity Reverse • Input Gain Control • Outboard Linear Fader Jack • Direct Out • Input Meter

API 225 COMPRESSOR

Same Compressor Used on Current API Legacy Consoles • Old/New Style Compressor Switch • Hard/Soft Knee • Pre/Post EQ • Stereo Link • In/Out Access

API 550A EQ

Reissue of the Original 550A • 3 Band, ±12dB • HP/LP Filters • 7 Frequencies per Band • EQ In/Out • Filter In/Out • In/Out Access

4 SENDS

Send On/Off • Pre/Post Fade • 4 Sends (4 Busses)

CHANNEL STATUS

Pan Control • Mute • Solo • Safe • Insert/In/Out

\$2995 MSRP

API U.S.A. CONTACT:

**TRANSAMERICA
AUDIO GROUP**

Phone: (805)375-1425 • Fax: (805)375-1424
e-mail: brad@transaudiogroup.com

To further tweak the mix later, you could add in a little of the dry tracks, making sure that these more present sounds don't stick out. —Mark L.

In a similar situation, I stereo miked the mix coming out of my monitors from about five feet away and printed the room sound to two tracks. I then applied the Lexicon LXP-1's "D-plate" with a short decay just to the room mics, then added a modified "Jazz Chamber" patch on the Lexicon MXP-1 to just the LXP returns and squashed the heck out of the results. It ended up a little noisy, but it worked all right. It wouldn't convince anyone in the know, but it was a nice nod to that sound. —Demian N.

REVERB SETTINGS

I would love to know the standard reverb settings used on the vocals during the mixing process. For example, what types are used on up-tempo, ballad, and mid-tempo songs? —AxxanPro

The only rule I'm aware of is that generally longer reverb decay times are used for ballads than up-tempo tunes — and that rule can also be broken. —Larry W.

It's a good idea to generally get your reverb tail to breathe with the tempo of the tune. If the reverb is too long on a fast song, it just clutters everything up; likewise, if it's too short on a ballad, it will affect the swing of the music.

Play around with the predelay, too. It can make a relatively short decay sound a lot bigger, and lets you add more space without making the vocals sound further away. —Oli P.

For some reason, I tend to not use any reverb. I've been fighting to get a real clean and upfront mix for the longest time, and I found that reverb was always the problem. I think you can only use reverb in song that has the breathing room — typically slower ballads. It's more a question of taste and what kind of mood you're looking for. As for a standard, I doubt that there is one.

Lately, I've been working with creating a room instead of just adding a reverb to a specific item. It's a lot more spacious, warm, and acoustically realistic. —Bungle

Reverb, what reverb? Lately, I've been trying to make reverb invisible; create a space instead of having that standard tail (on ballads). Some of your artists, especially your more experienced divas, though, will kind

of demand that hokey larger reverb. It's always a challenge to create the space where the singer is "in the room" with you. The best thing for you to do is to find records that you like the sound of, and try to emulate what's going on. Thievery is the sincerest form of flattery.

By the way, timed delays work great in place of reverb on some rock vocals, rockabilly, etc. You know, quarter-notes, eighths, dotted-quarters, etc. Also, I still use my Eventide 2016's (when I can keep them running...I have one just for spare parts). They have a very natural room program that enables me to create fairly realistic ambient spaces.

And one more thing: One reverb for verses, where there may be more space for longer (or shorter) decay times, and another for choruses, or bridges, to create more excitement and dynamics, to really lift up one section and cool out another. —Ed Cherney

Lately I have just been using room mics on another track. The digital reverb that I have access to doesn't sound so hot sometimes. I don't even have "perfect" room, but it is natural sounding. —Alphajerk

Another thing that sometimes works is to use two reverbs at the same time — one short and one long, with the long one quieter. I just did this on an *a cappella* track with good results. —Tim W.

SURROUND AND LFE

Roger, on the Dolby Digital surround mixes you've done, are you creating an LFE channel or are you just letting full-range go to the five main channels? —Stepewog

I use the LFE, plus I mix full-range to the five speakers. The user at home can do bass management to route the low end to the LFE channel if he does not have full-range speakers. —Roger Nichols

What kinds of things are you sending to LFE? Just extra low end? On a stereo downmix, the LFE stuff is discarded, right? So, as I understand it, you would want to send lows that would stress a standard stereo system, but nothing critical to the sound? —Stepewog

I send some of the bottom from the kick and the bass to the LFE, but that is about it. I do a little bass management that sends anything below 80 Hz (3dB/octave) from the other five speakers to the LFE channel, also. —Roger Nichols

GET THE MOST BANG FOR YOUR BUCK!

ECLIPSE

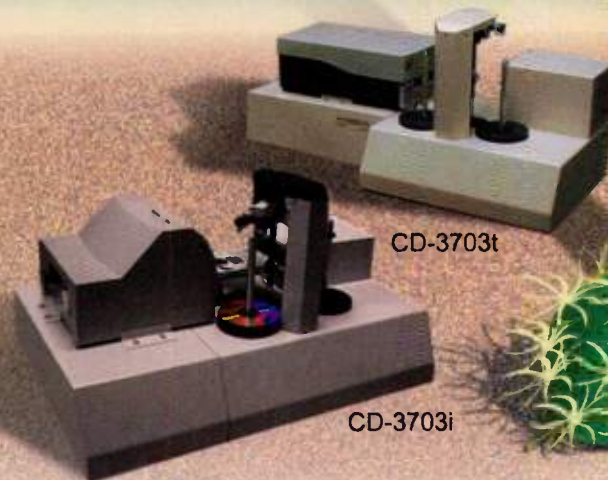
CD-R Production Systems

There's a new sheriff in town.

ADIOS AMIGO!

The ECLIPSE Offers You:

- 12x Speed
- Choice of Thermal or Inkjet printing
- A Host of "Anti-Piracy" Features



MediaFORM SMART TECHNOLOGY

888-607-1524 • www.mediaform.com

AUTHORIZED MediaFORM ALLIANCE RESELLERS

CONTACT US FOR THE RESELLER NEAREST TO YOU!



800-356-2553

www.mediasourceinc.com

ADVENT MEDIA

888 992 3472

www.advent-media.com

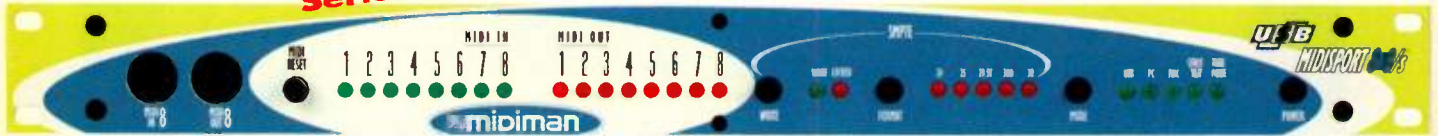
CIRCLE 24 ON FREE INFO CARD



The first name in MIDI.

For more than a decade, one company has remained at the forefront of the evolution of MIDI, making innovative, cost-effective solutions with legendary dependability. Our new best-selling USB MIDISPORT family is yet another step in our commitment to bring you the latest tools with the latest technology, without the latest headaches. It's no accident we're the world leader in MIDI.

**USB and
Serial 8x8**



USB MIDISPORT 8x8/s - 8 in/ 8 out MIDI interface with SMPTE.



USB MIDISPORT 4x4 - 4 in/ 4 out MIDI interface.

**All MIDISPORTs Are
Mac & PC
Compatible**

**World's Most
Popular USB MIDI
Interface**



USB MIDISPORT 2x2 - 2 in/ 2 out MIDI interface.



**PERFECT FOR
iMac**

USB MIDISPORT 1x1 - 1 in/ 1 out MIDI interface.



Leading the MIDI World.

The MIDISPORT line is compatible with: Mac G4s, G3s, iMacs and PCs.

800-969-6434 • WWW.MIDIMAN.COM • EMAIL: INFO@MIDIMAN.COM

CIRCLE 26 ON FREE INFO CARD

MIDISPORT

The last word in Digital Audio.

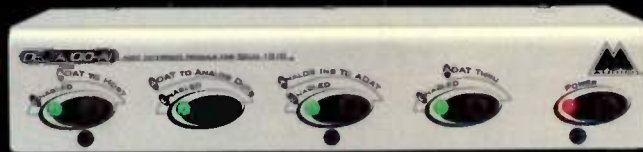
We know that choosing your recording gear is serious business. We feel the same way about making your gear. That's why we're proud that thousands of you have chosen to make a Delta card part of your recording set up. Whether you chose us based on reputation, specs, compatibility, or just because we took the time to talk with you, our message is definitely getting out: your success is our success. After all, we're here for the same reason-- to make music better.



*Legendary 24/96
Delta Conversion*

DELTA 1010 - 10 in/ 10 out PCI digital recording system.

*Litepipe
Compatibility*



DELTA 1010-AI - ADAT interface add-on for DELTA 1010



*Critically
Acclaimed*

DMP2 - 2 channel high-performance mic preamp direct box.

*BEST Drivers,
Lowest Latency*



DELTA 66 & DELTA 44 - 24 bit/ 96 kHz full-duplex recording interfaces.



Make music better.

The Delta product line, which features full 24 bit /96kHz operation, has been painstakingly tested so as to provide optimal performance with the finest software programs available today. We are proud to offer the following driver support:



800-778-3241 • WWW.M-AUDIO.COM • EMAIL: INFO@M-AUDIO.COM

CIRCLE 26 ON FREE INFO CARD

EQ NEWS

J U L Y • 2 0 0 0

NASHVILLE ESTUDIO SUMMIT SPOTLIGHTS NEW TECHNOLOGIES

As we make our way into the year 2000, Internet news is everywhere, and talk of e-this and e-that dominates many discussions. With the recent media interest in Napster, Gnutella, MP3.com, and other music-related Internet topics at a high point, audio professionals are finding themselves more and more concerned with what this new e-age will mean for studios, engineers, producers, and musicians. To foster discussion on this subject, *EQ*, *Pro Sound News*, and *Surround Professional* magazines, along with SPARS, AES Nashville, and others, sponsored the eStudio Summit on May 19 and 20 at the Marriott Cool Springs hotel near Nashville. A number of manufacturers and service providers such as TC Electronic, Euphonix, Sonic, and Studer were also on-hand to demo their latest technologies.

In attendance were producers and engineers from around the nation, as well as a host of presenters and panelists. Keynote addresses were made by Graham Strong, the principal architect behind a number of Internet companies such as Priceline.com, and Tom Zito, co-founder and CEO of garageband.com. Representatives from Rocket Network, Liquid Audio, Audible.com, and EDnet came to discuss the Internet

services each of the companies provide.

The eStudio panel discussions covered a broad range of topics; EQ Board moderator George Massenburg headed up a discussion of issues relevant to today's music producer. His panel consisted of producer/engineer and co-owner of Memphis's Ardent Studios, John Hampton; producer/engineer and head of Virgin Records,



Nashville, Scott Hendricks; producer/musician Dann Huff; and producer/songwriter David Malloy.

A panel headed up by Pro Sound News editor Frank Wells was titled, "Who Cares About Quality Anymore?" and featured mastering engineers Glenn Meadows (Masterfonics), David Glasser (Airshow Mastering),

Bob Katz (Digital Domain), and Bob Ohlsson (Bob Ohlsson Audio). The panelists held a spirited discussion of data compression, audio quality, MP3, and mastering issues in the Internet age.

While much of eStudio Summit focused on the Internet's impact on the recording business, surround sound was also a major topic of discussion; Jake Nicely, co-owner of Nashville's Seventeen Grand Recording and experienced multi-channel mix engineer, moderated "Can Surround Save The Studio Business?" which featured producer/engineer Chuck Ainlay of Back Stage at Sound Stage Studios, Hank Williams of MasterMix, Denny Purcell of Georgetown Masters, Kerry Moyer of the Consumer Electronics Association, and Rory Kaplan of DTS. In addition, *EQ* contributor Bobby Owsinski and *Surround Professional* founding editor and founder of TMH Labs Tomlinson Holman gave presentations on setting up and using surround production systems.

There's no question that things are changing fast in the audio industry—the impact of the Internet is just beginning to be felt, and will surely become a vital consideration as both commercial and project rooms prepare themselves for the future. Several of the eStudio participants can serve as case studies; practical uses are being found for the Internet and other forms of digital interface, and some facilities are actually beginning to make money off of online services. There are still several very important issues that need to be resolved, such as delivery formats, secure online distribution, and increasing adoption of high-bandwidth Internet access, but it's clear that things are moving forward.

In general, the mood at eStudio was very optimistic. Studio owners and engineers are looking forward to the challenges and creative opportunities that the Internet, surround sound, and new technologies promise to offer. —Mitch Gallagher



EQ's editor, Mitch Gallagher moderated a wide-ranging panel discussion on how commercial and project studios can work together. Panelists included (left to right): 3D Audio's Lynn Fuston, March *EQ* cover-man Jimmy Johnson, project studio owner Nick Sparks, producer/engineer Mike Clute, and mastering engineer Tommy Dorsey. Top: George Massenburg addresses the audience.

ACID™ PRO 2.0

LOOP BASED MUSIC CREATION TOOL



"WHAT ACID
DOES FOR
ME IS
UNPRINTABLE"

"Censors would be all over me if you printed the first words that come out of my mouth regarding ACID PRO. What you can print is that this is an astonishing, revolutionary program. *There is nothing like it.* I do a ton of remixing for today's top artists, and *ACID PRO has changed the very way I work.* It takes the guesswork out of loop based composition and gives me more time to devote to actually creating. As long as I'm alive and making records and searching out and producing artists, ACID will be a part of it. It's killer. Can you print that?"



- Tempo and pitch changes in real time
- Automatic matching of tempos and pitch
- Audition files in real time
- Non-Looping audio support
- Record in
- Unlimited tracks
- Generates and chases MIDI Time Code
- Onboard effects - XFX 1 included
- Track-at-Once CD burning
- Editing - Sound Forge XP 4.5 included
- DirectX Audio Plug-In support
- 24- and 16-bit audio support
- Multiple audio output support
- Volume, pan, and effects envelopes for each track
- Unlimited undo/redo
- Track bouncing (mix to new)
- Adjustable stretch properties
- Export each track as a single file
- Tempo maps
- Multiple time stretching algorithms
- Snap-to grid
- Hundreds of loops included
- Export/Save as .wav, .wma, .mp3, .aif, .rm

KEY INFO #203

Doug Beck remix artist / music producer
Shania Twain, Backstreet Boys, Britney Spears, Cyndi Lauper, The Fixx



CIRCLE 70 ON FREE INFO CARD



SONIC FOUNDRY®

SONICFOUNDRY.COM

SAE TO OFFER SUMMER PRO TOOLS WORKSHOPS

On the heels of completing their first year as a part of the Nashville recording community, SAE Institute is responding to the increasing demand by local engineers who are seeking an education in Pro Tools operation and technology.



The popularity and flexibility of Digidesign's 24-bit systems has practically made it a necessity for many engineers to take the time to expand their knowledge base and learn the technology. SAE's goal is to offer this opportunity to Nashville by creating a concentrated, comprehensive course that, upon completion, will give participants a working knowledge of Pro Tools with a minimum time commitment on their part.

Four different Pro Tools workshops will be offered during the summer months. They will include 16 hours of seminar and a minimum of eight hours of

practical experience, which is hands-on project work on one of SAE's many Pro Tools systems. SAE is offering the lecture portion of the course in two formats: a week-long option or two consecutive Saturdays. The practical experience for all terms can be scheduled at the student's convenience.

The cost of the course is \$795 and discounts are being offered to studios enrolling more than one staff member. Private tutorials are also being offered at an increased fee. Upon completion, participants receive special discounts on Pro Tools systems from the local Digidesign specialists, Audio One.

For more information, contact SAE at 615-244-5848.

AUDIO LEVELS & READINGS: A NEW BOOKLET FROM DK-AUDIO FOR SOUND ENGINEERS

DK-Audio aims to offer know-how and training to audio engineers with their new booklet entitled *Audio Levels & Readings*. Now in its second edition, the booklet offers some insight into the why, what, and how of audio metering, and can be used as a quick reference book or as an audio metering brush-up tool.

Written by Danish audio metering expert

Eddy Bogh Brixen of DELTA (an affiliate of The Danish Academy of Technical Sciences) and currently AES chairman of the Danish section, the booklet covers a lot of useful ground. Some of the chapters include: "Why are we using the dB scale?" "What is a meter doing?" "What is integration time?" and "The measurement of digital signals."

The *Audio Levels & Readings* booklet is enclosed with all Master Stereo Displays from DK-Audio, but is also available free of charge from DK-Audio or one of their international distributors.

For more information, contact DK-Audio at (+45) 44 85 02 55 or visit www.dk-audio.com.

HITQUARTERS.COM: A NEW INTERNET SERVICE

Designed to direct songwriters, producers, and musicians to the right person within a notoriously complex music industry, HitQuarters.com is a new and unique Internet service.

HitQuarter's search feature, HitTracker, will enable one to see who was credited for breaking a particular act. Their record company A&R, publisher, producer, and manager will be displayed from a huge directory that highlights their recommendation status, which is evaluated in view of an individual's track record within the industry. Users will be able to target those people who are certain to fit their particular requirements, and customize their contacts within the industry. This is in contrast to what happens today, with many "hitseekers" directing their efforts at whatever comes out of the yellow pages.

The site is financed by banner ads and therefore free of charge for its users, and will also feature newsletters, charts, chat rooms, recommended links, articles, and an ad service where users can buy and sell equipment or post a business card. A World A&R Top Ten will also enable users to see who are the most valued and successful players in the industry at any given moment.

For more information, contact www.HitQuarters.com at (+31) 20 337 08 49.



Getting the Right Gear Should Be Hassle-Free & Risk-Free.



FREE SHIPPING
LIMITED TIME OFFER
SEE SITE FOR DETAILS

{And Sometimes Just Plain Free.}

Welcome to zZounds.com

At **zZounds.com**, we're changing the way you buy gear. You'll find top-name guitars, keyboards, drums, recording equipment, MIDI gear and software—even sheet music and books—all in one place. Add unbeatable prices, great service, and tons of free resources to the mix—and you can see why thousands of musicians have already made **zZounds.com** their music store on the Web.

- **The best prices on Earth—guaranteed**
- **30-day, no-questions-asked money-back guarantee**
- **More than 120,000 products with instant Real-Time Stock Checking™**
- **1000s of user & expert product reviews**
- **Late-breaking product news**
- **Expert advice before & after you buy**

Oh yeah, about the free gear. (After all, that's why you stopped to read this ad, right?) Every day, until the boss comes to his senses, we're giving away gear. Not last year's left-handed kazoo, but cool stuff you'll actually be happy to win, like Mackie mixers and Roland keyboards. Just go to www.zZounds.com/free and find out what we're giving away today.

zZounds.com—all the gear you need, with no hassles, no risk, and (just maybe) no cash. How's that for a change?



Recording & Live Sound



Drums, Percussion & World Instruments



Keyboards, MIDI Gear & Software



Guitars & Basses



Books & Sheet Music



Reviews, Buying Guides & Product News



The Best Music Gear Auction



You bring the passion. We'll supply the rest.

CIRCLE 66 ON READER INFO CARD

EQ

PRODUCT VIEWS

CASE CLOSED

Chicago Case Co.'s newest product, a carry-on-board case for microphones, fits all new restrictive carry-on size requirements for airlines. Its custom foam insert has 21 two-inch holes to protect enough microphones for a complete show or session. An additional two-inch slot across the front holds extras such as direct boxes, cables, and other accessories. It was designed to meet the needs of sound engineers who depend on carrying their mic kit with them for "fly-ins" and "one-offs." For more information, call Chicago Case Co. at 773-927-1600. Circle EQ free lit. #115.



ACCESS GREAT SOUND

Access Music Electronics' Virus Indigo synthesizer is compact enough to be a companion for a laptop-based portable studio, yet boasts features such as 24 voices/16-way multi-mode, 512 sounds (256 RAM/256 ROM/128 multies), four oscillators per voice, three main oscillators plus one sub oscillator, two fully independent filters per voice (low-pass, high-pass, band-pass, and band-reject), multiple independent saturation/distortion/lo-fi effects per voice, and more. Included with the product is a free Emagic editor/librarian for Windows and Mac OS.

For more information, call Access Music Electronics at (+49) 23-61-90-2956 or visit www.access-music.de. In the U.S., Access is distributed by GSF Agency, which can be reached at 310-452-6216. Circle EQ free lit. #116.

COMFORT ZONE

Steinberg presents a whole new system for accurate and steady MIDI timing for Mac and PC systems running Cubase VST 5. The Midex 8 is a USB MIDI-Interface that supports the new Steinberg LTB technology (Linear Time Base). LTB is said to provide constant and controlled MIDI-Data-Transmission with a precision to 300 microseconds. Midex 8 connects to the computer's USB port with one cable and offers drivers for Macintosh and PC computers. Midex 8 also features eight MIDI inputs and eight MIDI outputs, and comes in a 19-inch housing with radical new design. It can be comfortably placed on the desktop or installed in a rack with the included rack ears. Power is supplied via USB. The Midex 8 is available for \$399. For more information, call Steinberg at 818-678-5100 or visit them at www.us.steinberg.net. Circle EQ free lit. #117.



4-CHANNEL COLOR

Fostex recently unveiled new color options for its X-14 four-track cassette multitracker. Referred to as the "ideal musical sketch pad," the X-14 is now available in transparent red and blue. The X-14 combines a four-track cassette recorder with a four-channel mixer. Simple to operate right out of the box, the unit features a built-in condenser microphone, mic/line inputs, and headphone/line outputs. The X-14 provides mixdown capabilities to a stereo master and allows the mixing of individual track levels as well as placement within the stereo image. For more information, call Fostex at 562-921-1112 or visit www.fostex.com. Circle EQ free lit. #118.



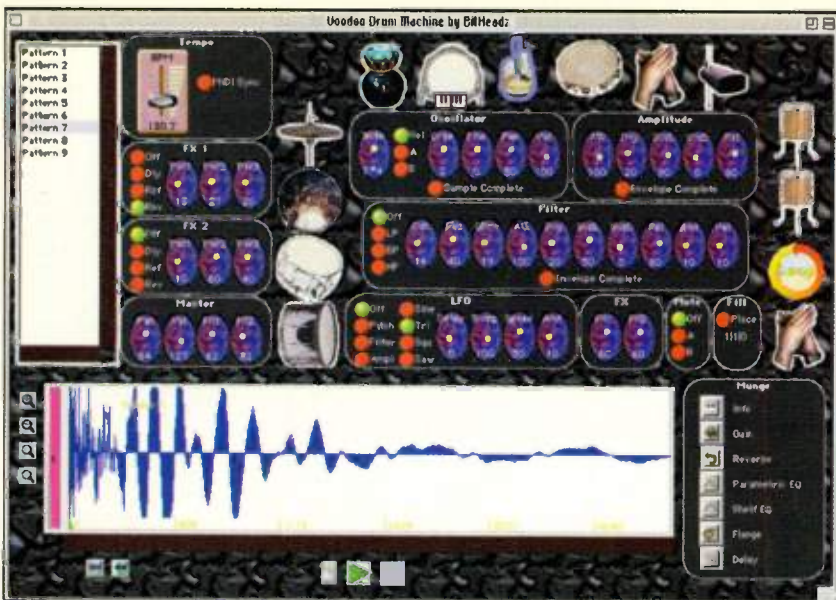
WARM AND DIRECT

Aguilar Amplification has announced the introduction of the DB 900, a high-quality tube direct box. The DB 900 features an ultra-low distortion circuit, and is claimed to "sound warm and open throughout the entire frequency range." The DB 900 offers an all-tube signal path, a Jensen transformer providing a balanced output, and a 10-year limited warranty. Specifications include: input impedance of 12.8 megaohms, balanced output impedance of 880 ohms, unbalanced output impedance of 150 ohms, noise rating of -98 dB, distortion of .025 percent, unity unbalanced output, a -20.5 dB balanced out, and an operating voltage of 100, 120, or 230 VAC. The DB 900 carries a price of \$529. For more information, call Aguilar Amplification at 212-431-9109 or visit www.aguilaramp.com. Circle EQ free lit. #119.

EAGER EDITOR

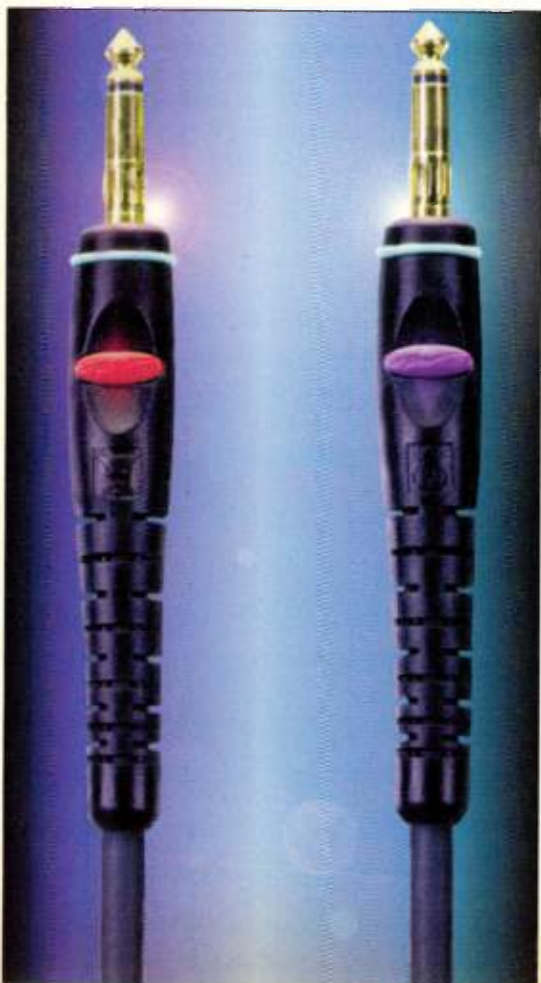
Sequoia is the name of the new audio editing system from SEK'D. Based on the Samplitude and Red Roaster software applications, this new program provides a special mode of operation (Four-Point-Cut mode), which is optimized with regard to efficient and reliable four-point-cuts. In this mode, the source material is always visible in the lower half of the screen. In the upper half, the destination tracks are displayed. Both parts can be navigated and played back independently. Features of the Sequoia hardware include 24-bit multi-channel quality with complete audio and video synchronization, symmetrical I/Os with a functional 19-inch breakout box, 24-bit/96 kHz A/D and D/A converters, 32-bit on-board digital mixer/patchbay, and much more. For more information, call SEK'D at 800-330-7753 or visit www.sekd.de. Circle EQ free lit. #120.





GROOVY VOODOO

BitHeadz has released Version 1.2 of the Voodoo Software MIDI Drum Machine that combines sampling, synthesis, and MIDI sequencing into one package designed for rhythm programming. Version 1.2 includes optimization for Apple's G4 processor, providing users with expanded polyphony, higher resolution effects, and improved performance of the application. Voodoo 1.2 also supports the Digidesign DirectConnection plug-in format for Pro Tools users. DirectConnect allows the audio output of Voodoo to be streamed directly to the Pro Tools mixing environment for mixing and processing. DirectConnect is free and is now available for both Pro Tools Mix and Pro Tools LE systems. For more information, call BitHeadz at 831-465-9898 or visit www.bitheadz.com. Circle EQ free lit. #121.



PLANET OF CABLES

Planet Waves has introduced a new line of instrument cables with standard 1/4-inch connectors and a lifetime warranty. The cables' gold-plated plugs have patent-pending compression springs to guarantee a positive connection into standard 1/4-inch jacks, as well as double-molded connectors that provide extra protection with unmatched strain relief. The special double-insulated/double-shielded cable design provides a clean signal, while eliminating hum and triboelectric noise, and convenient, color-coded O-rings allow for easy identification when multiple cables are plugged into sound reinforcement equipment. For more information, visit www.planet-waves.com. Circle EQ free lit. #122.

Go to
Summer NAMM
a day early

See demos of
Pro Tools
and products from:

DIGI WORLD

- Access
- Antares
- Aphex
- Comb Factory
- GM Automation
- Dolby
- Drawmer
- Focusrite
- IVA-GRM
- Mid Df Loud
- Koblo
- Lexicon
- Line 6
- Magma
- McDSP
- Serato
- Sound Dogs
- Synchro Arts
- Wave Mechanics
- Waves

DigiWorld
Nashville

July 20, 2000

@ Emerald Sound
Studio

Mixing with Pro Tools

Master Class with Charles Dye
Engineer of Ricky Martin's
Livin' La Vida Loca

Register now
space is very limited

1-800-333-2137 code 601

www.digidesign.com

digidesign

A division of **Avid**
CIRCLE 67 ON FREE INFO CARD



NIM

Garbage
Lenny Kravitz

Beck



Everclear

Filter

Limp Bizkit

www.digidesign.com

digidesign[®]

A division of **Avid**

1.800.333.2137, code **591**

They all use Pro Tools.[®]
Look into their stories on our site.

www.digidesign.com/users

© 5/2000. Digidesign, a division of Avid Technology, Inc. Digidesign and Pro Tools are trademarks or registered trademarks of Avid Technology, Inc., or its subsidiaries or divisions. All other trademarks contained herein are the property of their respective owners.

CIRCLE 69 ON FREE INFO CARD

EQ

PRODUCT VIEWS

LOGICAL MAGIC

Emagic has announced the arrival of Version 4.5 of Logic Audio. The latest stage in the evolution of the popular professional audio/MIDI sequencer, Logic Audio 4.5 features major enhancements to the mixer functionality. These include not only the introduction of a comprehensive surround functionality, but also a new class of Audio Objects, called Audio Inputs, that significantly furthers the value of the integrated real-time effects system. Version 4.5 also supports the new Studio Description Language, an Emagic development for the description of MIDI devices that provides detailed control over complex studio setups. This being a new release, scheduled for an official availability in August 2000, Emagic notes that the above features may change up until the official release date. For more information, call Emagic at 530-477-1051 or visit www.emagic.de. Circle *EQ* free lit. #123.



MIX MASTER

Stanton has introduced the world's first DJ mixer with a true optical fader, the SK-2F (SK-2 mixer with Focus Fader). The Focus Fader has numerous advantages over regular faders, such as extra long life (no contacts or graphite material to wear out since it is a true optical fader); super-sharp cutoff; no fader resistance; super quiet componentry (no more "crackly" noises); and no bleeding. Beyond the fader, some other features differentiate this mixer from the original SK-2, such as an input meter, featuring a new bar graph LED meter; an all-silver body with a blue anodized aluminum Protekt panel (double front panel where all screws are hidden underneath but the faders and line switches are still user-replaceable); and a headphone mute function, as found on the SK-1 and SK-5. The switch is located just below the LED meter, within the acrylic display, placed in a central location between the cross and channel faders for on-the-fly muting of the headphones. For more information, call Stanton Magnetics at 954-929-8999. Circle *EQ* free lit. #124.

GET ON BOARD

Samson's new AirLine Series UHF wireless systems feature transmitters with minimized circuitry that operate on a tiny AAA battery with 14-hour battery life, along with significantly improved wireless reception and sound quality. The AR-1 micro receiver is small, lightweight, and comes complete with a full complement of controls. Available systems include the AH1/Qe UHF wireless fitness system, which features a tiny, featherweight transmitter mounted onto a comfortable and unobtrusive headset; the AL1 wireless presentation system, which features an all-in-one miniaturized presentation transmitter with a built-in electret condenser microphone; the AX1 UHF wireless microphone system; the AH1/Qv UHF wireless performance system; the AF1/AG1 UHF Wireless Guitar System; and the AH1/Pro35X UHF wind instrument system. For more information, call Samson at 516-364-2244 or visit www.samsontech.com. Circle *EQ* free lit. #125.



Armoured Cable.

You can't get better connected than this.



One look at the stainless steel covering is all it takes to know that Armoured Cable is rugged.

But the important story is the quality of sound you get with our microphone, instrument and patch cables. True full frequency audio with all of your voice or instrument captured intact.

Armoured Cable. The only way to make the right connections.



**ARMOUR'D
CABLE**

PROTECT YOUR SOUND

For more about Armoured Cable please call 516-364-2244, fax 516-364-3888 or email sales@samsontech.com • www.samsontech.com • ©2000 Samson

CIRCLE 84 ON FREE INFO CARD

TASCAM US-428 Desktop Audio Controller

BY STEVE LA CERRA

Universal Serial Bus (aka "USB") can be a beautiful thing, and there's plenty of evidence of this in the recent release of TASCAM's US-428 desktop audio controller. Using a single USB connection to your computer, the US-428 (developed jointly by TASCAM and Frontier Design Group) provides a hands-on work surface for digital audio recording and sequencing software, along with an integral USB-to-MIDI interface, and a four-input x two-output digital audio interface with up to 24-bit/48 kHz sample rate resolution. The US-428 doesn't require a card slot, and you won't even need to open your computer's chassis to get it up and running. Roughly the size of a Portastudio, the US-428 has the appearance of an audio mixer, and is intended for use with either Mac OS or PC/Windows computers via ASIO 2.0, OMS, and MME audio and MIDI drivers.

Housed in a desktop chassis, the US-428 features four audio input channels designated as A, B, C, and D. The A and B inputs each include a balanced XLR mic input and a 1/4-inch TRS line input. The C and D channels have balanced 1/4-inch TRS inputs (one per channel) with a two-position switch enabling them to accept unbalanced, high-impedance guitar signals. Also provided for inputs C and D is an "analog/digital"

switch. Since the US-428 has an S/PDIF digital I/O, you can feed digital audio from an external source (such as a sampler) directly into the unit. By switching inputs C and D to digital, any S/PDIF signal can be routed into your computer's recording software without the need to change the cable patching configuration. All four input channels have dedicated trim controls for setting level to disk, as well as a green LED for signal present and a red LED to indicate the onset of clipping. The trim controls operate independently of the channel monitor faders, allowing optimum signal level to be recorded. Four analog inputs or two analog and two digital inputs may be recorded simultaneously.

The US-428 provides two output

channels available for use either as a stereo pair or two mono channels, with a single master fader for level control over both channels. A pair of analog stereo master outputs can function as control room monitor outs, while the S/PDIF output can simultaneously be used to route signal to a digital mix-down deck. A stereo headphone output with level control is also provided.

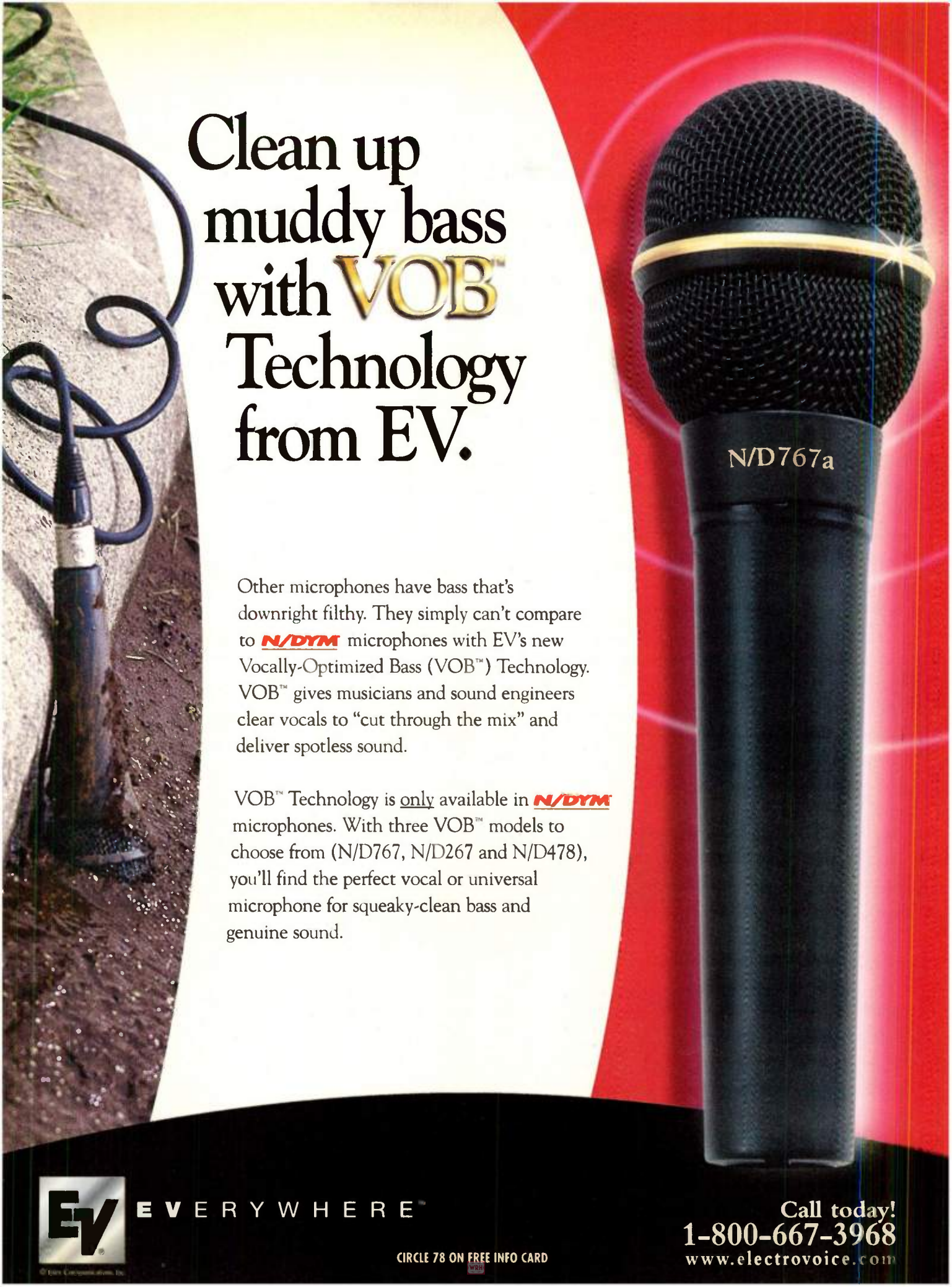
Each of the US-428's eight channels includes a fader, dedicated mute switch with status LED, a select switch with status LED, and a red "record" LED. Like many digital mixers, a channel is accessed by pressing the select switch, and then using the US-428's pan knob, jog wheel, and EQ controls (found

continued on page 145

TASCAM US-428 Desktop Audio Controller

What is it?	A compact digital audio and MIDI interface and fader control surface that connects to your computer via USB.
Who needs it?	People who don't want to give up a PCI slot for a MIDI or audio interface, who don't want to open up their computer chassis to install expansion cards, or who want a hardware control surface.
Special notes:	Can be used with both Mac OS and Windows. Comes bundled with Steinberg's Cubasis VST software and Xing's Audio Catalyst MP3-encoding software for both Macs and PCs.
Shipping:	Summer 2000
Suggested retail price:	\$599
Contact:	TASCAM, Tel: 323-726-0303, Web: www.tascam.com
EQ free lit. #:	101





Clean up muddy bass with **VOB™** Technology from EV.

Other microphones have bass that's downright filthy. They simply can't compare to **N/DYM** microphones with EV's new Vocally-Optimized Bass (VOB™) Technology. VOB™ gives musicians and sound engineers clear vocals to "cut through the mix" and deliver spotless sound.

VOB™ Technology is only available in **N/DYM** microphones. With three VOB™ models to choose from (N/D767, N/D267 and N/D478), you'll find the perfect vocal or universal microphone for squeaky-clean bass and genuine sound.

EV EVERYWHERE™

CIRCLE 78 ON FREE INFO CARD

Call today!
1-800-667-3968
www.electrovoice.com

Audio-Technica AT895 Adaptive-Array Mic System

BY STEVE LA CERRA

Audio-Technica's AT895 adaptive-array microphone system is one of the more unique mics to cross our paths in quite a while. Designed for use in sports broadcasting, electronic news gathering, and surveillance applications, the AT895 uses Audio-Technica's proprietary DeltaBeam technology to provide high rejection of off-axis sound, even at frequencies as low as 200 Hz.

The AT895's body houses five separate, fixed-charge backplate condenser elements, including one Audio-Technica Micro-Line element and four cardioid elements. Audio pickup of this five-element array is manipulated and filtered through digital, analog, and acoustical processing in an effort to maximize directionality of the mic under varying circumstances in real time (DSP is via DSDA-PRO software by Lamar Signal Processing Limited). The result is superior off-axis rejection of unwanted sounds such as wind, mechanical, and background noise. A typical shotgun mic with a tube length of roughly 15 inches offers a maximum off-axis rejection of around 30 dB; at 14 inches long, the AT895 is capable of providing up to 80 dB of off-axis rejection. At 90 and 270 degrees off-axis, rejection for a frequency of 200 Hz is 70 dB for the AT895 versus 15 dB for the shotgun.

The AT895 is powered by the AT895CP control pack, a small belt-type power supply, which provides power, DSP, and control for microphone functions. The control pack features a three-position pickup pattern switch with settings for full-field

adaptive, planar-adaptive, and line + gradient patterns. The two adaptive patterns allow the AT895 to "analyze" its environment and manipulate the output of the array to maximize rejection. The full-field adaptive setting provides the maximum directionality and off-axis rejection, while the planar-adaptive pattern limits

the vertical angle of audio pickup — resulting in a pattern resembling a narrow ellipse. The line + gradient pattern allows the AT895 to pick up sound in a traditional shotgun polar pattern. Filtering options include low-pass at 80 Hz with an 18 dB per octave slope, and bandpass from 300 Hz to

continued on page 145

Audio-Technica AT895 Microphone

What is it?	A multi-element mic designed for extreme rejection of unwanted sounds.
Who needs it?	Any engineers involved in miking sporting events, electronic news gathering, or distant pickup of nature sounds.
Why is it a big deal?	Because its pickup pattern is far more directional than shotgun or parabolic mics.
Special notes:	Although the AT896 uses multiple elements, its audio output is delivered on a standard three-pin XLR connector. AT895 adaptive-array microphone systems are available in two packages. The AT895/RK remote kit includes a 10-foot cable, click-on battery cartridge, shock-mounted pistol grip, windscreen, and case. The AT895/MK Mount Kit includes a 25-foot cable, shock-mount plate with 5/8-27 mounting thread, and a 120-volt AC power supply.
Shipping:	Now
Suggested retail price:	\$2,995 for the AT895/RK, and \$2,595 for the AT895/MK.
Contact:	Audio-Technica, Tel: 330-686-2600, e-mail pro@atus.com , Web: www.audio-technica.com
EQ free lit. #:	102



Mix & Match

Adding to the already versatile DA7 Digital Mixer, our latest software (Ver. 2.01) allows the DA7's transformation into a mixing control surface for DAWs; Pro Tools, Steinberg and MOTU Digital Performer 2.7.

The Panasonic DA7 is also the perfect mixer for the trailblazing studio with a TASCAM MX-2424, Mackie HDR24/96 or a combination of recorder and DAW. Its 38 inputs including 16 mic/line ins with 24-bit A/Ds, plus up to 24 digital I/Os give it both the audio quality and functionality for professional 24 track recording.

As the proven solution for interfacing and controlling the hottest new products, with their new formats and standards, the DA7 will make the match while you get busy mixing the tracks.

Taking Digital Further.....



Panasonic

PANASONIC PROFESSIONAL AUDIO

For more information call: **1-800-528-8601**

3330 Cahuenga Blvd., Los Angeles, CA 90068 • 3234363617 • www.panasonic.com/proaudio
Distributed in Canada by: Panasonic Canada Inc. • 905-238-2115

All trademarks are copyright of their respective owners.

WRN



18 Tracks / 24-bit

The VS-1880 offers full 18-track simultaneous playback, 288 Virtual Tracks for trying out all your ideas, and 24-bit A/D-D/A converters for superb, award-winning sound.



CD Burning

With the optional CD Recording System*, you can burn your own audio CD's and back up your projects to CD-R at blazing speeds.



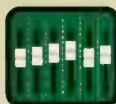
FREE Emagic® Music Production Software

Every VS-1880 includes a FREE copy of Emagic's® award-winning Logic™ VS music production software, so you can edit and mix your VS-1880 tracks alongside your MIDI sequences in an integrated computer-based production environment.



Unrivaled Effects

By installing optional VS8F-2 Effect Expansion Boards*, you get up to 4 stereo/8 mono effects processors including studio-caliber reverbs, delays and chorusing, vintage effects simulations, and innovative COSM Guitar Amp, Microphone and Speaker Modeling.



Automated Digital Mixing

Perfect your mixes with the VS-1880's built-in 28-channel digital mixer, which includes time-saving dynamic automation capabilities and routing options galore.



Mastering Tools

The Mastering Tool Kit* gives you professional CD mastering tools including split-frequency compression, full parametric EQ's, extensive dynamics control and preset mastering templates—cleanly integrated into the V-Studio recording environment.



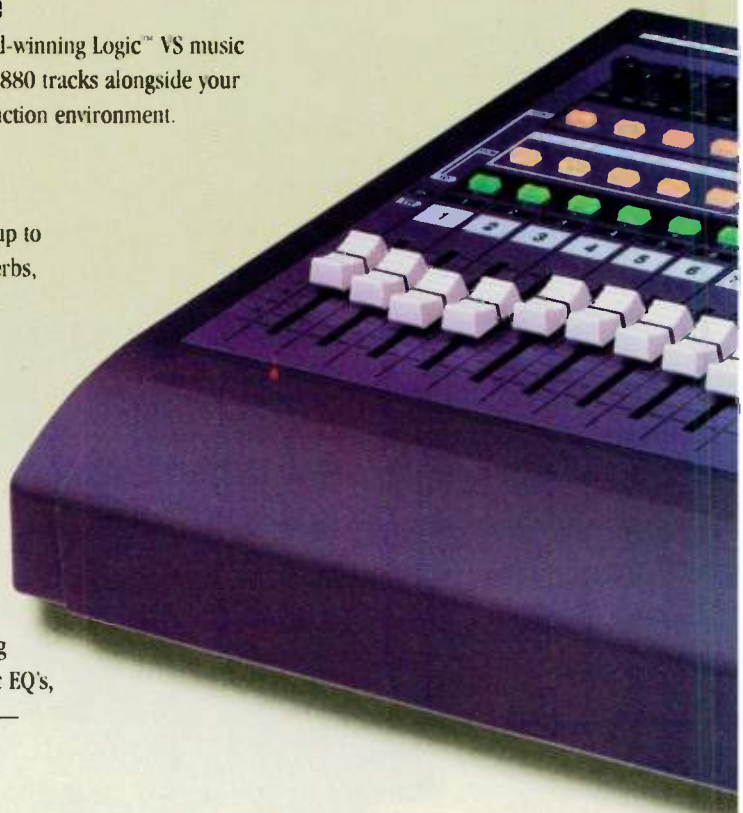
Industry-Leading Support

Answers to any operational questions you may have—from day one through day one million—are never far away, thanks to Roland's extensive product support team.



Proven Performance

When you buy a VS-1880, you're buying into a proven digital studio technology used by nearly 200,000 musicians, engineers and producers worldwide.



*Optional Effects Expansion Boards and CD Recording System sold separately. CD Mastering and Mastering Tool Kit require these optional purchases.

15

16

17

18 TRACKS

The New Measure of Recording Power

When it comes down to it, you can never have enough tracks... or effects... or convenience... or power. That's the thinking behind the new Roland VS-1880 Digital Studio Workstation. It's the ultimate integrated recording studio from the company that revolutionized personal hard disk recording. Any other studio, quite frankly, doesn't measure up.



Roland[®]

VS-1880 24-bit Digital Studio Workstation

Call 800-386-7575, ext. 2595 for your \$5.00 Demo Video. Faxback Information: (323) 890-3780 doc.# 10418 www.rolandus.com

CIRCLE 34 ON FREE INFO CARD



The Blasting Room

ALL's studio provides a Rocky Mountain alternative to the usual urban studio setting

BY STEVE LA CERRA

STUDIO NAME: The Blasting Room

STUDIO LOCATION: Fort Collins, CO

KEY CREW: ALL (Bill Stevenson, Chad Price, Stephen Egerton, and Karl Alvarez), Jason Livermore (engineer)

CREDITS: The band ALL has released nine full-length albums since 1988, including *Allroy's Revenge*, *Trailblazer*, *Breaking Things*, *Pummel*, *Mass Nerder*, and their newest CD entitled *Problematic*.

MIXING CONSOLE: Solid State Logic SL6000E, 56-input with a G-series computer, VCA automation, and Total Recall

MONITORS: Yamaha NS10M; KRK 5000

RECORDERS: Otari MTR90III two-inch 24-track; Panasonic SV3700 [2]; Studer A80 1/2-inch two-track analog machine; TASCAM 122 Mk. III cassette deck

OUTBOARD: API 550b equalizer [4]; TLAudio stereo tube equalizer and stereo tube compressor [2]; UREI LA22 stereo compressor; Drawmer DL241 stereo compressor and DS404 quad gate; Gatex Quad Gate

EFFECTS: AMS RMX digital reverb; Lexicon 480L; Eventide H3500 Harmonizer; Yamaha SPX1000 [2], SPX900, and SPX90; Roland SIDE1000 digital delay

MICROPHONES: Neumann U 87; AKG C414 [2], 391 [4], and D112 [2]; Sennheiser MD421 [4]; beyerdynamic M88 [2]; Shure Beta 57 [3], Beta 58 [2], SM81 [2], 55SH [2], SM58 [20], SM57 [4], and SM91 boundary mic [2]

MIC PREAMPS: Focusrite

ISA 215 dual mic preamp/EQ and Model One 4-channel mic preamp

SAMPLERS/SYNTHS/MIDI GEAR: Roland JV80 keyboard and R70 drum machine

INSTRUMENTS: Guitars: Ampeg Dan Armstrong with EMG pickups [4]; Gibson Les Paul Custom [2] and Les Paul Jr. [1]; Basses: Fender Precision Bass; Musicman Stingray; Drums: Drum Workshop (various sizes); Yamaha Maple Custom (12-, 14-, 16- and 22-inch sizes); DW, Tama, and Pearl snare drums; Paiste and Zildjian cymbals

INSTRUMENT AMPLIFICATION: Marshall JCM900; Mesa Boogie Dual Rectifier and Tri-Axis, model 50/50 tube power amplifier; ADA MPL preamplifier; Gallien-Kruger GK 800 RB bass amps [2]; Ashly BP41 bass preamp

STUDIO NOTES: In 1994, members of Descendents, ALL, and Black Flag built The Blasting Room as a refuge from the typical urban environment locale of many studios. The studio's location in Fort Collins is 45 minutes north of Denver, CO, in the foothills of the Rocky Mountains (The Blasting Room is the only studio in the

mountain states-region of the U.S. with an SSL console). In addition to the control room and main studio room, there are iso booths with dimensions of 9 x 3 x 9 feet [2] and 9 x 8 x 9 feet [1].

PRODUCTION NOTES: ALL bandmember and producer Bill Stevenson explains that his method of working at The Blasting Room "really depends upon the band and bandmembers we're working with. I don't have a particular way of recording. For example, if the band wants to track the instruments live, then we'll do it live. But if one of the members feels uncomfortable, then we might do just drums and bass, and then overdub the guitars. It's the same when it comes to lead vocals. If the singer is into getting picky, then we'll do punches and fixes, but if they just want to sing, then we'll record a bunch of tracks and I'll comp to get the vocal take. It's more about tailoring the recording situation case-by-case so that the band is comfortable with what they're doing."

Visit The Blasting Room Web site at www.allcentral.com/br/brochure.html **EQ**



PHOTO BY JASON CHINNOCK



THE GRAND CANYON Arizona



GIANDOMENICO STUDIOS | Collingswood, NJ



CATHEDRAL OF ST. JOHN THE DIVINE New York, NY

AVATAR ENTERTAINMENT New York, NY



IN SEARCH OF THE PERFECT REVERB...

MECHANICS HALL



OCEAN WAY RECORDING | Los Angeles, CA



PRO AUDIO REVIEW 1999 REVIEWER'S PICK



FREE SOFTWARE OFFER with purchase of DRE-S777.

A \$895 value!
See your authorized Sony dealer for more information.

Valid through September 30, 2000.

We've sampled and captured the actual reverberant characteristics of some of the finest acoustic environments in the world. Why? Because this is the underlying principle behind the Sony DRE-S777 Digital Sampling Reverberator.

The DRE-S777 uses highly advanced signal processing to capture real sound spaces with incredible, detailed precision. The result? The most realistic reverb ever... because it recreates the "real" ambience of actual

concert halls, cathedrals and studios. To quote Tom Jung from the 12/99 issue of Pro Audio Review, the DRE-S777 is "Second only to being there." An entire CD-ROM filled with some incredible sounding plates and spaces comes with the unit*.

A growing library of optional CD-ROMs is available including "European Halls & Churches" and the latest US release that includes some great American studios, churches, concert halls and the ultimate reverberant space, the Grand Canyon.

The proof is in the listening, so call 1-800-472-7669 ext. S777 today to order your Free Demonstration CD and VHS video tape and experience the difference between reverb effects and "real" space.



SONY

1-800-472-SONY ext. S777
www.sony.com/proaudio

©2000 Sony Electronics Inc. Reproduction in whole or in part without written permission is prohibited. All rights reserved. Sony is a trademark of Sony. *Media shown are available on optional CD-ROMs.

Home Grown

Mike and A.J. Mogis record indie bands — and themselves — in their Lincoln, Nebraska basement studio

STUDIO NAME: Dead Space Studio

LOCATION: Lincoln, NE

KEY CREW: Mike and A.J. Mogis, owners and engineers

CREDITS: Projects for “indie-rock” labels Crank! (Boy’s Life, Christie Front Drive, Cursive); Flydaddy (sideshow), Bar/None (Lullaby for the Working Class [Mike and A.J.’s band]); Saddle Creek (Cursive, The Faint, Bright Eyes); Caulfield (Giants Chair, MIJ, Luck of Aleia); and Secretly Canadian (Songs Ohia, Swearing at Motorists)

MIXING CONSOLE: Studer M-904 (26 x 16 rare recording console)

MONITORS: JBL 4406

RECORDERS: Studer A-800 2-inch 16- and 24-track; Ampex ATR-102 1/2-inch 2-track (rebuilt by Mike Spitz at ATR Service); TASCAM DA-88 24-track [3] and DA-30 DAT; Casio DA 7 portable DAT

DIGITAL AUDIO WORKSTATION: Digidesign Pro Tools 24Mix+ (three 24-bit 888 I/O plus lots of DSP)

OUTBOARD GEAR: Smart Research C2 [2]; Telefunken V73 [2]; Manley Electro-Optical Compressor [2]; Crane Song STC-8 [2]; Empirical Labs Distressor [2]; Purple MC76 [2]; TLAudio Tube Compressor; dbx 172 Super Gate

EFFECTS: Lexicon PCM-80; TC Electronic M-3000; Rocktron Intellifex

MICROPHONES: AKG C3000 [2], C414 B-ULS [2], C408 [2], C451E [2], and D112; beyerdynamic M-500 Classic Ribbon; Earthworks TC30K [2]; Neumann KM-184 [2] and TLM-103 [2]; Realistic PZM [2]; Røde Classic Tube; Royer R-121 Ribbon [2]; Sennheiser 421 [3] and 441 MD [2]; Shure SM57 [4]

MIC PREAMPS: Neve 9098 [2] and vintage 1272 [2]; Telefunken V-72 [2]; Calrec PQ-15S [2]; Manley Vox Box [2]; TLAudio Tube EQ

STUDIO NOTES: According to A.J. Mogis, “Dead Space Studio is in our basement. We record local bands, and some that aren’t so local. The studio combines the best aspects of

digital and analog recording. Both the Studer and the Pro Tools are new arrivals to us and are sort of dictating a move from our basement to a commercial facility.”

PRODUCTION NOTES: Mogis continues, “Typically, we do drums first because we don’t have a lot of isolation space where we can keep the drums from leaking into the acoustic guitar mics, for example. Then we’ll do acoustic guitars or bass. We’ve recorded string sections where we’d have couple of cellos and a violin, and we put them up in our kitchen because it’s nice and lively in there — a nice natural ambience. We’ve tried a few different things when recording strings. We’ve taken a pair of Earthworks TC30K’s and used them as spaced omnis; and we’ve also tried close-miking the instruments with a couple of Neumann TLM103’s, and then we kind of augmented that with the Earthworks set-up to get some serious ambience.

“For the outro on our album, *Lullaby for the Working Class*, Mike [Mogis] took the notes from the guitar line of a previous song on the album and recorded multiple tracks of an E-Bowed pedal steel guitar to create a droning sound. (We ran the pedal steel through an Ampeg 110 combo and miked it with a Royer ribbon mic.) He took the notes and turned them into a big, dense chord, and brought different notes in and out using the automation in Pro Tools. He recorded something like eight or ten tracks of individual notes, then faded stuff in and out. We also threw some recordings of our dishwasher and our van’s running motor into the outro. It was a real eleventh-hour sort of thing.”

EQ





Neumann KM-84i

A look at the
predecessor to the KM 184

MICROPHONE NAME: Neumann KM 84i
FROM THE COLLECTION OF: Dave Fontaine and Tom Atkins, High Strung Productions
PRICE WHEN NEW: Approximately \$495 ca. 1988

YEARS OF MANUFACTURE: 1966 through 1988
TYPE OF MIC: FET condenser

ACOUSTICAL OPERATING PRINCIPLE: Pressure gradient transducer

POLAR PATTERN: Cardioid

FREQUENCY RANGE: 40 Hz to 20,000 Hz

SENSITIVITY @ 1 kHz: 10 millivolts/Pa

RATED SOURCE IMPEDANCE: 200 ohms (switchable to 50 ohms)

SIGNAL-TO-NOISE RATIO: 70 dB (according to DIN 45 590, reference level of 1 Pa)

MAXIMUM SPL FOR LESS THAN 0.5% DISTORTION: 120 dB (130 dB with pad on)

POWER SUPPLY: 48-volt phantom, ± 4 volts

CURRENT CONSUMPTION: 0.4 milliamps

DIMENSIONS: 21 mm (diameter) x 110 mm (length)

MIC NOTES: Predecessor to Neumann's current KM 184 microphone, the KM84i was one of a series of small-diaphragm microphones that included the KM 83i (omni) and the KM 85i (cardioid with a low-frequency rolloff). Essentially these three mics are identical except for their interchangeable, screw-on capsules. Another microphone in the 80-series — the KM 86i — featured a dual-capsule design that allowed it to be switched between figure-eight, cardioid, and omnidirectional patterns.

USER TIPS: The Neumann KM84 has become an extremely popular choice for miking hihat. Since the mic has an integral 10 dB pad switch, it can handle the SPL from heavy, loud hihat cymbals. When using the pad switch, care should be taken not to damage it. We suggest using a paper clip or small screwdriver to slide the pad switch to the -10 dB position (exert a minimum of downward pressure on the slide). Try placing a KM 84 above the top hihat cymbal about two inches from the outer edge, four to six inches from the cymbal surface. To control leakage from the rest of the drum kit, the diaphragm may be pointed away from the snare drum.

EO

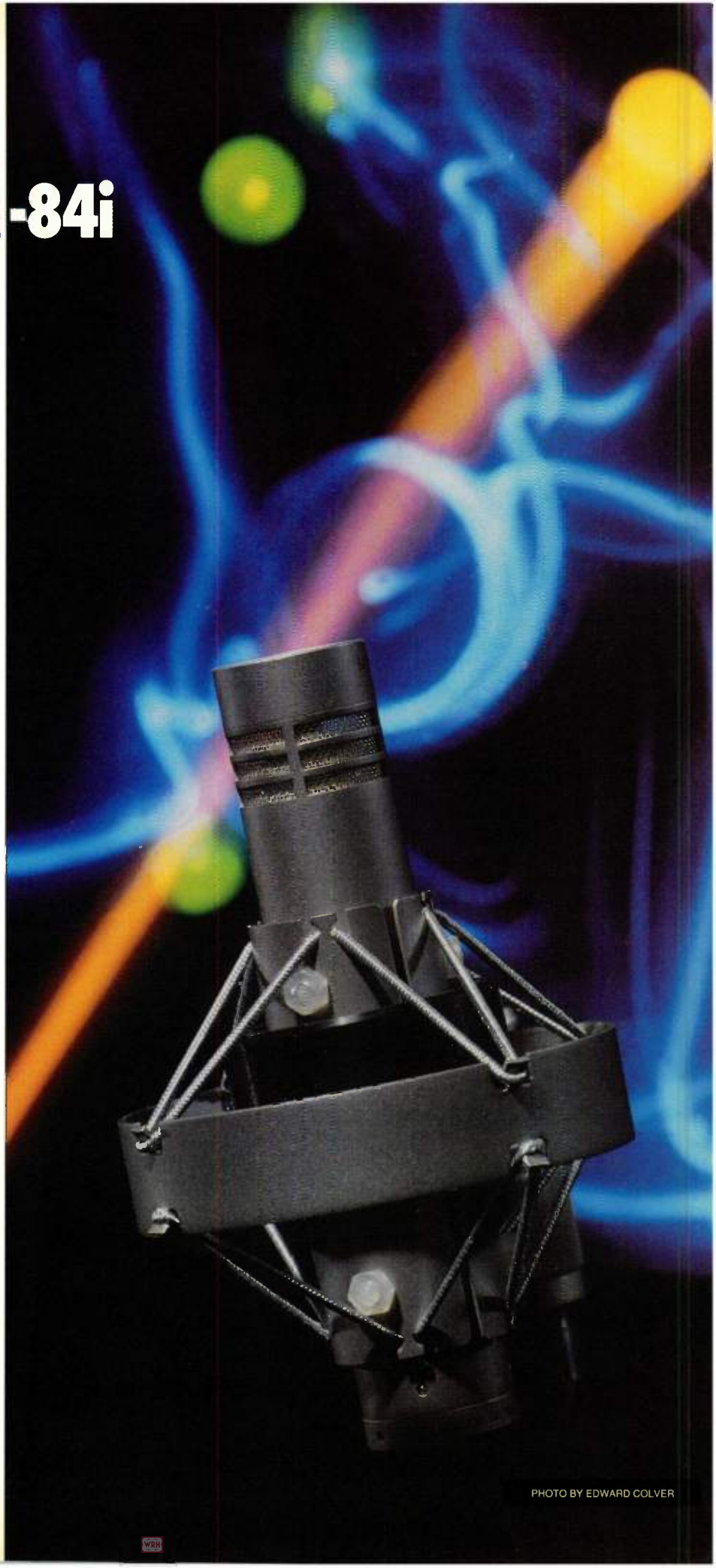


PHOTO BY EDWARD COLVER

JOEMEEK

C2 Stereo Compressor \$399.99



SC2.2 Stereo Compressor \$799.99



SC2 The Stereo Compressor
The classic Analog Photo-Optical Stereo Compressor that started it all! **\$1,999.99**



SC4 Digital Stereo Compressor
A Joemeek SC2 Compressor with M/S features, Dual Meters, Sample Rate Converter and optional 24bit AES/EBU Digital Card (DC4) **\$1,999.99**
Optional DC4 \$299.99

Distributed by
PMI Audio Group
23773 Madison Street · Torrance, California 90505
Toll Free (877)563-6335 · Facsimile (310)373-4714

When it comes to color, Joemeek set the standards. From the early "vintage" designs by the master himself, to the latest Class A analog circuitry.

Joemeek sets the standard for quality and value. No other stereo compressor can match the

Color Does Matter!

silky smooth colored sound of the Joemeek stereo compressors, when laying your tracks down or going to two track mixdown.

So while other stereo compressors claim to reproduce the warm colored Joemeek vintage sound you're looking for, wouldn't you rather own one that does!

got meek?



CIRCLE 28 ON FREE INFO CARD

joemeek.com

Crowd Pleasers

"I wanted to create a clean, crisp melding of sounds integrating our marching band with a live rock band. We placed fourteen Peavey Impulse 500s around the stadium...and everything worked out great, from Elton John's 'Bennie and the Jets' to Lynyrd Skynyrd's 'Sweet Home Alabama'."

Kathryn Scott
Band Director, University of Alabama

This band

& this band

- Exclusive weather-resistant Black Widow® woofers with field-replaceable baskets

- Proprietary 22XT™ titanium compression drivers with Peavey's own Sound Guard™ protection circuits

- Lightweight, rugged injection-molded cabinets that look good and sound great for any occasion, indoor or out

- Integral stand adapters, multiple handles and flying points for easy portability and set-up

- Great performance, great price!

*Tennessee vs. Alabama — largest crowd in history for a University of Alabama football game at Bryant-Denny Stadium, Tuscaloosa, AL

VISIT US ON THE WEB www.peavey.com

Peavey Electronics Corporation • 711 A Street • Meridian, MS 39301 • U.S.A.
(601) 483-5365 • Fax (601) 486-1278
Peavey Europe • Great Folds Road • Oakley Hay • CORBY • Northants NN18 9ET
England • Tel: +44 (0) 1536 461234 • Fax: +44 (0) 1536 747222 • ©2000

Visit your local Peavey dealer and hear the great sounding line of Impulse® enclosures.

sounded great

to a crowd of over 86,000*

Team Impulse®

- Impulse® 200*
- Impulse® 200P*
- Impulse® 200 Sub*
- Impulse® 500*
- Impulse® 500 Sub*
- Impulse® 500P*
- Impulse® 500P Sub*



PEAVEY

CIRCLE 32 ON FREE INFO CARD

WRH

Tuck & Patti



PHOTO BY ED FREEMAN

Jazzical pros reveal their inside tracks

BY MR. BONZAI

Mr. Bonzai: How would you describe your new album?

Patti: Jazz — more of a jazz album than we've ever done before.

Why is this place called "Binky Studios"?

Tuck: It was named after our cat, Binky, who died of old age at 17. During our first album, if we put her outside, she meowed so loudly that it leaked into Patti's mics. When we brought her inside, if I made any motion, she purred really loudly and that would leak in, too. I had to learn how

to be perfectly still while playing and she would lay on my foot and go to sleep.

Do you engineer most of your work?

Tuck: We do all the tracking ourselves, and then mix in San Francisco at Different Fur with Howard Johnston, who we think of as the third member of the band.

Who got you started as an engineer?

Tuck: We just figured it out.

Patti: We had a dbx 700, which recorded on videotape, in the little duplex we lived in, and we got a friend to build a baffle, and we recorded live. We couldn't overdub or punch in. It was good for us.

What do you record to now?

Tuck: Now we have a Sonic Solutions, with George Massenburg Labs A-to-D converters and Apogee D-to-As. This was the first recording medium and converter combination that sounded better to us than the dbx 700. Now we can digitally assemble, backup, and edit. PCM recording just wasn't making it for us until we heard the GML converters — that changed everything.

I'm sure George will be glad to hear that.

Tuck: George knows — in fact, we've talked with George a lot. The one thing I have never been afraid to do is to "cold call" people and ask for advice. I called George and he was good enough to loan us some of his converters when we did a major converter shootout back in 1994. The GML was the only one that sounded good enough to replace the dbx.

Around this time, we also asked about microphones and somebody told us about B&K, which weren't being used for vocals back then. This was in 1987, and

SUSPECT REPORT

William C. Tuck and **Patti Cathcart**

Occupations: Musicians, composers; Patti: singer/producer/arranger; Tuck: guitarist/engineer.

Vehicle: 1978 Toyota Corolla. "It has everything," says Patti, "even moss growing out of it. Tuck was driving it the first day I met him."

Location of interview and photos: Binky Studios, Menlo Park, California

Awards: At the 1999 North Sea Jazz Festival, T&P were presented with the Edison Award for the best international jazz album of the year.

Notes: Oklahoma-born Tuck moved to the San Francisco Bay Area to study music at Stanford. He devised a guitar technique that continues to baffle critics and amaze audiences. San Francisco-born Patti was a classically trained vocalist who enjoyed jazz and rock. They met in 1978 and were married in 1981. Over the next six years, they performed in dubs, steak houses, and lounges in the Bay Area. In 1988, they signed with Windham Hill. Their first three albums were *Tears of Joy* (1988), *Love Warriors* (1989), and *Dream* (1991), plus two solo albums from Tuck — *Reckless Precision* and *Hymns, Carols, and Songs About Snow*. In 1995, they recorded *Learning How To Fly* and, in 1998, *Paradise Found*. Their new album, *Taking the Long Way Home*, will be released in August, 2000.

The dean of jazz critics, the late Leonard Feather, wrote: "Not since Ella Fitzgerald met Joe Pass on stage has there been so felicitous a mating as Tuck & Patti."

we did a mic shootout. We had some really good tube mics, too. The results: We loved the transparent accuracy and detail of the B&K 4003 for Patti's voice. She records in stereo with a matched pair. They are condensers, omnis — and shouldn't work in stereo, but they do. We



TUCK & PATTI PHOTOS BY MR. BONZAI

We've done the formatting so you don't have to!



BASF introduces a Formatted DTRS Master that saves you time and head wear.

Now you can get the world's best performing DTRS Master already formatted - saving you time in the studio and wear and tear on your DTRS recorder head. BASF's new Formatted DTRS Master lets you record to DTRS immediately, without having to format the master tape.

PLUS, get all the benefits of a BASF DTRS Master tape that's designed for all of the rigors of digital multitrack recording.

- consistently delivers lower error rates than any other major brand on the market;
- specially constructed ABS shell providing precision tracking, virtually eliminating dropouts caused by static or dirt;
- convenient sliding erase-lock tab offering a simple means to safeguard your masters.

Available in 44.1 kHz, 113-minute length only. Compatible with Tascam's DA-38, DA 88, DA 98 and Sony's PGM-800.



EMTEC Magnetics



EMTEC Pro Media, Inc. ☎ US 1-888-295-5551 Canada 1-800-817-4478 or visit our web site at www.emtec-usa.com

CIRCLE 72 ON FREE INFO CARD

learned by experimentation, by calling people, and reading. The B&K's require a 130-volt power supply, so we bought a Millennia preamp; its utter transparency is perfect for Patti's sound.

How do you record the guitar?

Tuck: Direct, because long before we got together I had a buffered preamp put in the guitar, so it comes out with low impedance, 100-ohm — I can go straight into anything. We record direct, and the rest happens in mixdown, because our only goal at our

studio is to document the performance with the cleanest raw tracks possible.

When you work with Howard Johnston, what kind of console does he use?

Tuck: He's got an SSL, and recently we bought some Avalon EQs that we take with us for mixing, along with our GMLs and our Meyer speakers.

How did you get your nickname?

Tuck: From "Little Tommy Tucker," because I used to cry when I didn't have food in my mouth. And from "Friar

Tuck" because I was a fat little baby.

Who taught you how to play guitar?

Tuck: I'm pretty much self-taught. I played classical piano for seven years before I picked up the guitar, and then I had only a handful of lessons. I listened a lot, and played in bands, watched people, and got real good at figuring things out.

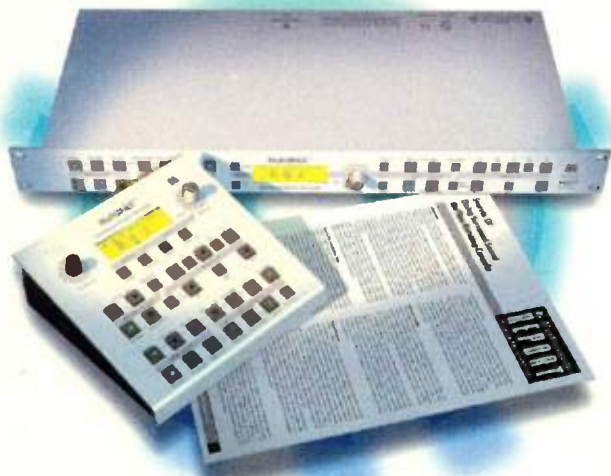
When you play, it sounds like three people playing — how do you do that?

Tuck: There's a lot of counterpoint and a lot of juggling going on. By juggling, I mean



Secrets of Doing Surround Sound

On Your Existing Console



MultiMAX

Multifformat Monitor Controller
with optional remote

"MultiMAX works elegantly on any console."
—Dino Elefante, co-owner of The Sound Kitchen

Cash in on surround sound mania without a lot of cash. Get the information you need to make a sound business decision by first reading our free report, "Secrets Of Doing Surround Sound On Your Existing Console".

Learn how MultiMAX will augment your console's stereo monitor section, adding monitoring for 7.1, 5.1, LCRS and other formats with comprehensive control of multiple speaker systems.

But it's more than just a level control. Quality checks and downmix compatibility are just a button-push away, giving you confidence that your mixes will survive any playback format. And it does so much more...

So get informed and then get MultiMAX.

Receive the free report

Call or visit us on the web and order AM01



(800) 582-3555 or +1 (626) 281-3555
1151 W Valley Blvd, Alhambra CA USA 91803-2493
Fax +1 (626) 284-3092 www.martinsound.com

CIRCLE 22 ON FREE INFO CARD



THE DETAIL

Strong vision helps The Great Horned Owl navigate through the woods at night. Although it is dark, it will see even the smallest details clearly. It knows this and trusts its senses 100%. So should engineers. This is why Dynaudio Acoustics monitors provide the transparency and details you need to judge audio – if it's there you will know it!



THE BIG PICTURE

BM6A

NEARFIELD MONITOR

The BM6A delivers a punchy, accurate and transparent sound for the demanding engineer. It is suited for every aspect of audio engineering and reproduction including music, broadcast, post production, stereo and 5.1 set-ups.

- Linear phase and frequency response, 41Hz – 21kHz
- Dynamic linearity, same response at low and high levels
- 28mm soft dome tweeter with long aluminium voicecoil
- 175mm magnesium silicate impregnated polypropylene woofer with a large 75mm aluminium voice coil
- Bi-amplified (Dual 100W amp)
- Adjustable LF and HF trim
- Slow attack optical HF limiter
- True Clip indicator LED

Dynaudio Acoustics monitors utilize innovative and proprietary driver technology, which ensures exceptional dynamic capabilities, ultra low distortion and high power handling. A fine array of monitors ranging from small nearfields to big main-systems, active or passive, ensures the right solution for your application.

For more details contact your dealer today or visit www.dynaudioacoustics.dk

For a Free demonstration of any Dynaudio product in your studio, please call 1-800-518-4546



dynaudio acoustics
IF IT'S THERE = YOU'LL KNOW IT

CIRCLE 73 ON FREE INFO CARD

not necessarily playing all three parts at once. At this point, I am pretty good at playing two, three, or even four parts at the same time and keeping them going. It really comes from meeting Patti — I had heard other people do it before that, but I was just a straight-ahead guitar player in soul and jazz bands when we first got together.

I play fingerstyle and keep a bass line going with the chords, plus some percussive action, and maybe some counter melody — maybe even some inner motion with something that just developed. I had an ear for it

from playing classical piano.

Patti, did you have a mentor?

Patti: I had a really great teacher. I played violin starting in grade school, and, by the time I got to high school, I found a real teacher — Owen Fleming. I loved the violin, and then I started performing in school musicals and singing with the orchestra. He gave me a good classical foundation.

When was your first professional gig?

Patti: I got my first paycheck when I was 17. I had been singing since I was eight

years old, and then in church choirs, and I had the classical training, plus folk music, and I listened to the pop music that my babysitters had played.

How has the Internet affected your career?

Patti: It's been very good for staying in touch with our audience and getting the word out about what we're up to. Tuck is giving guitar lessons and keeping our site current. We get a lot of e-mail because people check it out and like the information. It's at www.tuckandpatti.com.

Tuck: At this point, it's not a money-making thing — just free access to information we feel the audience can benefit from. We give away every technical detail we can think of, every secret we do. We put up all the information on how our albums were recorded with a press kit and high-res photos.

Patti: We even get requests for songs over the Internet for our upcoming shows. We can stay in much closer contact with the folks out there.

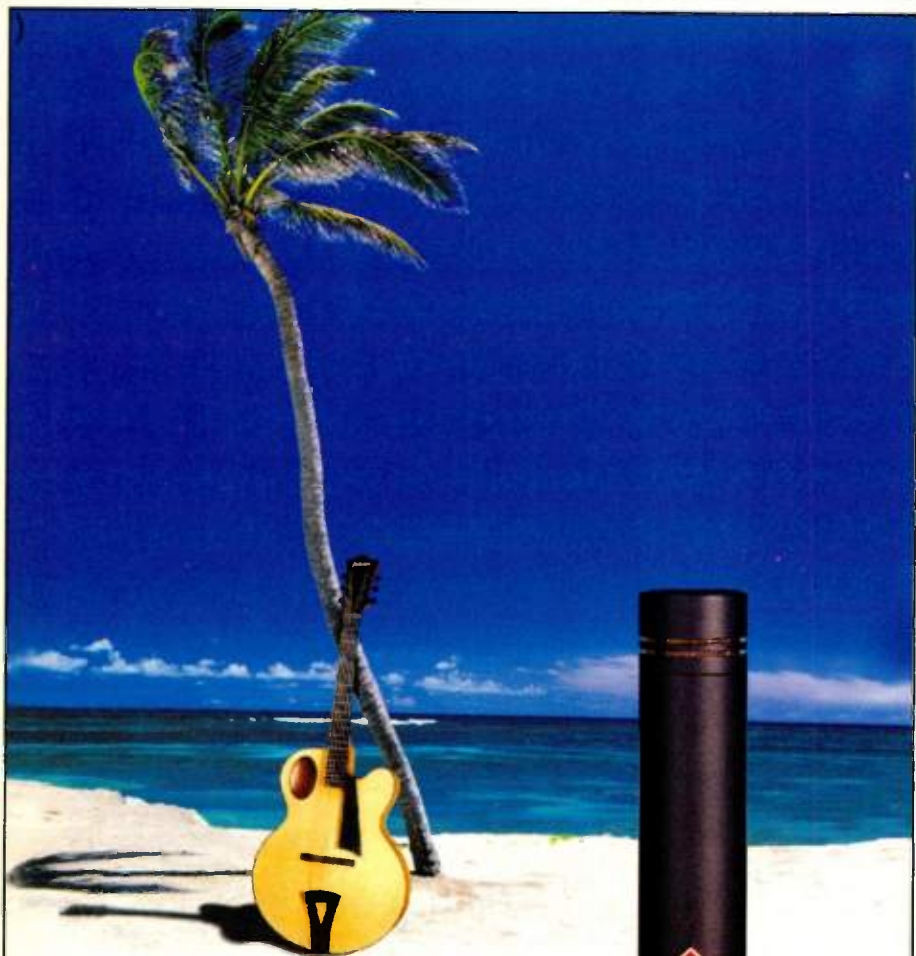
How would you compare now with the way it was when you first started out together?

Patti: We are better musicians, and we continue to get better. We have relentlessly done this for 21 years — as time goes by, it just gets clearer and you get to the point much quicker. It's magical and we don't know where it will end up.

Tuck: Conceptually, it hasn't changed at all since we got together. The concept has evolved, just getting deeper and deeper.

Advice for the young musician?

Patti: Play music from the bottom of your heart, as good as you can do it. Be true to yourself. **EQ**



Desert Island Microphone

The Choice of Those Who Can Hear The Difference



Neumann|USA the **KM 184**

Tel: 860.434.5220 • FAX: 860.434.3148 www.neumannusa.com/rm



CIRCLE 30 ON FREE INFO CARD

The Revolutionary Way to Mix, Master and Make CDs

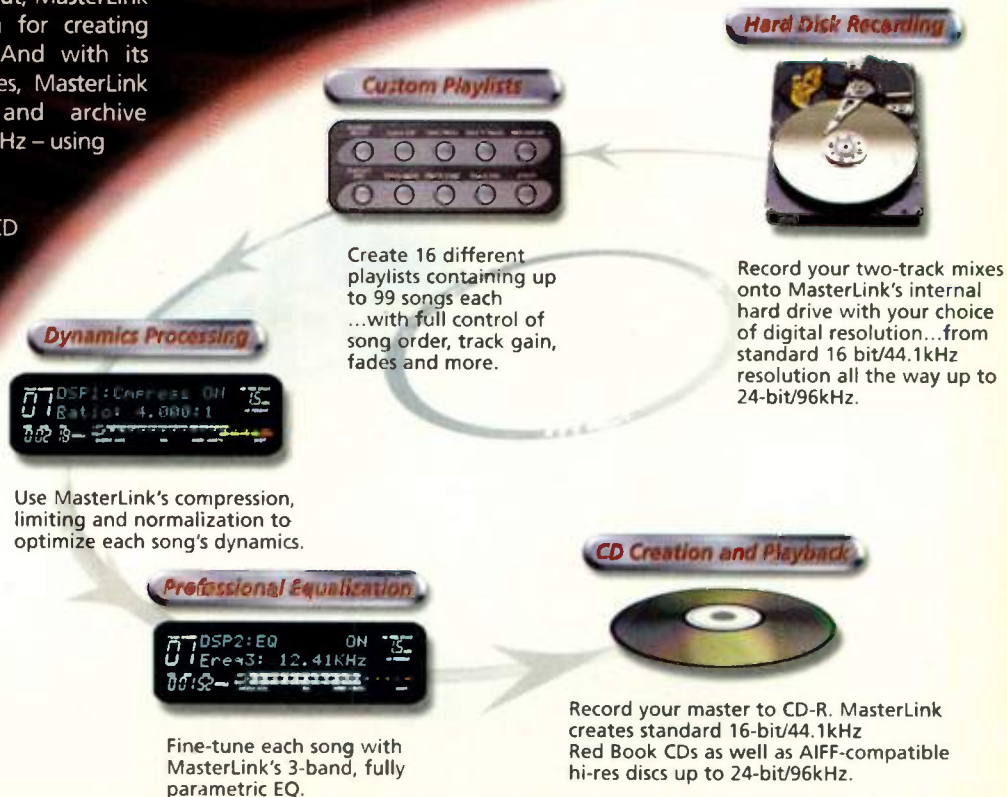


The new MasterLink™ ML-9600 high-resolution recorder is much more than just a mixdown deck or CD burner. It's a visionary product that will completely change your perspective on two-track audio, and redefine the way you master your mixes.

Combining hard disk recording, DSP and the world's most advanced CD-R format, MasterLink offers you an all-in-one system for creating polished, fully mastered CDs. And with its unique high-resolution capabilities, MasterLink makes it easy to deliver and archive two-track mixes – up to 24-bit/96kHz – using convenient, inexpensive CD-Rs.

Fully compatible with standard CD and AIFF audio formats of today, it delivers the advanced digital quality you'll be using in the years ahead. But why wait? Visit your Alesis dealer today and join the MasterLink revolution.

MASTERLINK™ ML-9600 HIGH-RESOLUTION MASTER DISK RECORDER



Cutting Vinyl

David Cheppa takes mastering vinyl releases to new heights

BY BOBBY OWSINSKI

David Cheppa began cutting vinyl in 1974, and since that time has cut almost 22,000 sides. He's the founder of Better Quality Sound, which is currently one of the few remaining mastering houses dedicated strictly to producing vinyl. Thanks to his intense interest and design engineering background, David has brought a medium once given up for dead to new, unsurpassed heights of quality.

EQ: Not too long ago, everyone thought that vinyl was dead, yet you're really, really busy.

David Cheppa: I don't think anybody else does as much vinyl cutting as we do. We do about 500 masters a month here, but only because that's the niche that it worked out to be. When things were waning back in the '80s, I was still acting like nothing had changed insofar as I was still looking for ways to develop and improve the medium.

You never think about vinyl being "improved."

We've actually developed it quite a lot. In the old days, way, way back in the '50s, the first cutting systems weren't very powerful. They only had maybe 10 or 12 watts of power. Then, in the '60s, Neumann developed a system that brought it up to about 75 watts per

channel, which was considered pretty cool. Then in the '70s, the high-powered cutting systems came into being, which were about 500 watts. That was pretty much it for a while. I mean, it made no sense beyond that because the cutter heads really weren't designed to handle that kind of power anyway. Even the last cutting system that came off the line in about 1990 at Neumann in Berlin hadn't really changed other than it had newer panels and prettier electronics.

One of the things that I did was look for a way to keep the signal path simple and clean and free of anything that would affect the signal. I figure that a mastering engineer spent a lot of time and money to get it to where he wanted, so I didn't want to alter the program when I finally got it. All I wanted to do was give them as faithful a reproduction as possible. What I went for was to keep the warmth of the vinyl, but the power of the CD. But because we had CDs by then, nobody even cared about vinyl. I

mean, everyone in the cutting end was old school in their thinking in a lot of ways and didn't care much about improving the medium other than just trying to do what was always done. So, using my background as a design engineer, I improved the cutting system, mainly the amplifiers. I pushed the power levels way beyond anything that we ever had.

In doing that, I sacrificed a number of cutter heads. And these cutter heads are about twenty grand apiece, if you can find one. In fact, Neumann doesn't really make them any more, but if you want them to build you one from scratch, they'll charge you \$35,000 for it. If you can find one, you can pick up a burned-out one for about \$5,000 or \$6,000. It costs about \$10,000 to repair it, just the way it is. Last year alone, I burned out four cutter heads to get everybody's product out the way I wanted. Nobody knows what we go through to get a really good faithful recording on the disk because, when you



CLEAN CUT: According to David Cheppa, his Better Quality Sound has the most powerful cutting system around.

Packed

Classic Transformer-coupled Mic & Line preamplifiers and Instrument Pre-amp

High & Low pass Filters switchable to compressor or gate side-chain

High resolution VU meter and Digital output display

Compressor with ratio, attack speed, gain make-up, threshold and release-time controls gives sustained power to, and control over, vocals and instruments alike

Gate / Expander, an essential tool for eliminating background noise

High and Low-frequency shelving EQ with switched frequencies, selectable to Compressor & Gate side-chains

Two fully-parametric mid bands of EQ, selectable to Compressor & Gate side-chains

Multiband Limiter for distortion-free limiting. Sum enables External input to be mixed with internal signal path. Mute cuts the output.

De-esser, based on proprietary optical technology, removes sibilance from vocals imperceptibly

Insert send and return may be taken pre-EQ, between EQ and Dynamics or post-Dynamics

A/D conversion with selectable sample frequency, bit-rate and external clock selection including Super Clock

Focusrite Producer Pack

24/96 READY

Ever since Rupert Neve[®] designed the first generation of Focusrite EQ and Dynamics modules, they have been the choice of many successful recording engineers and producers.

The ISA 430 repackages these classic designs in one comprehensive unit. Versatile routing and access to the signal processing blocks means you can split the EQ and compressor into two separate signal paths for simultaneous use on two tracks. Or use them both together with the original classic transformer-coupled microphone preamp for the best Total Input Channel money can buy.

Cap it off with the AES/EBU 24 bit/96 kHz optional **Digital Output Stage**, which can also be used as an independent A/D Converter. This is the best of Focusrite signal processing packed into one unit. Hence we've dubbed the ISA 430 the "Producer Pack".

Ask for a demonstration before your next session.

ISA 430 Producer Pack

\$3,495srp
\$3,995 with digital output



*Rupert Neve does not design for, nor is affiliated with Focusrite Audio Engineering Ltd.

PRODUCED IN THE UK BY

Focusrite
www.focusrite.com

DISTRIBUTED IN NORTH AMERICA BY

www.digidesign.com

digidesign

CIRCLE 71 ON FREE INFO CARD

+44 (0)1494 462246

1.800.333.2137, code 553

MPRI



Console goes...here

Littlite

Hamburg, MI 48139 USA
810-231-9373
Fax 810-231-1631
litesls@caeinc.com
www.littlite.com
1-888-548-8548

Made in the USA Lifetime Warranty

CIRCLE 9 ON FREE INFO CARD

COME SEE US
AT NAMM
BOOTH #5517

master for CD, you don't usually master with vinyl ears. You master with an ear to whatever it is that you want and, as a result, you don't consider anything else.

When you get stuff in that doesn't use "vinyl ears," what are the problems that occur?

This is what I notice and it's really the secret: The balance of the sound is the most important thing. You get a good mix where the elements are balanced well and it cuts well as a result.

Frequency balanced?

Yeah, in the sense of equalization, every aspect of it is balanced so that you don't have these anomalies poking out that you don't really want. It seems obvious that this is what you would strive for, but that's not what mastering guys generally do. They'll tweak things in all different directions. If it's a good mix, you can make a great master because the best masters have the best balance. It seems obvious, but it just bears out, especially in cutting.

Do you have to do a lot of mastering in the sense of having to do a lot of EQ and compression, or do you just do a lot of straight transfers?

My goal is to take someone's work and keep it faithful and not touch it, but there's very few engineers that I don't have to do anything with their program. The problem is taking something that's now in the digital domain and putting it in the physical realm. You're basically making that little stylus accelerate sometimes as much as 5,000 times the force of gravity at times, especially when you have program with a lot of percussive brilliance or sibilant sounds created by S's.

By the way, that's where all the power is required in cutting. In the physical world with sound systems, all the energy is in the low end. But in cutting, it's the exact opposite. All of the energy is in the upper spectrum, so everything from about 5,000 cycles up begins to require a great amount of energy. This is why our cutting systems are so powerful. One lathe has 3,600 watts of power and our least powerful one is about 2,200 watts. It's devastating if something goes wrong at that power. If I get a master that's raw and hasn't been handled at all, and there is something that just tweaks out of nowhere, it can take the cutter head out. So that's always a big concern.

We do everybody's work here — MCA, Sony, Warner Brothers — but I treat every project as though I'm doing Babyface's album. Even when it's

somebody's garage band, I'll give it the same care and interest because, to me, every project is important. But that project may be a mess. If it's beyond anything I think I should be messing with, I'll call them and say, "Listen, this hasn't been premastered for vinyl." "What do you mean by that?" "Well, there's percussive brilliance that's out of control." This is the problem in almost every case because sibilant distortion can occur on vinyl that doesn't occur anywhere else. It's because the velocities are so high and so quick that the person's playback stylus will literally chatter in the groove. And that chattering sound seems to be a distortion, when, in truth, the record might not have any distortion, but nobody can track it. I can actually cut records that nobody can track, which is useless.

With a lot of rap and hip-hop, do you have problems with the low end?

The answer is yes and no. It's almost always no good if they haven't really mastered it because the kick may be boosted so severely that there's no way that you can get any apparent volume.

Where does most of the vinyl go?

Today there's so many markets; the DJ market, or the dance/rap/hip-hop market, is probably the greatest number. I think 80 percent of it goes there. The others are really only a few percent, like classical music. A lot of music that we're remastering was done in the '60s and '70s. Everything that Polygram ever did and everything that Motown ever did, they're being re-mastered and we're re-cutting them.

We're actually getting a better record now than they had back then because you're hearing things that they couldn't hear on the original masters. Also, the cutting systems weren't that evolved back then either. Everything's been improved so much.

It really must take a lot of experience to cut a good record.

If you just want to cut a mediocre record, you don't need to know a lot of anything. If you want to cut a better record, it's good to know something. If you want to cut an incredible record, you need to have an understanding of the physical world and the laws that govern it. You have to know what the limits really are, physically and electronically. It's a balance of art, science, and technology.

If you would like to contact David Cheppa, he can be reached via e-mail at BQS@gte.net.

ONE DAY THEY'LL FORGET THAT A RECORDING
STUDIO USED TO TAKE UP AN ENTIRE BUILDING.
THAT WOULD BE TODAY.



The Yamaha AW4416 professional audio workstation.

- 24-bit digital hard disk recording (all 16 tracks at once with no compression)
- 32-bit digital mixing (at the level of our infamous Q2R, including flying fader automation)
- 16-bit sampling (phrases from hard disk, CD or computer assignable to eight, dual-level trigger pads)
- 32-bit effects processing (two assignable to any track)
- Onboard CD burner (option...but who wouldn't get it?)
- Dual card slots for optional digital I/O of your choice (export/import up to 16 tracks simultaneously)
- Dedicated metering
- Unbelievable price!

Take note of this date. It's the first day in your professional recording future, courtesy of the AW4416. Once again, Yamaha gives you more for less.

 **YAMAHA**
WWW.AW4416.COM

Exceeding Expectations

Do you make these four common client service mistakes?

BY JIM BORDNER

Whether you run a full-boat professional facility serving musicians in their quest for the Holy Grail, or a one-man shop specializing in on-holds, we all have the same challenge: growing the client list and increasing our share of our market.

We send out demos, try direct mail and magazine ads, and join the local Chamber of Commerce. So why does most of our new business come in over the transom? Why do we all say, "Most of my business comes from existing customers and word of mouth?" Well, it's simple: The easiest and cheapest way to create new customers is by exceeding the expectations of the customers you work with today.

This business of recording audio is a *service* business. Sure, most of our work is in the physical realm, and when we deliver the project, it's in a tangible form: a DAT master, a one-off CD, a box of cassette dubs. But that doesn't mean we're selling a product. We provide a professional service. And as anyone who markets such a service can tell you, our clients are looking for more than a job well done. They want an *experience*.

And they're going to have one, good or bad. When it's all over, they're going to decide if the experience measured up to their expectations. If it didn't, you'll never see them again. If it did, they'll keep you in mind until someone they like better shows up. If you actually manage to create a better experience for them than they expected, you have a friend for life. They'll bring you all their work, they'll tell everyone they know; they'll do your marketing for you.

I know how true this is. Years back, before I started my commercial music enterprise, I was a regular customer at recording studios, producing radio and jingles as an ad agency copywriter. So I learned well the grave mis-

takes suppliers make when dealing with customers, and I think of them every morning when I switch on the gear. Maybe you should, too. Here are four of the most common reasons why customers don't come back, and how to avoid them

"They didn't listen to me." Nothing sets a customer's teeth on edge faster than being made to feel that they aren't being taken seriously. C'mon, you know the feeling: Don't you hate it when they don't listen to you?

You can probably remember at least one session where you blew off the customer's comments, telling them (more or less) that they didn't understand the process well enough to make the call. But you don't have to go that far to prove you're not listening. If you smile and nod

while they ask you to please change the EQ on the guitar, and then they have to ask you again 10 minutes later, you've made your point loud and clear.

Listening to a customer isn't the same as playing yes-man. Listening is exactly that: hearing and understanding your customer's concerns, and using your expertise to address those concerns. Let's say you're working with a completely inexperienced singer who makes a really bone-headed suggestion. It would be a time-saver to ignore him. It takes a lot more time and patience to say, "Well, my experience has shown that doesn't work very well, but I want to know what you're going for. Let's talk about the effect we're trying to get." The latter approach demonstrates that you heard him and you care about his work.



ILLUSTRATIONS BY NEEL PATIL

21st century mix technology

TASCAM's engineers are dedicated to delivering ever more recording power, at an ever greater cost advantage; providing musicians and engineers with access to the most creative resources digital technology can provide.

This advanced third generation TASCAM 36-input digital console provides unparalleled levels of processing, audio quality and control at the heart of any recording system, including full 24-bit audio, moving faders, snap-shot and dynamic automation, programmable FX and dynamics, fully parametric EQ, proper machine control, full MIDI, Sync and

word clock capabilities, and the most versatile I/O capability of any recording console in its class.

Best of all, the TM-D4000 features a control surface and operating system which is user friendly and easy to understand. And for all your future upgrade requirements, the TM-D4000 is readily expandable with a full range of interchangeable T/DIF, AES and ADAT® digital and balanced analog (24-bit AD/DA) I/O expansion cards, and plug-in 8-channel high quality mic pre-amp/ ADC (MA-AD8), 8-channel 24-bit DAC (IF-DA8) and 8-channel ADAT to TDIF (IF-TAD) convertor units.

HIGH PERFORMANCE 8-BUS DIGITAL RECORDING CONSOLE TM-D4000



The TM-D4000 represents something altogether different in the 8-bus digital mixer market – a price performance breakthrough.

TASCAM

a whole world of recording®

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640
323-726-0303 web: www.tascam.com
TEAC Canada Ltd., 5939 Wallace St., Mississauga, Ontario L4Z1Z8 Canada
(905) 890-8008
TEAC Mexico, S.A. de C.V., Campesinos No. 184, Colonia Granjas Esmeralda,
Delegacion Iztapalapa, 09810 Mexico, D.F. Mexico
+52 (5) 581-5500

WRB

CIRCLE 61 ON FREE INFO CARD

Earthworks Quality



for a song SR69

*a brilliant new vocal microphone
for stage, studio & the street
available in four elegant finishes*

real: +1-603-654-6427 (fax: 6107)
virtual: www.earthwks.com
postal: box 517 Wilton NH 03086

CIRCLE 14 ON FREE INFO CARD

"He thought he was selling me a paint job. He forgot he was selling me the entire experience of getting the painting done."

"They dropped the ball." You book a session for two o'clock, and, when the client arrives, you're still wrapping up someone else's gig, so you leave them cooling their heels. You forgot the extra cassette the client wanted to take home. Or you simply didn't get around to calling someone back. Ouch. You missed the client's most basic expectation.

I do a lot of work with an ad agency that has little desk signs all over the place that read, "DWYSYWD." I finally asked the creative director what it meant one day, and she told me it stands for, "Do What You Said You Would Do." It's a non-negotiable principle for their company, and the cornerstone of all client service.

A big part of not dropping the ball is refusing to over-promise. Because we're all eager to please, it can be easy to say "yes" too many times. The best defense is a solid scheduling system. If you're flying solo, invest in a personal organizer and learn to use it. But, in addition to realistic time-management, you also need to create in your staff an iron clad desire to follow through. Make sure you can really deliver what you promise and then do it, every time.

"They gouged me on the bill." You probably gave your customer some idea of what the project would cost before things got underway. If they're racking up too many hours, making more demands on you or your staff than you expected, or continually asking for extras, the burden is on you to open the dialog. Let them know that they're approaching the limits of the estimate *before* you have to start charging them. They will either say, "Well, okay, whatever it takes," and agree to a new estimate, or they'll start backing off their demands, making your sessions a bit easier.



Either way, you win. If you fail to let them know that the meter's running, they'll walk away feeling they got overcharged.

"They were kind of hard to work with." Wow, where the heck did *that* come from? We're not hard to work with. We do our jobs efficiently and well, and we have great relationships with lots of people.

This grab-bag client comment hides a universe of customer service problems, but most have something to do with matching your personal style to the style of the customer. A corporate client is not going to appreciate the kind of rock-'n'-roll banter you may engage in with your more volume-enhanced clients. Spending 15 minutes swapping war stories with the attractive VO talent and waiting for the agency producer to actually start running the session won't sit well with someone who has already been in three meetings today and has one looming. If you're prepared to alter your working style to accommodate a specific customer, you'll win many more friends.

Are you noticing the pattern here? Most of these customer service problems are a result of poor communication. Understanding your customers and then clearly communicating with them can go a long way toward solving all of them. That, and

always remembering that you're not just creating a product, but giving your customers a complete experience.

Let me give you an extreme example of bad customer service. It wasn't a studio; it was the guy who painted my house two years ago. He came highly recommended, so when I called for an estimate, I was surprised when he didn't show up at the appointed time. I called and got his answering machine, and he failed to call me back for three days ("They dropped the ball"). When he finally did call, he was full of excuses about being busy and how hard it is to run his business, and made a new appointment, which he kept. He gave us a fair price, and said he'd get started as soon as the rain stopped. When it stopped raining, he didn't show. And didn't show. And didn't call. So I called him and left a fairly heated message on his machine... I was ready to find someone else, but my wife convinced me to give him another chance. When he finally did show up with his crew, he tried to talk me out of the semi-transparent stain we insisted on, favoring latex paint ("They didn't listen to me"). They spent the day playing music a little too loud and flirting with my wife ("They were kind of hard to work with"), and didn't finish when they said they would, so they had to come back on Sunday. The only one he missed was gouging us on the bill.

Now, here's the punch line, the moral to this story: The actual paint job was excellent, with sharp edges and good coverage and all the things I figured he and his crew must be incapable of. In fact, before they started working, I told him that his customer service had shaken my confidence in him, and they'd better be on their best game, because if the finished job was as bad as his communication skills, I wasn't going to pay. He just laughed and said, "When we get finished, we're going to be your painter for life."

Wrong. They did a really good job, and I'll never call him again. He thought he was selling me a paint job. He forgot he was selling me the entire experience of getting the painting done.

Don't ever forget this when working with your customers. Just handing them a great-sounding tape or disc is nothing if we give them a panic attack on the way to getting it. Make the whole experience a good one, listen to them, communicate effectively, and you won't need to advertise. Your happy, happy customers will do it for you.

Jim Bordner makes music, records audio, and studies the twisted anthropology of studio customers at Gravity Music. You can reach him at jim@gravitymusic.com.

HOLDS UP ON THE ROAD




COUNTRYMAN ASSOCIATES, INC.
417 Stanford Ave. Redwood City, CA 94063
Phone: 1-(800)-669-1422 Fax: (415)-364-2794 Email: sales@countryman.com

CIRCLE 85 ON FREE INFO CARD

www.eqmag.com

visit the
eq
magazine
web site



16 total channels • 4 buses
16 XDR™ mic preamps • 16 mono mic/line channels • 4 stereo aux returns • 6 aux sends per ch. • 3-band equalization w/swept midrange

1604-VLZ™ PRO

16 total channels • 4 buses • 10 XDR™ mic preamps • 8 mono mic/line channels • 2 mic/stereo line channels • 2 stereo line channels • 4 stereo aux returns • 4 aux sends per ch. • 3-band equalization w/swept midrange on mono channels • 4-band fixed equalization on stereo channels • white sidewalls optional

1642-VLZ™ PRO

14 total channels • 2 buses + Alt 3-4 extra stereo bus • 6 XDR™ mic preamps • 6 mono mic/line channels • 4 stereo line channels • 2 stereo aux returns • 2 aux sends/ch. • 3-band EQ

1402-VLZ™ PRO

12 total channels • 2 buses + Alt 3-4 extra stereo bus • 4 XDR™ mic preamps • 4 mono mic/line channels • 4 stereo line channels • 2 stereo aux returns • 2 aux sends/ch. • 3-band EQ

1202-VLZ™ PRO

VLZ PROs have also won more industry awards

VLZ™ PRO Series with XDR™ mic preamps. Precise creative tools for serious artists.

If you're serious about your creative product, your equipment list should start with a really good mixer.

Our VLZ™ PRO Series has become the industry standard for compact mic/line mixers. They're used day-in and day-out by more professionals to create more albums, demos, movie and broadcast sound tracks, commercials and web casts than any other brand.

They mix and submix in most of the world's top recording studios (we know of one 1202-VLZ™ PRO that's actually built into the control surface of a \$1,000,000 digital console). And VLZ™ PRO mixers are in more basement, garage and back-bedroom home studios than you can shake a patchcord at.

XDR™. The finest microphone preamplifier design ever built into a compact mixer.

Because the preamps in mixers have long been considered a poor second to \$1000 to \$2000-per-channel outboard preamps, Greg and our Analog Engineering Department spent two years of meticulous experimentation creating a sonically comparable mic preamp circuit.

According to numerous cynical recording engineers, magazine reviewers and a lot of satisfied owners, we succeeded.

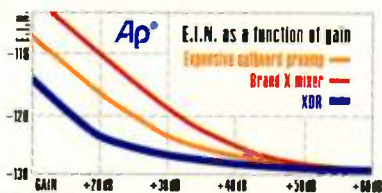
One reason is the advanced 2068 op-amps that are a foundation of the XDR design. They blow away our competitors' 4580 op-amps in terms of noise and distortion. Consider these real, measurable XDR™ (Extended Dynamic Range) microphone preamp specs:

- 0.0007% Total Harmonic Distortion
- 0.0008% Intermodulation Distortion



mic E.I.N. at practical real-world gain levels

By "practical" gain levels, we mean the +20 to +30dB normal operating range. The chart below compares E.I.N. for XDR™ ■, an Awesomely Expensive Outboard mic preamp ■ and a compact mixer ■ whose specs claim -129dBm E.I.N....but only at +60dB gain.



While XDR™ sonically rivals esoteric designs, it's no cream puff. We also built in protection against damage from shorts and "hot patching"...and the best RFI rejection of any compact mixer.

But don't just take our word for it...

Here are a few comments we gleaned from just *one week* of incoming VLZ™ PRO Series owner registration cards:

"Love the XDR mic preamps... clean and sweet!" C.H., Tampa FL

"A quality replacement for a far more expensive mixer brand." J.C., Arlington TX

"I was contemplating a couple of '-----' outboard mic preamps (\$2000+). The new XDR preamps let me make my next purchase a CD burner or an outboard processor instead." M.M., Miami FL

■ 130dB total dynamic range to handle hot digital sources

■ 3Hz to 192kHz bandwidth

■ Ultra-low

"Great product. XDR's are a great innovation and the value's unbeatable."

J.K. Boise ID

"I hooked up my brand spankin' new AKG 3000 and all I can say is 'cool!'"

T.D., Waukesha WI

"I've been through numerous small consoles that were noisy. This one isn't, so it's a keeper!" J.F., Boca Raton FL

"Gorgeous preamps. Nice job, guys."

J.C., Provo UT

"Nothing comes close to the quality/price." P.K., Spokane WA

"Excellent frequency response... excellent mic preamp. Worthy of our Neumann mics." C.M., Atascadero CA

"Killer mic preamps!" R.A., New York NY

The VLZ™ PRO Compact Mixer Series:

- Premium XDR™ mic preamps and VLZ™ circuitry for ultra-low noise
- New high-performance 2068 op-amps
- Musical, sweet-sounding equalization at useful, logical frequencies
- Sharp 18dB/octave Low Cut filters
- Stereo In-Place Solo
- Easy channel level setting via Solo
- Constant Loudness pan pots
- Inserts on all mono mic/line channels
- 60mm long-wearing, logarithmic-taper faders (except 1202-VLZ PRO)
- Sealed rotary controls
- Thick MIL-spec fiberglass circuit boards
- Easy-to-understand manuals
- Best Technical Support in the industry

Call toll-free for a 72-page brochure/hook-up guide that explains the VLZ™ PRO line in excruciating detail. Or log on to our web site.

Then visit a Mackie dealer to decide which VLZ™ PRO model best meets your creative needs.



than any other competitive mixer line. These are just the awards we remembered to take photos of.

www.mackie.com • 800.258.6883

CIRCLE 19 ON FREE INFO CARD

VLZ Series mixers are made by Adonius and Philo folks in scenic Woodbridge, VA USA.

Mastering **FAQ**

Classic Sound's
mastering maestro
reveals how to get the
most out of working with
a mastering engineer

BY SCOTT HULL

Mastering is the final piece in the puzzle, the last stage in the production of a recording where the polish is applied. But, unfortunately, mastering has remained a somewhat shadowy process for many project recording engineers — what actually goes on in the hallowed halls of a professional mastering studio? As a long-time mastering veteran, I've heard the same questions from my clients over and over; here's a collection of some of the most-asked mastering questions.

1. What is the best mixdown format to bring to the mastering session?

Balance is the key. Mix to the highest resolution format that is balanced with the rest of your production. For example, if you spent days in a professional multitrack studio recording the original tracks, and days in another studio overdubbing and mixing, don't mix to a low-resolution format. Sure it's convenient, but it's not in balance with the money and time spent in the studio. "Invest" in a format that sounds as good as your mixes. My personal recommendations: For guitar-rock, use analog tape. For all other formats, listen and let your ears be your guide. Consider 24-bit/96 kHz digital if analog poses too many obstacles.

Try this: Set up a mix, and print it to whatever mixdown formats you have available. Pause for a few minutes (until the ringing in your ears stops), then listen and compare the formats. Make sure they're playing at exactly the same level. Even better, have someone else play them back without telling you which is which. (Have all formats cued and playing so you can't look over and see the meters moving.) Then try to forget everything you've heard about analog

being fatter, DAT being harsher or its low end being tighter, or analog having more hiss, or whatever. Just listen! Time spent on this is definitely worthwhile — it will take only a few minutes. Then you can make the decision for yourself.

2. We want to save money in the mastering process, so we will pre-assemble the masters for you.

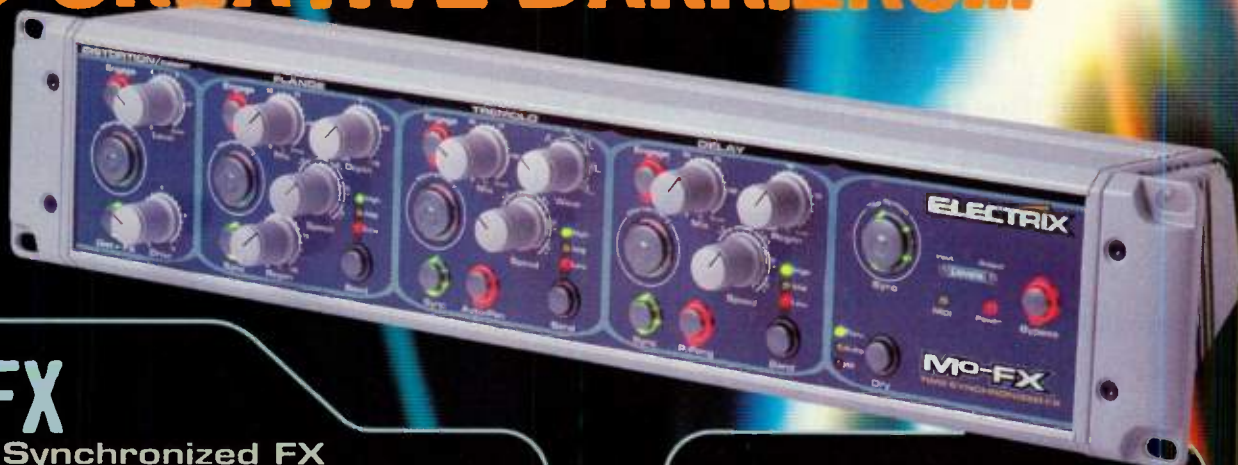
This has been coming up a lot lately, and it's a misconception. For a mastering engineer, it's a simple matter to change reels or put in a new tape. There's no real time saved by pre-assembling. Why? More often than not, when you hear what the mastering EQ/compression/level adjustments/etc. do to your recording,

you're going to want to choose different mixes. It happens all the time. Adding compression can bring out the guitars, so maybe now you want a mix with more vocals. The point is, it's an interactive process. For this reason (among others), you should attend your mastering sessions whenever possible, and build a relationship with your mastering engineer so that he/she knows what you want and can help you get there.

Every time a client of mine has pre-assembled a master tape, I have had to re-edit it. I have a very quiet room and have listened to thousands of fades and segues. Often, after raising the level or compressing a mix, the fade-out no longer sounds right. And when the fade is adjusted, the gap



NO CREATIVE BARRIERS...



Mo-FX

Time Synchronized FX

Feel The Rhythm!

To coordinate the flange, tremolo and delay would be a nightmare with regular multi-effects or stomp boxes, but Mo-FX makes it easy. Simply tap in the tempo (or receive MIDI clock), put each FX block into sync mode and that's it - instant synchronization. Imagine a shimmering flange on the high end, the tremolo slowly panning the mid range and the delay quantizing the snare into a timbale, dub style groove. It's a sonic orgy of FX-Sex. Get Fatboy Slim's: "the Rockafeller Skank" sound by simply putting your mix through the Mo-FX delay and cranking the speed knob.

Mo' delivers unreal sonic soundscapes and retro-analog effects right through your fingertips. **Time and frequency manipulation is the key.**

"Mo-FX's front panel pots are arguably the nicest feeling ones I've had the pleasure to rotate, and the whole works lights up like NORAD during the Cuban missile crisis."
Keyboard - Keyboard KEYBUY

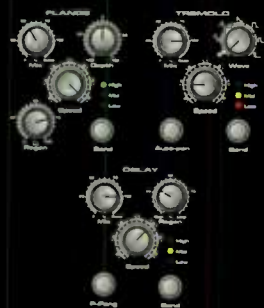
Here's how to do it...

FX-Sex Explained

Tap tempo to your track's quarter notes and activate sync for the FX blocks. Set the flange band to high, tremolo band to mid / low and the delay band to mid. Set the flange division to 8:1 and depth to 12 o'clock. Put the tremolo on a sine wave, and the delay at 1:5:1 with the regen at 10 o'clock. In about 5 seconds of knob twiddling you've got a throbbing sonic orgy in perfect time with your tune.

"Rockafeller Skank"

Run the track through the delay block in 'kill' mode. Tap in the tempo with the sync button on. Regen set to 0. The effect mix at 50%. Then quickly twist the regen knob all the way to 'loop' and disengage the delay. Now perform the "Skank" and slowly crank the speed knob up to max. The sound staggers upward into an infinite buzz.



- ▶ **Band-Aid.** Choose which frequency bands or band combinations get sent through each FX block and unlock new and subtle sonic possibilities.
- ▶ **Hate Math?** You don't have to convert milliseconds into beats anymore. Mo's hands-on timing controls let you easily experiment and get into the groove.
- ▶ **Hang On A Moment.** Play, punch and attack the momentary buttons. Achieve musical switching effects not possible with knobs or bypass controls.
- ▶ **No Means No.** Gain intuitive, musical expression with your time based effects. Every control is up front and center so there's no menus, no matrix and no programming.



also check out:



WarpFactory
THE ULTIMATE VOCODER

"If you're after a vocoder, this is the one to go for. Even if you're not interested, try it and you soon will be." *Future Music: UK, Platinum Award*

ELECTRIX™

Check out our web site at:

www.electrixpro.com

between the songs no longer feels right. Most of my clients ask me to space the songs as I feel it, taking into account long, soft fades and loud intros, etc. An experienced mastering engineer can be a great help in creating a smooth, flowing, consistent feeling from one track to the next.

3. I want you to make my record sound like [fill in artist's name].

You need to do your homework on this. Study the recordings of [fill in the artist's name] and determine what it is about them that appeals to you. If these elements are not in your recording, a mastering engineer can't put them there.

Sometimes when someone says this, they mean that they want their record to be as "loud" as another artist's. But often a recording sounds loud because of the sounds themselves. A recording with sharp midrange sounds and attacks on bass and drums, for example, will sound louder than a smoother recording, no matter how much "louder" you make the latter.

Understand that loudness is not a meter reading, rather loudness is how we perceive sound, and is dependent on the

context of the recording. Recordings with dynamics and air don't sound as "loud" as compressed recordings. Comparing, for example, the levels of the vocal tracks in a dynamic mix to those in a compressed mix, the uncompressed vocals will usually seem "louder" because of context.

Suffice it to say, despite the trend to make recordings as "loud" as possible, you must determine what you want your music to say to the listener. If all it has to say is, "Hey, I'm loud," then make it as loud as you can. If your music has more to say, then don't let the mastering engineer get off easy by simply turning up the level. Is anybody listening? Nod if you can hear me.

4. I know it's best for me to attend the mastering session, but what if that's impossible? What does the engineer need to know from me to get the job done?

- Names and contact info for all of the people involved with the project. I may need to contact the mix studio about a problem with the masters, or the producer with a question about the sequence.

- A track listing, with the choice mixes indicated.

- The master reel and ID each master mix is located on.

- Your overall impression of your project. Does it seem dull or too bass-heavy to you? What do you think needs fixing?

- Specific problems with individual songs. Keep it simple and to the point: "It doesn't rock enough," or, "It sounds too messy or boomy." If I'm not sure what you mean, I'll ask you to explain. Your mastering engineer's ears and instincts will give him most of the needed information. How loud, how bright, how compressed, etc. Right away he will probably hear and fix many of the issues you're having with your mix. What you need to convey are the unusual details. If you want the mastering engineer to give you input about mix selection, or sequencing, mention that up front.

By the way, if you hope your mastering engineer won't notice your mistakes, rest assured that he will. But he won't tell anybody about your screw-ups. Bring them to his attention, and he might even be able to do something about them with creative EQ or editing. If you don't mention them, he might think you wanted it to sound that way.

Best GEAR deals on the planet!

- 100% satisfaction guarantee
- Buy at great prices, sell for top dollar
- No hidden reserves
- Escrow on all transactions

www.digibid.com

digibid.comTM
Auction Network
an IndustryClick solution

CIRCLE 12 ON FREE INFO CARD

For over ten years,
Grace Design
 has been quietly
 building the finest
 microphone
 preamplifiers
 in the
 world...

model 801

the original and final word
 in 8 channel microphone preamplifiers



model 201

a two channel version
 of the acclaimed Model 801



"The Grace was about as natural as anything
 I've heard, and quiet...The Playback reveals a
 level of ambient detail that I haven't
 experienced before"
 -Tom Jung, Pro Audio Review

"The Grace Pre-amps were stunning and, indeed, beat our
 most costly tube preamps in a blindfold test."
 -Gary Barlough and Richard Zwiebel, Mix

"With the signal flowing, the 201 declares its worth...The
 sound is pleasingly open and uncolored"
 -Tim Goodyer, Studio Sound

"Overall, the Grace 801 sounds great, is built like a Porsche
 and is priced right. Anyone looking for a high quality
 preamp should check this one out."
 -George Petersen, Mix

lunatec V2

the worlds first reference-quality
 portable microphone preamplifier



model 801R

the definitive remote control
 microphone preamplifier system



FREQUENCY RESPONSE

4.5Hz-1.0MHz (+/-3dB) @40dB gain

THD+N

<.001% (+25dBu out) @40dB gain

EIN

-130dB (50Ω source)



...the word is out

for complete product, pricing and dealer information
 call **303.443.7454** or browse to **www.gracedesign.com**

CIRCLE 74 ON FREE INFO CARD

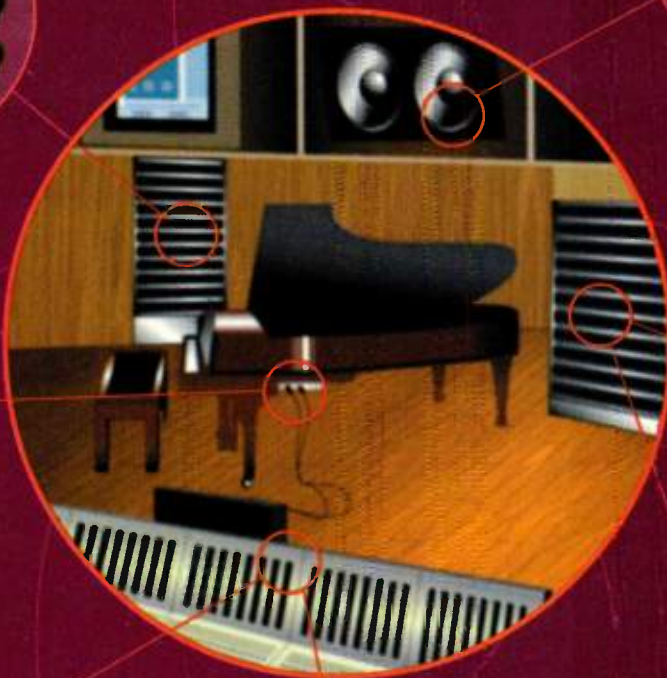
Switchcraft Delivers More Sound Solutions!



VIDEO JACK SERIES



HPC CONNECTOR SERIES



AAA Q-G TWIST SERIES



FRONT ACCESS PATCHBAY SERIES



3.5MM PLUG SERIES



3502RA RCA PLUG SERIES



TT253NC SERIES

That's because the broadcast/audio industry continually turns to us for quality components. From jacks and plugs to connectors and patchbays, Switchcraft has been improving the sound quality of recording studios for decades.

By responding to the evolving and growing needs of our customers, the Switchcraft name is now seen virtually everywhere in recording studios around the globe. Because of our reputation for constant innovation, we are becoming your one-stop expert supplier. No one can deliver solutions tailor-made for your broadcast studio requirements better than Switchcraft!

Get your own sound solutions: call us today at 773-792-2700.

Switchcraft
www.switchcraft.com

Switchcraft, Inc.
5555 North Elston Avenue
Chicago, IL 60630
Phone: 773-792-2700
Fax: 773-792-2129
sales@switchcraft.com
www.switchcraft.com

5. What do I need to bring to the mastering session?

All of your original master tapes. Prepare a list before the mastering session of the things that you want the mastering engineer to be aware of. Write out the track listing and choice takes on a sheet of paper to give to the mastering engineer at the start of the session. You should have spoken with the mastering engineer before the session so that you know what to expect out of your session. If it's going well, you may find there's little for you to do.

For most recording engineers, mastering is the only time that they're not turning the knobs. Enjoy it! Ask the "stupid" questions. How long will it take? What will I be able to bring home with me? Can we make revisions to this later? Why is there only Snapple in the 'fridge?

6. How long does it usually take to master a CD?

This is an important question to ask your mastering engineer. Generally about a day to master a full-length CD and make reference copies. Some engineers like to work alone with the music for the first part of the session. I like to get to know the record for a while before I make up my mind about the overall timbre and detail. That includes spending some time talking to the clients about what I think their project needs, what they want it to sound like, and how I'm going to accomplish that. Some mastering engineers edit and assemble their own projects; others have an assistant to do the assembly after the EQ is done. You'll have to ask before the session.

7. What sorts of things can't a mastering engineer fix?

The big three: compression, distortion, and too much reverb. Most other things can either be "fixed" or hidden behind some other element of the mix. I can't always be sure a fix will work or not until it's tried. Be aware that, in the process of correcting one problem, it's likely that other elements in the mix will be affected. It's a matter of compromise. You must keep the big picture in mind. A perfectly good lead vocal is of little use if an ugly-sounding rhythm section surrounds it.

One note: A mix that is over-compressed will always be over-compressed. If you really feel you should heavily compress or limit while mixing, consider recording an uncompressed version as well. When you hear your mix with the right EQ, you may find it doesn't need as much compression to sound punchy. An over-compressed mix doesn't take EQ changes as well as one that

is more open. It also sounds entirely different if you put the mastering EQ before the compression. I wish everyone could book a one- or two-song session before their final mastering session. There's so much to learn about what works and what doesn't.

8. Is there someplace in the mastering process where it is possible to save money by doing things yourself?

You can be prepared. Do your mastering preproduction. Listen to the proposed sequence all the way through to see if it makes sense. If a workstation is available, assemble the choice mixes together. Studying this premastered ref will give you an advantage in the mastering session. You will already know if the sequence works, and you will have a good idea which mixes should be used. You may also know what songs will need the most work to fix. Just remember to bring your original masters to the session. A lot of expensive mastering time is spent experimenting with different mix choices and different sequences.

9. What tips do you have for people who want to master their own projects?

Go for it! Set up a monitoring system that you think sounds good. Don't use any room EQ to fix the sound, instead experiment with the speakers and the room until you think it's right. Then don't change it.

Listen to many recordings in this space. Spend time getting to know what different styles of music sound like in this space. Compare and contrast mix engineers and mastering engineers (that's one of my favorites). Continue building up this reference library in your head and in your room. You are now at stage one of being a mastering engineer. Listening to your recording now has some relevance. How does your project sound compared to the others? Try to figure out how to make it sound the way you think it should.

Don't overdo the compression or EQ. Most mastering EQ is in small increments; 1 or 2 dB. Most mastering compression is also subtle.

It's the combination of just the right amounts of EQ, compression, level, and editing that makes the difference. Knowing the right amount of each — that's the art of mastering.

Scott Hull is the chief mastering engineer at Classic Sound in New York City (www.classicsound.com). His credits include projects for Steely Dan, Miles Davis, Bruce Springsteen, Alanis Morissette, Garbage, Limp Bizkit, and many others.

Again!



TT Patchkit Series

- 96 TT jacks with nickel-plated steel frames
- Gold-plated, cross-bar switching contacts
- Rugged, heavy-duty steel cable tray



TTP96AS Series

- 96 TT jacks with nickel-plated steel frames
- Gold-plated, cross-bar switching contacts
- Rugged cable tie bar



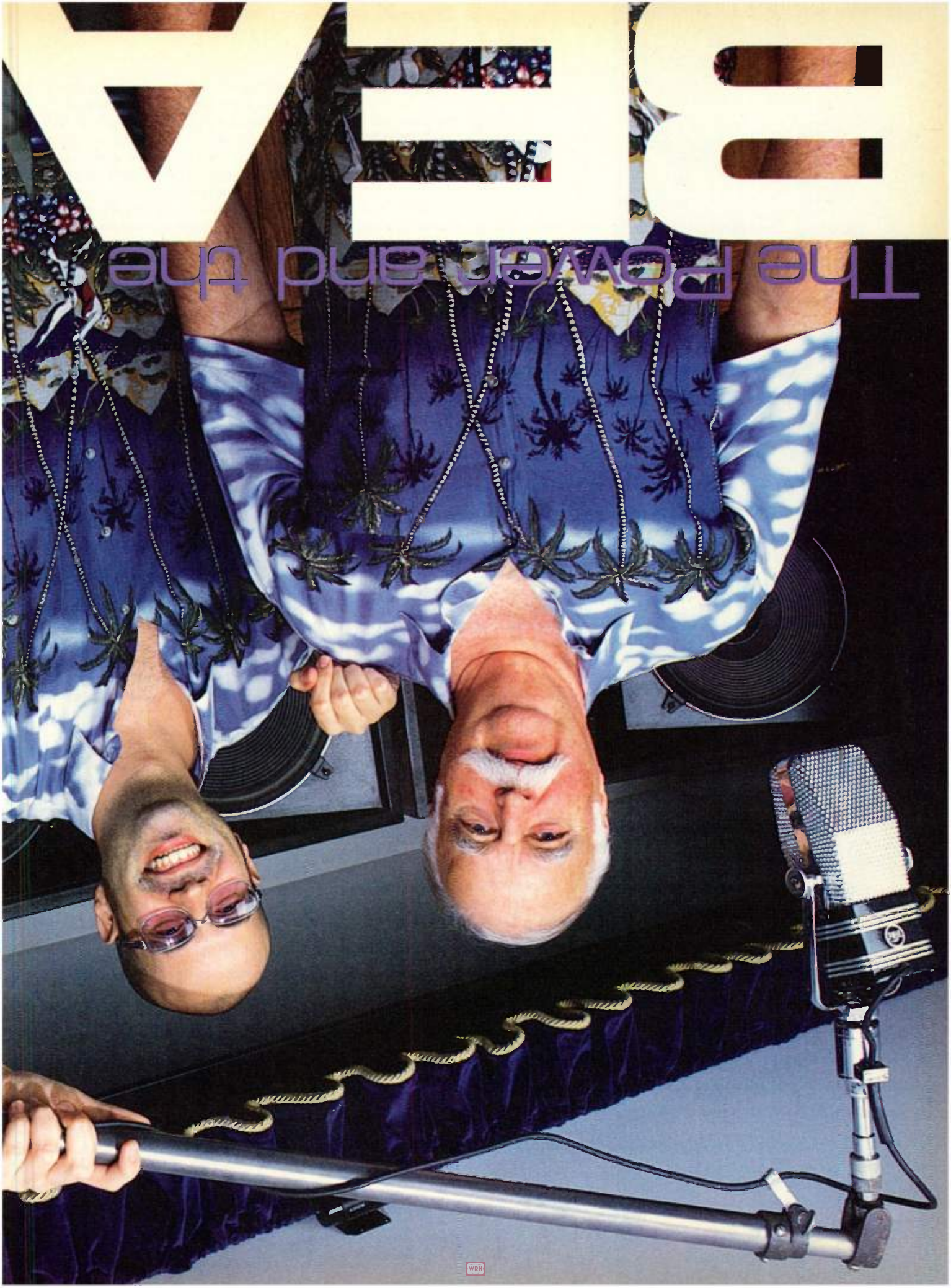
TT253NC Series

- Rugged, heavy-duty cable clamp
- No screws to deal with
- Nickel-plated plug finger

Switchcraft

www.switchcraft.com

5555 North Elston Avenue Chicago, IL 60630
 Phone: 773-792-2700 Fax: 773-792-2129
 sales@switchcraft.com www.switchcraft.com



BRAD

The Power and the



Bruce Swedien shares his thoughts on working in Cuba, the analog versus digital debate, and his project studio

by **Bruce Swedien**

as told to **Steve La Cerra** • photos by **Wes Bender**

Approximately six years ago, world-class producer/engineer Bruce Swedien moved from California to a new home on the East Coast. Naturally, Bruce has a studio in his home, known as Westviking Farm. He's worked on numerous projects there, such as A Guitarra by renowned Portuguese guitar virtuoso Antonio Chainho (Movieplay Records of Portugal, 1998), 5000 Miles by Nils Landgren (ACT Records, 1999), and Les Go — Dan Gna by the Ivory Coast-African group Les Go (Juna Records, 2000). In October of last year, Bruce mixed a new single at Westviking Farm for the rock band Survivor. His most recent projects there were mixing Pasajes de un Sueno for BMG artist Ana Torroja, and the as-yet-untitled release for Sony-France artist Cyrius.

Until lately, Bruce's studio was based primarily around analog tape technology, but for these most recent projects he stepped into the digital arena with impressive results. In this article he discusses why and how he and studio accomplice Andres Levin used a mixture of technology to record and mix both the Ana Torroja and Cyrius albums.

U T Y

The Power and the BEAUTY

HOME SWEET HOME

Here at my home studio, Westviking Farm, I've just completed a major project for Sony Music from a world-class singer and songwriter by the name of Cyrius. Cyrius's music is absolutely won-

derful, and he's one of the most fantastic artists I've ever worked with. That's not easy to say because, as you may know, I've recorded some of music's most remarkable artists! The producers of the project are myself and Andres Levin. Originally from Caracas, Venezuela, Andres has produced tracks with Caetano Veloso, kd lang, Carlinhos Brown, Tina Turner, and David Byrne.

Since Andres is now based in Manhattan, we

have worked together on a number of projects. Andres says he finds mixing in my studio very relaxing and soulful, with Bea, my wife, supervising the hospitality aspect of the activities. All of us involved in the work have dinner together as a family every evening; I know that this feeling of oneness has had an inspiring effect on the music.

Until a few months ago, my studio revolved almost completely around analog technology. The centerpiece of my room is a beautiful old Harrison 32C desk from 1979. It's essentially the same desk I used for Michael Jackson's *Thriller* (though that particular desk was a very early 32 Series). When I bought this desk five years ago, it was literally unused, so I consider myself very lucky to have found such a gem. First and foremost, I'm committed to using this console due to its wonderfully musical sound. Needless to say, I am very familiar with operating the console, knowing where every button lies. To me, it's important to be able to react instinctively to the music I am involved with. I don't like to interrupt the creative process to get the technical

process going. If I have to pause to think out the signal path every time I want to make an adjustment to the sound of the music, by the time I have it under my fingers, the musical inspiration has more than likely vanished. In my opinion, gut reactions translated to popular music recordings make the most meaningful recordings. I always felt that pop music is an emotional experience, not an intellectual experience.



MPX 500

24-BIT
DUAL CHANNEL
PROCESSOR

POWERFUL STUFF



- 24-bit D/A A/D & Processing
- Simple User Interface
- True Stereo, Dual Channel Effects
- Fully Balanced In/Out with XLR & 1/4"
- S/PDIF In/Out with Digital Out Dry
- Up to 5.5 Seconds of Delay
- Programmable MIDI Control
- 240 Presets
- 30 User Registers
- Classic Lexicon Reverb
- Graphic LCD
- Universal Power Supply
- Tap Tempo

[with the power of 24-bit, true stereo processing and Lexicon's world class reverb...]

the only limit is your imagination.



The MPX 500 includes Lexicon's most powerful digital engine ever built, our proprietary LexiChip 3

Lexicon

H A Harman International Company

BEAUTY

My Harrison console has been fitted with Geoff Michaels's Virtual Faders VCA automation for ease of mixing. It's an absolute joy to use — very powerful — and makes my old Harrison behave like it's almost "state-of-the-art." My main recorders are a Sony/MCI JH-24 two-inch, 24-track machine as well as an Ampex ATR-102, which I purchased new quite a few years ago (we'll talk more about the ATR-102 in a little while).

Many EQ readers might already be familiar with my love for the sound of analog recording — it has a "beauty" that I don't always hear with digital recording. It can be elegant. To my ears, analog tape has wonderful proportion and symmetry. In all aspects of music recording, I have never been intensely interested in technical specifications. I have always been intensely interested in how the sound of the music affects my "soul."

At the other end of the spectrum from my analog world is the digital world. In all fairness, I must say that what the digital recording medium does well, it does *dramatically* well. On this subject there's really no room for discussion. For instance, digital recording is very robust and consistent. Every time you play back a digital recording it sounds the same — which is not necessarily true of an analog recording. Running an analog master tape over and over again during the overdub and mixing processes can wear the tape somewhat, resulting in a loss of high frequencies and transient response. With a digital recording, this is not a concern. When digital recordings are stored to hard disk, there's an added advantage of random access to the audio — I don't even have to wait for the tape to rewind!

With the refinement of high-resolution digital recording formats, the line of distinction between analog and digital recording methods is beginning to disappear. For the two most recent projects, Andres and I put together a

rather large, 24-bit Pro Tools system right here in my beautiful little studio. Andres feels that, with the 24-bit Pro Tools rig, we have the best of both worlds because we can experiment with arrangements and processing right up to and including the mixdown process — but still mix without looking at a computer screen.

HAVANA, HERE WE COME!

Cyrius's album is a combination of Cuban music with French lyrics. We had the opportunity to record all the basics and most of the overdubs at Egrem Studios in Havana, Cuba during January, March, and April 2000. The musicians we used for the project are some of Cuba's finest players, including Guillermo Rubalcaba (piano), Changuito and Don Pancho (percussion), Pancho Amado (tres), and Roberto Caracaser (arrangements), among many others. Almost 30 of Cuba's finest musicians participated in the album.

The first thing I had to do when I got there was to spend a whole day re-EQing the control room, repositioning the large monitors, and testing all the lines and channels. We recorded straight to a great-sounding Studer A-80 analog two-inch, through Egrem's Amek/Mozart mixing desk.

Egrem is the studio where all the great Cuban recordings have been made, not to mention Ry Cooder's legendary production of the *Buena Vista Social Club* in 1996. This has been the number one recording studio in Havana

In all aspects of music recording, I have never been intensely interested in technical specifications. I have always been intensely interested in how the sound of the music affects my "soul."

“I want it that way.”



Tim Lamoy (left), House Engineer for the Backstreet Boys, and Monitor Engineer, Chris Holland

Introducing the ATW-7373 Handheld Condenser Wireless System

Tim Lamoy and Chris Holland, sound engineers for the hugely successful Backstreet Boys, know exactly what they want from a wireless system. That's why they switched to the new Audio-Technica ATW-7373 handheld condenser system for the group's all-critical vocal sound.

Lamoy put it this way: "This system has the best rejection and sound quality I've heard to date. It's got a warm, full-bodied 'wired' sound. Everyone loves it."

The handheld transmitter features the same element used in the legendary AT4033 microphone. It provides a real step up in wireless audio quality, delivering rich sound, natural top end and superb off-axis rejection.



The ATW-7373 true diversity UHF frequency-agile wireless system.

The best news? The ATW-7373 wireless is a major touring system that won't blow out a modest equipment budget.

Outstanding sound. Solid RF. Great price. Who wouldn't "want it that way?"



The Power and the BEAUTY

since the 1940s. The room has so much sonic personality that it comes through, even when close-miking. When 'Dre [Andres Levin] and I walked into the room and heard the rhythm section rehearsing, we just hit the floor — we knew immediately it was a great-sounding room. We

but if you're into the sound of music, it'll grab your heart immediately. It is one of the best-sounding rooms I have ever recorded in, anywhere in the world.

All the basic tracks were recorded live to two-inch tape with no click track. At that point in the project we didn't even put SMPTE on the tape! For the second trip to Havana (in March and April), we brought a 1970s Korg Rhythm machine to use as a time reference on a couple of the songs that we would later edit in Pro Tools. When we returned to New York, we transferred all the two-inch analog tape to Pro Tools at Kampo Studios in New York. We used Kampo's SSL MT Axiom digital mixing desk for its exceptional analog-to-digital converters.

Once in the digital domain, we did final overdubs at The Fun Machine in Manhattan (Andres's place) and my West-viking Studios. For the overdub recordings in both places, we use Neve Class A 1084 EQ/preamps and Neve Class A 1066 EQ/preamps. When we finished about half the overdubbing, I started mixing. A day or so later, Andres drove up to the farm from New York, with all the new overdubs on a hard drive. We

popped them into the mix and continued mixing.

We have five Digidesign 888/24 I/Os, a Mark of the Unicorn MIDI Timepiece AV, and a Digidesign Universal Slave Driver for synchronization. The SMPTE flow is very simple and straightforward: out of the computer through the SSD (SMPTE Slave Driver) straight to the Harrison. We

were told that a lot of history was made in that studio since the 1940s and 1950s, and no one has touched it since. It's literally like the day it was made. The roof has a few leaks, so there are buckets sitting around the studio floor with cloth in them — so they don't go "clink" when a water drop hits them! The room doesn't look that great,



would slide the start of each song forward so that the music would start 20 to 30 seconds in, giving the Virtual Faders automation system a bit of pre-roll before the music started.

Recently, we heard about using the Aardvark external digital clock with our Pro Tools system. So we got one and compared the sound of our music from Pro Tools, with and without Aardvark. We were instantly convinced! With the Aardvark, the sound has a much improved clarity.

Andres uses a Pro Tools rig based around an Apple Power PC 9600, 400 MHz computer. We used Pro Tools hardware and Andres used MOTU's Digital Performer software. All data was stored on two 18 GB, hot-swap drives, and everything was backed up later to DDS3 format.

It's incredible to think that now the whole album exists on the main drive, instead of a huge stack of two-inch tapes. We have a special shock-mounted case for the drives because they are fragile.

THE POWER

A wonderful thing occurs when combining the analog and digital worlds. If we originate a recording in the analog medium and then transfer this recording to digital tape (or disk as the case may be), virtually all of the beauty and elegance of the analog recording will remain in the sound field.

I think I could go so far as to say that at least 95 percent of the radiance of the analog sound remains in the sonics of the music when you transfer to digital. I think it's a lot like transferring a motion picture film to videotape. A huge percentage of the depth of field and symmetry you get with motion picture film remains in the images when you transfer it to videotape. Of course, once we have our tracks on digital, we can work wonders with the sound due to the incredible power of digital technology.

Some of Cyrius's vocals were recorded directly into Pro Tools,

but we were very careful in our selection of the equipment used on his voice (as well as on the project in general). Digital can sound cold when used or overused as a medium of origination in music recording. We chose our gear to help avoid that as much as possible, using Neve Class A mic preamps and my own microphones (for details, see the accompanying story on Bruce's microphone collection).

THRESHOLD

It's the point of beginning.

In the world of signal processes it might be where compression or gating starts. In yours, it's where your creativity is about to be set free.

Bellari products drive you through the threshold and into realms you've never been able to reach - and you'll never turn back.

Our mic preamps have transformer balanced inputs, 48 Volt phantom power, and phase reverse; our compressor/limiters have opto-coupled detector circuitry, our sonic exciter has phase adjustment and spectrum correction encoding, and our duct box has a variable input pad.

All Bellari products have high-voltage plate voltages for that authentic tube sound, but the reason to use Bellari products is to...

go beyond the threshold.

Bellari



5968 South 350 West
Murray, UT 84107
(801) 263-9053 • FAX (801) 263-9068
email: bellari@rolls.com
web: www.bellari.com

CIRCLE 35 ON FREE INFO CARD

JULY 2000

WRB

The Power and the **BEAUTY**

I love the Neve 1066's because they have variable mid-high, and low-frequency bands. On the Neve 1066, the single high-frequency control is absolutely wonderful once you learn how to use it. For instance, as you crank on more substantial amounts of high-frequency EQ, the knee of the curve moves down the spectrum a bit, making the resultant high-fre-

DO I AMUSE YOU?

I'm a funny guy in that I don't like to use other people's microphones. To protect my sonic integrity, I've tried to use microphones that only I have handled — mics that haven't been beat up. I want to know what my microphones will sound like. For example, when I put my U 47 in front of a trombone player, I know what it's going to

sound like. This is especially a concern with the inconsistency of most vintage microphones. I have mics in my collection that I bought new in the 1950s, and I can still use them on my projects today because I really take care of them. I have quite a few old RCA ribbon mics that are all wrapped carefully in plastic to protect them.

There are some new mics out there that are absolutely incredible, but I have a feeling that microphone technology matured about 30 years ago. The noise level of the microphone amplifiers has gone down a bit, and the newer mics are more consistent. For example, if you buy a new Neumann M 149 pair, they don't necessarily need to be close in serial numbers to sound alike.



quency EQ more dramatic. Yet, if you use just a small amount of high-frequency EQ, it adds a gorgeous open, air-like character to the sound. I also have two Neve 1272's for recording synths and guitars direct. They're Class A (to me it's the ultimate signal path) with a lot of headroom, which makes them quite forgiving — so whether you hit them hard or not, they still sound marvelous. And they add a little character, a little color to the sonics of the source.

PLEASE HOLD THE REVERB

Andres and I did not use Pro Tools merely as a "multitrack tape recorder." We used it to develop and shape the arrangements of the songs during the mixing process (as well as using it to clean up tracks, comp vocals, record effects, submix, and pitch-shift certain elements). Since hard-disk editing is not only random access but non-destructive as well, it gives Andres and I a lot of creative options during the mixdown. There's discrete tracking, plus this tremendous power to

create editorially. On one particular song, we needed to spice up the introduction. So Andres copied some snare hits from a drum fill during the song and used them to create a new fill for the beginning of the song. It took him about five minutes to do this. Of course, I have to say that Andres is seriously good and quick at Pro Tools. If we were using tape, we could have done the same thing, but it would have taken hours and hours just to do that one drum fill.

One of the really great uses we found for Pro Tools was as an effect "holder." Though it'd be nice to have more than one at Westviking, I have only one EMT 250 reverb. What Andres and I have done on several songs, is set up the EMT 250 for a distinctive reverb on a particular track, and printed that effect in Pro Tools. Then we can re-set the EMT 250 with a different reverb for another sound source.

THE RESPONSIBILITY OF POWER

I feel there's a certain responsibility that goes along with all this digital power. In my beloved profession of music recording, I've been very fortunate to have spent my life in the recording studio with the very best musicians in the world. I've learned a great deal from them. I have found virtually all of them to be very open and giving. In fact, I think that perhaps my real role in music recording has been that of the fortunate student. Those incredible mentors taught me that my first and foremost responsibility is to the music I am involved in. Duke Ellington or Quincy Jones would kick my ass all over the place if I didn't keep the music in focus!

When Quincy and I are working on a project together, if I get sidetracked or deeply involved in a technical issue, Quincy will announce to everyone in the studio, "Hey look, Bruce is having another AES meeting!" What I'm getting at is that, when your heart is in the right place, the kinds of editing and controlling options that we have access to today won't get in the way of creating believable music. However, if you turn the digital manipulation process into therapy, then it could become a problem. Listen to that little guy who sits on your shoulder telling you what's good or not so good. If you do that, you can't go wrong. Don't just have fun with your computer. That's not where it's at.

THE BALANCING ACT

What's interesting to me is that the sound of the recording coming off 24-bit Pro Tools is not that much different from the analog tape. I also think that my Harrison console — with its relatively simple signal path — has such a warm and clear sound that you can run darn-near any signal into that desk and it'll sound good (whereas a lot of other desks are not so forgiving). The EQ on my lovely old Harrison is four-band, totally parametric, with the best high-pass and low-pass filters on the planet.

The only other desks that I work with on a regular basis that have high-pass and low-pass filters of this quality are the SSL 4000, 9000, and Axiom MT. Filters of this magnitude can be very dramatic, and I rely on them a great deal. Once you learn their effectiveness, it's incredible what you can do. I always try to clean up the low end of the spectrum so that the bass and other low-end sound sources can be as clear as possible. With careful use of the high-pass filters on sound sources that have no real low end, you can work miracles.



"These mics are so good
it's absurd!"

Bruce Swedien (Grammy winner,
Michael Jackson, Quincy Jones,
Duke Ellington)

"God, I love these (expressive
deleted) things!!!"

Ed Cherney (Grammy winner,
Rolling Stones, Eric Clapton,
Bonnie Raitt)



(818) 760-8472
Burbank, Ca.

CIRCLE 38 ON FREE INFO CARD

The Power and the **BEAUTY**

For instance, I recently recorded and mixed a fantastic acoustic band from Stockholm. There was some secondary mic pickup in the studio — the guitar amp was miked in the same room with the drums. If you listen to the mics on the guitar amp, you will hear a bit of the kick drum. With the high-pass filters on the Harrison, I can virtually make that low-end, secondary pick-up of the kick-drum disappear, without affecting the sound of the guitar. Outside of the fundamental frequency of the note being played, there's no real low end in the guitar amp. If you have a quality high-pass filter you can safely edge the corner frequency up until you clean up the bottom end without destroying the sound of the guitar. Doing that on tracks whenever possible is dramatic — you can leave the whole bottom end of the spectrum wide open for the bass and the kick-drum, or any other low-frequency sound source. I think it was on Michael Jackson's *Thriller* that I really discovered how super-high-quality high-pass and low-pass filters can be used to the best advantage.

These filters can be equally useful on vocal tracks as well. When you hear a little room rumble that may color the sound of the voice, an effective high-pass filter can virtually make that rumble disappear. You might not hear that stuff in a mix as a specific sound, but it does take up space in the overall image of the music.

If your vocal or solo instrument is being played live at a distance from the source that's creating the problem, you'll have a delay from the source sound that'll be creating phase

problems. By using these filters carefully, you can really help things out. I also use the high-pass filters for overhead mics on the drums, or in-the-room-mics in the studio, because secondary pick-up and the resulting out-of-polarity problems can cause some nasty mix complications.

**"I'm a funny guy
in that I don't like
to use other
people's micro-
phones. To
protect my sonic
integrity, I've tried
to use micro-
phones that only
I have handled —
mics that haven't
been beat up.
I want to
know what my
microphones will
sound like."**

AM I A NUT CASE, OR WHAT?

Over the years, I've learned that, in music recording, it's the often overlooked "insignificant" details that can actually be extremely important. In fact, when Quincy Jones and I discuss this very subject, "Q" has said to me, "It's *all* important!"

I think I am lucky in that I absolutely love detail in anything I am involved in — especially music recording. I'm such a nut case that I even carry my own wire to every project that I do! My heavy-duty wire case full of Monster Cable goes with me everywhere, and my beautiful little studio at home is entirely wired with Monster Cable.

NOW HEAR THIS!

The main monitoring system in my studio consists of Westlake BBSM-8's, passively biamped. Using the Westlake-designed Speaker Muff's, the stereo imaging of the BBSM-8's is astounding, and I consider this to be the finest music mixing/listening system in the world. You can discern minute degrees of left-right position

in the stereo panorama with no effort at all! My Westlakes are powered by Electrocompaniet, Mono-Block, Class-A amplifiers. The BBSM-8's are very fussy about the amplifier they're powered with because they have a very low impedance in the mid-range. To sound as good as they possibly

can, they must be connected to an amplifier that will deliver a lot of power at very low impedance in the 1,000 to 1,800 Hz frequency range. The Electrocompaniet Mono-Block's will deliver 600 watts at 1,500 Hz with no problem at all.

For my truth-check speakers, I have a pair of older Auratones, powered by an Electrocompaniet Class-A amplifier. My little Auratones are mainly a slice-of-life observation point for my mixes.

An important part of my music-mixing situation is the acoustical treatment for my control room. I use an ATTACK Wall from Acoustic Sciences Corp, which I discovered a few years ago at my studio in L.A. when filming my video series. My old pal Arthur Noxon brought down an ATTACK Wall and set it up in my studio. I whipped out a couple of my mixes, and, as I listened, I was amazed to see mic positions in the stereo panorama that I hadn't seen in decades. I ordered an ATTACK Wall right away, and it's been a part of my studio world ever since.

The ATTACK Wall consists of a set of studio-grade Tube Traps placed as closely as possible around my mixing desk. The dead side of

the Traps faces the desk and the bright side faces out into the room. The result is a virtually reflection-free listening environment as far as early reflections are concerned. Early reflections in a music-mixing situation are a detriment to stereo imaging. They blur and obscure lots of important detail that exist in the original recorded sound field. On the other hand, late reflections are quite valuable when listening in a mixing room. If they are a little on the quiet side, very diffused, and incoherent in direction, late reflections will enhance stereo imaging and musical transparency. Sound from the speakers that escapes over the ATTACK Wall splashes back and forth between the bright side of the traps and the walls of my control room to create that wonderful diffuse backfill.

Whenever I travel (and I do travel a lot), I always carry a little aluminum foil box of DATs in my briefcase. On those DATs are tracks and mixes I've made over the years. Since I know the sound of these mixes intimately,

continued on page 141

We Buy
Used Gear!

WWW

SHREVE AUDIO

1-800-214-9222

.com

The Best Prices on
Earth and in
Cyberspace!

Specializing in digital recording and the latest in music technology!

Visa, MasterCard, AmEx, Discover accepted
www.shreveaudio.com

AKAI DPS12v2

1200 Marshall St
Shreveport, LA 71104

Marshall Mics

UNBELIEVABLE PRICE!

AKAI DPS12v2

*Use MESA software to edit on
your computer!
Burn your own CD's!

SHURE
THE SOUND OF PROFESSIONALS... WORLDWIDE™



MXL 2001
*Includes
FREE shock-mount-
a
\$49 value!

ONLY \$149



**AS LOW
AS \$699**



Write
Supplies
Last!

For the best prices check out our
website at www.shreveaudio.com

TASCAM

DA 78HR



**The World's 1st
24 Bit MDM!**
8 Track 24 Bit DTRS

- *12 audio tracks
- *Record 8 tracks simultaneously
- *250 Virtual Tracks
- *20 Channel midi-automatable digital mixer
- *Easy to use graphic interface



MPC2000XL

**AS LOW
AS \$1,199**

CALL!

**DigiDesign
001**

*complete audio/MIDI, hardware/software solution in one box
*eight analog inputs, eight analog outputs, eight channels of ADAT optical I/O and two S/PDIF I/O channels - all at 24-bit resolution

**CALL FOR
BEST PRICE!**

ALESIS

ADATS IN STOCK!



Trade in your ADAT
for a **BRAND NEW
ADAT!**



ONLY \$849!

CIRCLE 39 ON FREE INFO CARD

INSIDE BRUCE SWEDIEN'S MICROPHONE COLLECTION

By Steve La Cerra
Photos By Wes Bender

Bruce Swedien is a man who loves his microphones. Not only is the size and depth of his personal collection impressive, but if you want to know how to treat and keep track of your mics, then just ask Bruce! All of his microphones are carefully packed in some of the most serious road cases I've ever seen (he recommends also putting ribbon mics into plastic and then into either their covers or cases). All cases are numbered, and Bruce has a computerized inventory indicating case number, contents, manufacturer, model number, serial number, and value of the contents. His inventory also specifies accessories that may be packed in the cases, such as power supplies and shock mounts. Seeing this system in action is a true testament to an artist and his tools.

I've seen a lot of vintage mics — but none that are so well cared for by their original owner! Here are a few of Bruce's favorites from his collection, along with his recollection of historic and important sessions they were used on and tips for getting the most out of them. Enjoy!



BRÜEL AND KJÆR 4006

"I have a pair of these that were calibrated in Copenhagen at the factory, so they're absolutely matched. These are omnidirectional condenser mics, and I have a set of acoustic modifiers that fit over the front of the mics to change the response. Depending on which one you use, you can give the mic a boost in a certain frequency range or change the directionality of the mic slightly."



ROYER R121

"Royer has done a tremendous job in furthering the cause of ribbon microphones. I have three of their mics, a pair of R-121 (mono) mics and the SF-12 stereo mic, which is gorgeous [see photo]. I don't know exactly how the SF-12 is different from the R-121, but it sounds a little different tonally from the mono mic. The difference is maybe more in spectrum than in color. To my ear, the stereo mic is a bit brighter. They're both velocity mics. The R-121 is bi-directional, and the stereo is two bi-directionals in an XY pattern. I use it as a coincident pair, like it's two mics. I absolutely love these mics."



ROYER SF12

"You know how I feel about ribbon mics, and I was excited when they came out with this because one of my favorite ribbon mics was the B&O [Bang and Olufsen] ribbon. I have a couple of them, but they're in terrible shape and can't be repaired. It's good to see Wes Dooley and the guys at Royer working so hard to come up with these new ribbon mics. The guys at Royer keep telling me, 'Put them in front of a guitar amp. You can't blow them up.' But I would never do that with a ribbon. That's sacrilege. I told them forget it. I am not doing that!"



ALTEC 21B

"I have several of these old Altec microphones that I purchased new; this one is in operating condition. They're omni-condensers, which kept them from being very popular, but it's a good mic. I used it on bass a lot. I'd wrap it in foam and place it into the bridge, or I'd place it up under the fingerboard where the neck meets the body of the bass. Check out the high-pass filter: 20, 40, and 120 Hz. The mic would actually go below 20 Hz so it was good for capturing the low end."



SHURE SM7

"At one point I had about five of these mics. This particular mic is serial number 5210, and was the first SM7 that I bought. The ones I purchased after this one don't quite sound the same. This is the one I used on *Thriller*." Bruce looks up his session notes on *Thriller* and informs us, "I used it for all the vocals on the title song, 'Pretty Young Thing,' and probably 'Billie Jean.' For 'Pretty Young Thing,' the mic was very close."



AEA 44C

"This is Wes Dooley's new re-creation of the RCA 44BX. The 44C ribbon is an incredible mic for vocals. I recorded Cyrius singing a soft ballad on his new album with one of these fabulous mics. I placed the artist about ten inches away from the mic, and, of course, I used a windscreen. They have to be stored in plastic — you even need to be careful when closing the lid of a case on them because the ribbon could be stretched. That'll damage the high end."



RCA 77DX

"I purchased my 77DX's new after I had purchased the 44BX's, probably sometime around 1957 or 1958. They're a few serial numbers apart. This particular pair has a low-luster 'umber' finish to reduce light reflection in TV studios. I love these on trombones. I place them pretty close to the bell — there's no problem with air blasts unless you shove the mic into the bell."



NEUMANN U 47 FET

"I think that the U 47 FET was an attempt by Neumann to replace the tube '47 or at least to come out with something similar in appearance and sound quality. It uses the same capsule, but it's a field-effect transistor amplifier. I purchased mine quite some time ago from Neumann (like most of my mics, I purchased these new). I love these mics, and one of my favorite applications for them is on trombone. I recently recorded a trombone player from Stockholm named Nils Landgren with these mics. I get in real close, and the U 47 FET can take the sound level without a problem."



NEUMANN M 149

"I have a pair of M 49's that are great, but they're a little hard to keep in perfect shape. Sonically, the M 149's are close to the '49's — maybe a little brighter. The M 49 has an output transformer, but the M 149 doesn't, though the '149 is a valve [tube] mic. For historical purposes, I wanted sequential serial numbers. With the newer Neumann mics, you can buy them many serial numbers apart and they'll sound exactly the same. Vintage mics are all over the place due to the PVC diaphragms. I used the M149's all over Le Sang des Roses with Cyrius: strings, horns, the girl singers, and a lot of lead vocal."



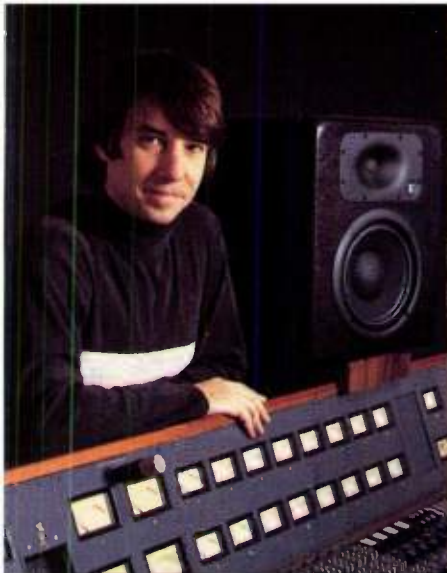
RCA 44BX

"With this mic, if you get closer than three feet to the sound source, proximity effect is going to be quite conspicuous. They're not high-output mics, and if you have to go for a lot of EQ, you're going to have a noise problem. If the mic is in good condition, it won't be a problem, but you do need a sensitive mic pre with low noise. When you set up this mic, don't set it perpendicular to the floor. Tilt it forward slightly so that gravity puts a little sag in the ribbon. That way, you'll get about a dB or so of free, no-noise, 10 kHz EQ."



BRAUNER VM1

"The best use I have found for the Brauner VM1 is as a vocal microphone. It's a three-pattern tube condenser mic with very low noise, and the construction is beautiful! On certain voices it's wonderful. It can be a bit bright, so it's best for a voice that isn't overly sibilant. It has a nice degree of proximity effect, so, if the singer works the mic a bit, you can get some free low-end EQ without noise or distortion. It can work in a very intense sound field, and has an incredibly wide spectrum."



William Wittman is a multi-platinum Producer/Engineer, former Staff Producer/A&R Vice President (RCA / BMG Records and Columbia / Sony Records), Musician and Songwriter. His career truly covers all the bases.

“I’ll tell you a secret; I’ve always had a love hate relationship with near-field monitors. But these LSR’s have changed all that. First, they’re just easy to listen to. They’ve got plenty of full, real bottom, great stereo imaging, and they go loud enough to feel right. Plus, they translate incredibly well to the rest of the world. They’re just *musical*. Wow; good sounding speakers I can trust! It’s love-love.”

LSR. Profiles

The world’s most noted recording professionals discuss the world’s most advanced monitoring systems.

The Three Best Performing THX® Monitoring Systems Are Also The World’s Most Applauded.

Since its introduction in 1997, the system-engineered JBL LSR Series has become a favorite choice of engineers, producers and performers, many of whom have also become its most loyal advocates. More important, this acceptance is found in every major geographic area of the recording industry; from Los Angeles and New York to Nashville and London.



LSR 32

LSR 28P

LSR 12P

Monitors Whose Performance Profile Was Determined By Science, Not Opinion.

During a half century of building the most technically advanced studio monitors, JBL has developed a long list of working relationships with key recording professionals around the globe. As a direct result of this unique collaboration, these industry leaders have chosen JBL monitors more often than any other brand. Not once or twice, but consistently for decades. In fact, JBL monitors are a part of the history of recording itself. Consider as examples, the now fabled JBL 4200 and 4400 Series that, at their launch, actually defined an entirely new standard and new category of monitor. Such is the case now with the entire LSR line.



Joel Jaffe is an award winning Engineer/Producer/Composer and co-owner of Studio D Recording, Inc., home to a long list of platinum and Grammy Award winning albums and artists. Currently, Joel is working on DVD surround mixes for some of the industry’s top touring acts. LSR surround systems are his choice for stereo and 5.1 channel multimedia projects.

“The THX Approved 5.1 JBL LSR28P with the JBL LSR12P subwoofer provide an extremely linear response, great transients and full-frequency monitoring in a near-field set up. In addition, the LSR speakers allow us to be able to go between stereo mixing and multi-speaker formats, which is absolutely necessary today in a state-of-the-art studio.”

ALL NEW LSR 25P



The Only Workstation Monitor
Good Enough To Be Called LSR.

CIRCLE 75 ON FREE INFO CARD



EVER WONDER?

HOW THEY MIXED "DARK SIDE OF THE GENIUS? HOW TO FIND A BASSIST IN TO DEAL WITH A&R GUYS? HOW TO SET OF TURNTABLES?

A photograph of a man with dreadlocks, smiling and playing an electric guitar. He is in a music studio or rehearsal space, surrounded by various pieces of audio equipment, including large speakers, a keyboard, and a mixing console. The lighting is dim, with a blueish tint.

**MOON"? HOW TO COPYRIGHT YOUR
OHIO? HOW TO SET UP A GIG? HOW
GET YOUR HANDS ON THE PERFECT**

FEED THE DREAM. JOIN NOW.
MUSICPLAYER.COM

THE MUSIC PLAYER NETWORK For Musicians by Musicians

GUITAR PLAYER • KEYBOARD • EQ • BASS PLAYER • GIG • MC²



B Minority RULE

Sylvia Massy Shivy fights the odds and helps heavy rockers such as Tool and System Of A Down reach the top

BY HOWARD MASSEY

*Sylvia Massy Shivy has one of the most infectious laughs you'll ever hear. It's hard to imagine this bright, cheery woman — one of only a handful of female engineer/producers in the business — hanging out in the studio with the likes of angry thrashers such as Tool. But clearly a synergy exists, because their partnership resulted in one of the more successful debut albums in recent memory — 1993's *Undertow*.*

As far back as high school, Shivy knew that music was her calling. She sang and played drums, keyboards, and guitar in local bands, performing everything from reggae to ska to punk to metal. In college, she began making radio commercials — experience that she claims has served her well by providing a theatrical view of music production. Assistantships at a number of studios in both northern and southern California followed, and she soon made the transition to engineer and then producer. Despite her early experiences working with mainstream artists such as Patti LaBelle, Barbra Streisand, and Prince, Shivy gravitates toward the harder edge of things, aligning herself with a variety of alternative rockers, including the aforementioned Tool and bands such as System Of A Down, Machines Of Loving Grace, Powerman 5000, and Love And Rockets. Recently returned to northern California, she's currently in the process of building her own studio, where she plans to continue her work out on the bleeding edge of popular music.

EQ: Why do you think there are so few women in the music business?

Sylvia Massy Shivy: You know, that is a very interesting question. When I first got into the business, I thought, well, maybe there's some kind of unfairness as far as men versus women in the business. But the more time I've spent in it, the more I realize that is not the case. It's that women biologically have other things to do, and by the time their career really gets going, it's time to think about other things! [Laughs.]

That doesn't explain why there aren't more women in entry-level positions.

It's difficult when you really want to be an engineer or get into producing and you find out that it takes everything. It takes fifteen-hour days, six, sometimes seven days a week, total dedication, working for practically nothing to start. That's enough to discourage not only women, but most entry-level people.

Still, this is such a male-dominated industry.

I suppose there are some people that may feel uncomfortable working with a woman. I think that the best way for a woman to present herself in the studio is to not be noticed as much — to dress more in the uniform of a studio: jeans, really basic attire, not flashy, not dressed up. Women love to dress up, and I think it's a distraction for clients. Though some clients love it; some clients will only work with women. I was lucky to get a job in L.A. at Larrabee [Studios], which has always had a good hiring practice of starting women. But there are places that I've found to be very difficult for women to start in, and for no good reason. It is an issue. It's weird that there are not that many women in the industry.

What experience do you feel had the greatest impact on your career?

Probably the one with the most impact was the work I did with Prince when I was assisting at Larrabee. He would have several rooms going at the same time and he'd always be short an engineer and would

Minority RULE

just have the assistant do the project. So I got to engineer and mix for him on several different projects.

He's one of just a handful of artists that have been able to successfully produce themselves. Why do you think that is?

Well, the thing about Prince is that he has the final product already swimming in his head; he knows what it's going to sound like. He could get it there himself — he could engineer it, he could produce it, he could perform every part himself faster than anyone else — but he prefers to have other people put it together.

What's the oddest way that you've recorded a guitar and got a good workable track out of it?

The funniest moment was throwing a guitar off a cliff at Indigo Ranch while I was recording Machines of Loving Grace. There's this beautiful view of the ocean and a rocky cliff at Indigo, and it's quite a ways away from the studio, so we had to get a very, very, *very* long extension cord. I brought my portable DAT recorder up to the cliff where we set up a Marshall stack and had a sacrificial guitar that had been decorated for the occasion. We drilled a hole through the guitar and tied a long rope on it so that we could retrieve it, and had a very long instrument cable going from the guitar into the Marshall stack. And then, at the precise moment of the most beautiful feedback, the guitar was tossed off and we recorded the sound of it crashing. It was really tremendous! [Laughs.] Later we retrieved the guitar and the owner of the studio framed the remains. He has it up on the wall of the studio now.

Whose idea was this — the band's or yours?

Mine. When I'm working with bands, I try to get them to loosen up and to not be restrained by what they do. So I try to think of the most insane sounds or insane things to do, for two reasons: One, to possibly get some exciting recordings to use on the record, and, secondly, to create a very memorable moment that the band will never forget. I think I manage to do that on almost every record.

What did it sound like?

It was squealing and banging and crashing, with echoes off the canyon. I don't know how usable it was, but we wound up slipping it in on a segue somewhere.

What do you see as the difference between a finished record and a demo?

Demos seem to have an energy that gets lost when the songs are re-recorded. Often on demos, the drum



TOOL'S GOLD: Tool's *Undertow* and *Opiate* are just two of the many successful albums Sylvia Massy Shivvy has worked on.

recording is unfocused and there's usually not a lot of time spent in layering other instruments and vocal parts. If I listen to a track and notice things about it that are missing, then I would consider it a demo.

But there's a fine line between fleshing a song out sufficiently and not overdoing it. How do you know when you've crossed that line?

Well, as soon as it gets real crowded, you've gone over the line. I think a production needs negative space as much as it needs space to be filled up. As long as you have left a pocket here and there, you're doing okay. Simplicity always seems to be better when you're talking about musical parts, so as soon as it feels claustrophobic, you might want to shed a few tracks and simplify it a bit.

And there's also the all-important issue of dynamics.

Exactly — that's where the positive and negative space comes from.

That seems to be one of the hardest things for new artists to come to terms with. How can you make a new artist understand that?

You want a song to have movement and to have a payoff and, hopefully, a peak. If you're trying to explain that to a new artist, you might take examples of songs that they like — even though perhaps they don't know why they like it — and listen with them and discuss it. Ask them why they like it; hopefully, the song will include an example of that type of dynamic movement.

Another tough thing is dealing with low end — getting a tight, solid bass without it becoming boomy and woofy. What kind of techniques have you come up with for dealing with that?

You have to have proper monitoring. Otherwise, you don't know what's going on with your low end; you're just flying blind.

But assuming that you are monitoring accurately, what knobs do you start reaching for?

Always in Fashion

No matter what the application, **Music Recording, Broadcast, Post-Production** or **Live Sound**, for more than 27 years AMEK has led the way in **Audio Innovation**.

Our outstanding analog and digital products are always born from the **creative genius** of **Legendary Designers**, such as **Mr Rupert Neve**.

AMEK has always paid careful attention to the way you work, consistently providing an unrivalled combination of **Features, Performance, Reliability, Familiarity** and **Impeccable Sound**. You can also count on the support of the \$1.5 billion Harman organization.

When you add all this up, you begin to realise that whatever the size and style of project you have in mind AMEK's **premium quality solution** will always be your **perfect fit**.



Legendary Designs Crafted by AMEK



Manchester
44 (0)161 868 2400



Los Angeles
1 (800) 585 6875



Nashville
1 (888) 286 9358



Tokyo
81 3 5707 0575




US Headquarters

1449 Donelson Pike
Nashville, TN 37217
Tel: (615) 360-0488
Fax: (615) 360-0273
Web: www.amek.com
Email: amek@amek.com

H A Harman International Company

CIRCLE 06 ON FREE INFO CARD

Minority RULE

There's a real scary knob — the high-pass filter. That allows you to trim off the sub-frequencies that are going to get you in trouble and that will help you tighten up the low end.

How do you identify what those frequencies are?

For example, if you're trying to get a kick drum and a bass to lock together, how do you go about doing that?

I try to separate the frequencies and make them independent from each other, and that can be really very tricky, depending on what you're working on. I usually work on the kick drum first, putting it into a complete picture with the rest of the drum kit. Once that spectrum is worked out, then the bass comes in next. Or sometimes I'll add guitars before the bass, because the lower guitar frequencies can make the bass confused. So one way to clear the bass up

is to use that high-pass filter to clear up the low end on the guitar; it allows you room for the bass. I suppose the lowest frequency is the kick drum, and then the bass sits right above that, and the guitars are on top of that.

So you'll roll-off low frequencies in the bass so that

they don't conflict with the higher end of the kick drum?

That's right.

What sort of frequency areas are you talking about?

Sixty to 100 Hz on the low part of the

kick drum. And above that with the bass, depending on what key the song is in.

Do you use a lot of compression?

Most of the time I don't record with compression on the drums. I will often add compression in the mix to the kick and sometimes to the snare. If it's a real mechanical sound, I'll use a lot of compression — and very pokey

"When I'm working with bands, I try to get them to loosen up and to not be restrained by what they do."

www.microboards.com

"Hear The Power"

StartREC™

CD-R Editor/Duplicator

StartREC is the first Digital Audio Editing System combined with multidrive CD-R duplication capability designed specifically for the Audio Professional, from MicroBoards. The StartREC offers Audio Professionals advanced hard disk editing tools, and the ability to create simultaneously up to four custom audio CD's in a convenient rackmountable or desktop configuration.



While You Perform,
So Do We!

MICROBOARDS
Technology, Inc.

Setting the Course in CD Technology!

Headquarters: 800 646-8881 • Fax: 612 556-1620
East Coast: 888 215-3966 • Fax: 610 495-5437

CIRCLE 25 ON FREE INFO CARD

sounding compression. More organic sounds will get a looser type of drum compression and more room. Bass, I usually do record with compression.

Do you record both DI and bass amp signals?

Yeah, and depending on where the bass needs to sit in the mix, I'll reverse the phase on one of the two bass tracks until it pokes out the best. Also, when recording drums, it's very important to check phase between every single mic because there'll be some conflicting phase and you will lose instruments and have a very difficult time later trying to hear things.

What's your favorite bass amp mic?

Sennheiser 421. Just give me a dozen 421's and I'm happy! [Laughs.]

What are your favorite drum mics?

I use a [Sennheiser MD] 421 for kick and toms, a [Shure SM]57 for top and bottom snare, [AKG] 414's or 451's for hihats and individual cymbals. For overheads, a pair of [Neumann U] 87's or a C24. Sometimes I use a Neumann CMV 563 with the M7 capsule for a room mic; that's kind of an unusual mic.

What are your favorite vocal mics?

It depends on the performance and the performer. A lot of times, to get the best performance in real hard music, I'll use a live mic like an SM58. In fact, for certain voices it can't be beat. I'm very impressed with an SM58— isn't that silly? [Laughs.] I mean, I own a Telefunken U47. For intimate vocal performances I like to use the U47 with a great deal of compression— usually two compressors ganged up, an LA2A with an 1176 or an RCA BA6A compressor with the UA175.

And you'll record it with double compression?

Oh, yeah, because if the performer hears his voice compressed in the headphones, he'll perform differently than if he was not hearing that compression.

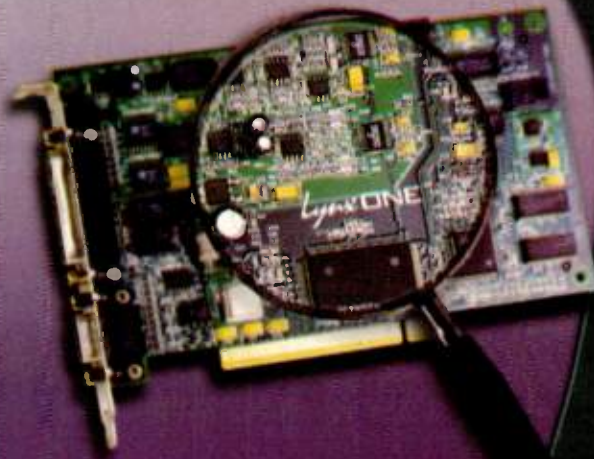
What advice do you have for the reader who wants to be the next Sylvia Massy Shivy?

If you love music, stick with it. Don't be afraid when you're broke and you think the world's against you! [Laughs.] Use that energy, get pissed, and keep going. Work with as many up-and-coming bands as you can— be out there looking for talent and find a way to record them, whether it means buying your own home recording setup or getting a job in a commercial studio and sweeping floors. Just stick with it, and the longer you're there, the more likely you'll have success.

This interview is excerpted from Howard Massey's new book *Behind The Glass*, soon to be available from Miller-Freeman Books.

Get Focused.

24-bit Analog I/O • 24/96 Digital I/O
Two MIDI Ports



LynxONE
Lynx Studio Technology, Inc.
1048 IRVINE AVE. #408, NEWPORT BEACH, CA 92660 ph. 949.515.8265 • www.lynxstudio.com

"Sonically, the LynxONE is top quality. Easy install and crash free operation... offers I/O and sync options professionals expect. One could use this card for a big-buck master session or block-buster movie without any reservations."

- Pro Audio Review
April 2000

"It's extremely clean, very clear, and amazingly accurate. Rock solid with a wide range of programs."

-Recording Magazine
February 2000

"The LynxONE is an excellent mastering card in terms of sound quality and flexibility. Suitable for today's professional studio."

AUDIO QUALITY: 5 (out of 5!)
-Electronic Musician
August 1999

CIRCLE 18 ON FREE INFO CARD

See what lengths I u b-
www.rane.com/eqs.htm

Fidelity a Must
Accurate, 24 dB/octave crossover seeking LTR. You—smart, determined, successful. Me—rugged, original and proven. I can be connected balanced or unbalanced when you set me up. Can handle 2-way, 3-way, 4-way or even 5-way and keep full fidelity. Explore my models, controls, connectors and stats at www.rane.com/crossov.htm

Let's Mix It Up
and smooth outgoing at parties and

Alte
Tired of ov
for deserv
LTR. I'm
and got
improve
tweakers
www.ran



AC 22, AC 22B, AC 23, AC 23B, MX 22 & MX 23 Crossovers

Rane — Personal Preference

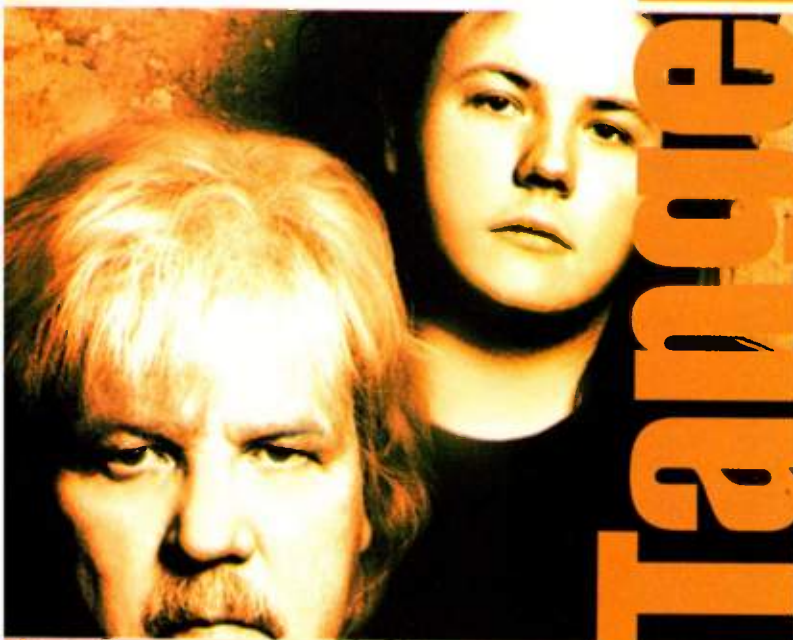
Mukilteo, Washington USA tel 425-355-6000

CIRCLE 33 ON FREE INFO CARD

*For the times
they are a
changing—
and no more
so than for
legendary
German
electronic
ensemble
Tangerine Dream*

by Jonathan Miller

Tangerine Dream=





INDEPENDENCE DAY



Tangerine Dream. The words conjure up images of a bygone psychedelic era. Yet these legendary electronic trailblazers have eagerly harnessed the latest technological developments in their ongoing quest to remain on the cutting edge of music for nigh on three decades, which is present in their prolific recorded output and concert appearances.

Although a whole classroom worth of musicians have passed through the group's ranks since its formation in September 1967, Tangerine Dream's unique approach to instrumental music has always been a reflection of the philosophies of its founder and mentor, 55-year-old keyboard player and guitarist Edgar Froese. As a sculptor, Edgar spent time studying under renowned Spanish surrealist artist Salvador Dali, whose unorthodox techniques he later applied to music.

Tangerine Dream: Independence Day

For many, Edgar remains the living embodiment of the group he fronts to this day alongside his son, Jerome. Tangerine Dream's longevity in an age of increasingly disposable music speaks volumes, and can perhaps be attributed, in part, to the relationship between the many changes in the group's line-up and the composition process itself, as well as the natural evolution of the music technology involved.

Tangerine Dream has been heavily involved in sound research for many years, regularly working alongside equipment manufacturers in the development of music hardware and software. Often this proved to be something of a love/hate relationship, so nowadays Edgar and Jerome prefer to remain tight-lipped in this regard; Edgar having learned his lesson well — the hard way. "We stopped talking too much about it, because lots of things have been invented by some bizarre thoughts we ourselves had about sounds and music. Ironically, people began to manufacture hardware and software exactly as we had spoken about it, and released stuff into different market places under their own logo without even mentioning our name."

With a staggering 95 album releases to date, Tangerine Dream enjoys worldwide sales extending comfortably into seven-figure territory, including official

live recordings and soundtracks. When American realist director William Friedkin asked them to score the music soundtrack for *Sorcerer*, his 1976 follow-up to *The Exorcist*, the group found themselves in the unlikely position of Hollywood darlings, and a lucrative second career ensued. This funded vast amounts of unique custom-built equipment, which was put to mind-blowing use on record and onstage — not bad going considering "electronic music" has never courted mass appeal.

Paradoxically, Edgar deplores the term: "We have never called ourselves an electronic band or said we are producing electronic music, which is something completely different."

New Dreams For Old

Electronic or otherwise, Tangerine Dream's copious output and groundbreaking methodology dictated that the group become studio-savvy from an early stage in the game. In 1976, they plowed their not-inconsiderable earnings into a



Edgar Froese's Work Space

Computer (music)

Apple Macintosh G3 (400 MHz, 128 MB RAM)
Omega ZIP 100
MOTU 2048 Mk II
Plextor Plexwriter 8/20 CD-RW
40 GB HD [2]
18 GB HD [2]

Computer (sampling)

Echo Gina 8-channel audio interface
Pentium II PC (500 MHz, 128 MB) [2]
25 GB HD [2]

Software

Steinberg Cubase VST/24
BIAS Peak 2.1
BIAS SFX Machine
NemeSys GigaSampler v1.6 [2]
"We're using GigaSampler as our main sample library tool. The latest update especially is the best device for building a large library

of samples that is swiftly accessible and easily overseable. It also has the advantage of providing us with nearly unlimited storage space from whatever hard drive units we add."

MIDI Interface

Opcode Studio 5 LX

Samplers

Akai S2000 [3]
"These are used to import sounds that, for one reason or another, have not yet been stored into the GigaSampler. They are a reliable part of our equipment, but rather old-fashioned because of their 32 MB storage limitation."

Synthesizers

Ensoniq SQR+
Korg M1r
Kurzweil K2000R
Roland JV-1080 (with 4 expansion boards)
Roland JV-2080 (with 6 expansion boards)

Korg T1 (master keyboard)
Korg Z1
Roland JP-8000

Effects

Eventide H3000-S Harmonizer
Roland SDX330
TC Electronic M2000
TDX (3D surround system)

Mixers

Mackie 32:8:2
Mackie CR1 604

Recording

Alesis ADAT Type II (20-bit)

Monitoring

B&W CDM 7 Special Edition
Monitor Audio UK
Sennheiser HD580 Precision headphones

All Your Time-Stretching and Pitch-Shifting Dreams Have Just Come True...

A new version, more features, more power. This is not a toy.

Pitch 'n Time, originally released in December 1999 by Serato Audio Research, has already been described as the best pitch and tempo control tool on the market today. It has received rave reviews from a number of pro audio magazines and



was recently nominated for the 2000 Mix Technical Excellence & Creativity award.

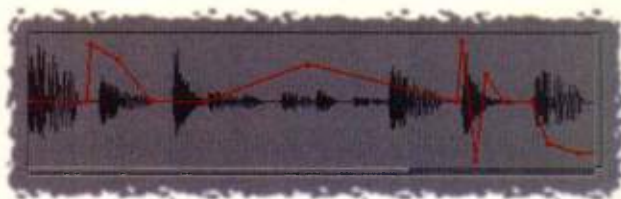
With the release of version 2.0, we at Imaginary Gadgets have built on that tradition of excellence to deliver a product which incorporates exactly what you have been wishing for.

Introduced in this release is an impressive array of new features including multi-channel mode, waveform overviews, tempo mapping, cue points and pitch mapping which together make Pitch 'n Time 2.0 an essential tool for your collection.

New in Version 2.0

Multi-Channel Mode allows you to process up to 48 tracks together while maintaining their original phase coherency.

Waveform Overviews mean that each of your graphical editing portals has its own preview. You can actually see the effects of your tempo map as it is applied directly to the Waveform.



Pitch Mapping allows you to create amazing pitch-bends and record-scratching effects by drawing your pitch change right on top of the waveform.

Tempo Mapping gives you the power to create variable tempo ramps and changes over the length of your sample.

Cue Points, this simple yet powerful feature lets you synchronize arbitrary cue points: simply move them where you want them to go in the output, and Pitch 'n Time warps the timebase as required!

Pitch 'n Time is powered by
serato[™]
intelligent sound

Download your **free** 15-day trial of Pitch 'n Time

www.pitchntime.com/demo



www.pitchntime.com

Pitch 'n Time[™]
Version 2.0

Tangerine Dream: Independence Day

cavernous Berlin studio complex, sited in a former ballroom and cinema built in 1910 — an admittedly unusual move for the time. These impressive facilities were later lost when Christopher Franke left the group in 1987.

Prior to moving to their present location, Edgar says, "The aim was that each member of the band had his own recording place to work independently and prepare things, because if there was just one big studio and one member was working or trying to do his sound research, then the others would just be hanging around and waiting. That would not be economically wise, so we decided that we should have some smaller, independent places where we went to do our work, and then move together into a bigger place to finish everything."

Of course, times change, and musically and geographically so have Tangerine Dream, now partly based at the Froese family vacation home in the idyllic surroundings of a small Austrian village on the outskirts of Vienna. Today,

father and son envisage a very different Tangerine Dream indeed, both philosophically and technically. Freed from the contractual rigors of the mainstream music industry, having founded their own TDI Music label in 1998, they will ultimately become the sole proprietors of the Tangerine Dream legacy — past, present, *and* future. "For us, it was definitely a very important step to take," states Edgar, "because we know so much about the business, and know we can handle it ourselves now. By initially moving into Britain and dealing with a small company there, we were able to take the first step toward our situation of today — setting up our own company, worldwide. It's the right time to do this now; we've done it; we're very happy — and we're *free!*"



Jerome Froese's Work Space

Computer (music)

Apple Macintosh G3 (300 MHz, 128 MB RAM)
Iomega JAZ drive ("Not recommended!")
MOTU 2048 Mk II
Plexor Plexwriter 8/20 CD-RW
40 GB HD
4.3 GB HD

Computer (sampling)

Echo Gina 8-channel audio interface
Pentium II PC (450 MHz, 256 MB)
Pentium III PC (600 MHz, 256 MB)
TEAC R58S CD writer
40 GB HD unit [2]

Software

Steinberg Cubase VST/24)
NemeSys GigaSampler v1.6 [2]
BIAS Peak 2.1
BIAS SFX Machine
Adaptec Toast

MIDI interface

Opcode Studio 5

Samplers

Akai S2000 [2]

Roland VP-9000 ("Just added!")

Synthesizers

Alesis D4 Drum Expander
E-mu Morpheus
E-mu Orbit v2
E-mu Planet Phatt
E-mu Proteus 2000 (expanded)
Ensoniq SQR+
Korg M1r
Korg Wavestation A/D
Kurzweil K2000R
Roland D-550
Roland D-70 (master keyboard)
Roland JD-990
Roland JV-880
Roland JV-1080 (including 4 expansion boards)
Roland U-220
Roland JP-8000
Yamaha TG77
Yamaha TX802
Waldorf Microwave

Effects

ADA Microcab II speaker simulator
Digitech GSP2101 Studio Tube (Ltd. Edition)

Ensoniq DP/4
Lexicon PCM60
TC Electronic D-Two Rhythm Delay

Mastering

Anatek SR-7
Behringer Denoiser Model 2000
Behringer Edison
Behringer Ultrafex II
DQC System ("TD's own mastering invention.")

Mixers

Mackie CR1604
Mackie LM3204
Roland M-240R

Recording

Alesis ADAT Type II (20-bit)
Sony PCM2600 DAT
TASCAM MD801 MiniDisk
Yamaha CDR-1000 CD recorder

Monitoring

Tannoy System 600A Active
Sennheiser HD560 Ovation II headphones

Free they may be, but, as Edgar is well aware, independence often has its attendant downside: "The entire Tangerine Dream recorded catalog consists of nearly 100 records. Obviously, we can't deal with all of it at once. So far we've released about 25 records in the last year-and-a-half, which represents a *huge* amount of work for the both of us on different levels, working perhaps the hardest we ever have. As far as the musical side of things is concerned, we're a two-man crew! We do *everything* ourselves. There's no ghost-writers involved; no hired musicians working in the background."

Studio City

This in itself has dictated a new approach to recording, together with the construction of a new, custom-designed studio complex in former East Berlin to deal with the increased TDI workload. "The working facility we had quite near to the city center in Berlin was in a not-so-friendly neighborhood," explains Jerome. "We had to totally soundproof its rooms, so there were no windows. We were sitting in a kind of black hole, really. For several years we said, 'Well, it's okay because we also have a working facility in Austria.' But we're not always in Austria, because our business headquarters are in Berlin. So for years we've been searching for a new city studio location where we can set up our instruments in natural daylight *and* not disturb any neighbors!"

Edgar nods in agreement, "Our experiences throughout all the years have taught us that one is often inspired by one's surroundings. In the end, I was having such a hard time working in a kind of isolated box in Berlin, as Jerome described. And commercial studios often aren't any better. We've worked on many specific projects where we've had to move in and work on an already prepared platform. But I never felt very comfortable in that kind of environment, even in L.A., where I've worked in most of the studios. Great places, by the way, but, because of the nature of what a professional studio is all about, they *always* seem to be missing a kind of colored landscape feeling. I don't want to be trapped in a black box anymore."

Home is Where The Art is

Light, bright, ergonomic, and airy are expressions that immediately spring to mind when venturing into Edgar and Jerome's new individual workspaces. The recording workspaces themselves are housed on separate floors within a radical four-floor

building that would not look out of place nestling in the Hollywood hills. Its tasteful decor, featuring artifacts from around the globe, is a reflection of Edgar's artistic roots and passion for travel. (In case you're wondering, the Froese's respective private living quarters occupy the remaining two floors.) In reality, this desirable real estate is located in a plush German residential neighborhood. That the once-divisive Berlin Wall was only a stone's throw away adds further still to its ambience.

"This place is ideal," declares Edgar. "An architect originally designed and built it for himself and his company. He's a computer freak and had already installed ISDN connections before we came and looked at the place. We gave him a few ideas about what could be done here and there during the final stages of finishing the building."

Like all new studios, this one was not without its share of teething troubles. Jerome's recalls, "I had some minor problems because the power supply to my studio space up in the roof here was not very reliable at first, so we called an electrician and he put in a new fuse — a *red* one; all the others are white. I said, 'Why is this one red? Is it to do with the strength?' He said, 'Yes. Normally those fuses are used at bigger facilities, like Siemens, to power their machines!' So now everything's okay."

Edgar is happy with the result: "My new studio space has been set up in a completely modular fashion; I can take it apart and move it to another part of the building within a day, if I want. Both Jerome's and my working spaces are networked together, so we can transfer data between floors. Sometimes we can work together without necessarily seeing each other. That's quite interesting."

The Golden Age of Wireless

Networking and ISDN are set to play an even greater role in the Tangerine Dream *modus operandi*, as Edgar reveals: "Here in the studio we're already developing a couple of new approaches for future concert performances. For instance, there are advantages to be had in using the Internet for recalling data — using the 'Net interactively onstage between different band members, which is a completely new technique..."

"Keeping our sounds at home, but using them somewhere else onstage, in other words," interjects Jerome.

"Correct," Edgar acquiesces, before continuing. "The real hi-tech parts of the show will remain in the studio, whilst we perform onstage. We've tested this already,

World Class Sound...
Unbelievable Price

MXL 2003



\$399.95
(MSRP)

- 3 position switch: Bass Cut & 10dB
- 1.06" 3 - micron Gold Diaphragm
- 20-23 kHz
- Cardioid Pick-up Pattern
- 130 dB SPL
- Balanced transformerless output
- Noise Level: 18 dB-A
- Weight: 530g

"You wouldn't think condenser mics could get any more affordable, but Marshall Electronics have dared to step into an already crowded bull pen with a deal you can't pass up."

Eddie Ciletti - Contributing Editor
EQ Magazine, March 2000

"The MXL 2003 strikes me as a mic that could very easily find a home in broadcast, ADR and Foley applications, in addition to a multitude of music chores"

Roger Maycock - Technical Consultant
Mix Magazine, March 2000

Visit Our Website at:

www.mars-cam.com

Marshall

Professional Audio Division
Mogami Cables & Accessories

1-800-800-6608
sales@mars-cam.com

CIRCLE 20 ON FREE INFO CARD

Tangerine Dream: Independence Day

and know it works. Now we have to make the technology more user-friendly. I'm sure it's the key to future performance techniques. Even if audiences are still stuck in that kind of old-fashioned mindset of a guitarist posing sexily at the front of the stage, we're looking for something different.

"The good thing about our new place is that we now have so much freedom to do all kinds of crazy things. Some days we just work on different Internet projects, starting with the home page, ending with various music communication services that are possible today — what is good and bad about MP3 for us, or whatever."

Never one for resting on his laurels, Edgar is already reflecting upon the ideal "studio" of tomorrow: "We are always thinking about what we call the 'third step.' The first step was the entire analog level of equipment, which lasted from 1971 until about '82 or '83. Then we started working on a digital level — step two. And now we're starting to leave this digital level in favor of a more virtual level, but virtual in a good sense — the *third step*. It's more or less a completely wireless situation with a totally different control mechanism. In fact, it's so different that one could even say, 'Is there anything in it that has something to do with music?' And the answer is no, because there is nothing that reminds you of

a traditional music studio anymore. That's the level we're working toward right now, but we've got a kind of hybrid situation at the moment."

Virtual Reality

This "hybrid situation" presumably extends to Edgar's recent studio hardware of choice, a Mackie 32:8:2 console, for example, as opposed to one of the new digital alternatives: "I don't need all of that hardware for any of our future music. Eventually, I won't even need a *keyboard* anymore! The Mackie console, and even the modular rack-mounted stuff, only exists for one simple reason: we still have a *lot* of back-catalog work to complete. With sessions involving older recordings, we bring in the vintage tapes, hook up the necessary machinery, play the tapes only once onto another medium, and then throw them away. We just need the Mackie for monitoring old multitrack tape formats, starting with quarter-inch eight-track — later we used 16-track, then 24-track machines. We run all the different tracks through the mixing console over to individual audio tracks on a computer."

For Tangerine Dream circa 2000, computers are clearly where the action lies, with a mix of current Apple Macintosh and IBM-compatible PC hardware performing a variety of roles,

Ever Heard Natural Mic Sounds?



Hint: No, you haven't.

Compare the best discrete or tube preamps to an MSS-10 and you'll discover that they still color the sound. All other discrete and tube preamps obscure spine-tingling details that the artist created and the mic captured, but you never heard.

The MSS-10 goes beyond Discrete or Tube sound. The Natural sound of an MSS-10 puts it in a new category all by itself. Critics and legendary engineers are saying that the MSS-10 is something special, but the opinion we're most interested in is yours.

You can get a free report about the MSS-10 and Natural sound by phoning or visiting our website. Then experience Natural sound for yourself with an MSS-10, the Natural mic preamp.

"From now on, whenever I record, I'll be using the MSS-10s. I would love to have a ton of them."

—Al Schmitt

MSS-10 Mic Preamp

1151 W Valley Blvd, Alhambra CA USA 91903-2493 (800) 582-3555 or +1 (626) 281-3555
Fax +1 (626) 284-3092 www.martinsound.com/naa.htm

CIRCLE 22 ON FREE INFO CARD



AKG®

NEW
C2000B

**Austrian brilliance
at a lower price.**

**What all studio
mics aspire to be.**

The new C2000B side address condenser microphone gives you large diaphragm clarity at a price that can only be categorized as amazing. See your local AKG retailer to hear what we mean.



AKG Acoustics, U.S. · 1449 Donelson Pike · Nashville, TN 37217 · Phone: (615) 360-0499
Fax: (615) 360-0275 · E-mail: akgusa@harman.com · www.akg-acoustics.com

H A Harman International Company

CIRCLE 02 ON FREE INFO CARD

www

Tangerine Dream: Independence Day

from sequencing, sampling, recording, and mastering to the sleeve artwork, courtesy of Edgar, that adorns their TDI Music releases. "We run all software programs separately, so there are no problems. We wouldn't, for example, run a sequencer program and NemeSys's GigaSampler on the same computer. I wouldn't recommend *anyone* doing that. Maybe some people might say, 'But, hey, I can't afford two computers just to have things separated.' But it's *much* more reliable that way."

MIDI control may well be problem-free, but in the cutting-edge world of Tangerine Dream, this is not enough: "We are only using MIDI because some of the interfaces to the outside world are still MIDI," Edgar maintains. "Even if one has a so-called 'MIDI 2' interface, it doesn't make every data flow faster, *after* the interface. It's like starting a race in a Formula One car at 300 miles per hour, suddenly reaching a fence, and having to change over to riding a horse! It doesn't make any sense. So now we are working with a couple of people to get *rid* of that interface — to have absolutely no time delay from the very fast attack of a given signal to the final storage of the sound. And that would get rid of the *entire* problem of latency when working with audio files, which we will *always* be stuck with as long as we use MIDI.

"There are much faster data connections already available, but because the music industry has missed all and everything within the last 10 years, if one wants to beat these limitations then one has to do things oneself. The industry is so far behind, it's unbelievable. What those guys have been doing since '89, I just don't know!"

Don't Look Back in Anger

Like it or lump it, the Tangerine Dream name will probably forever remain synonymous with synthesizers. Playing devil's advocate for a moment, I ask if there is anything new that excites in this department, to which Jerome responds, "Well, I'm using the Roland JP-8000, mainly for creating sequences, because I like working with its arpeggiator. But I don't really use its *sounds*, because we have *tons* of better sounds stored elsewhere. And that's it."

His feelings toward both the virtual analog synthesizer phenomenon and the more recent proliferation of software synths are similar: "We *never* use that stuff. If we wanted to use analog sounds, then we'd get our Minimoog or Jupiter 8 out of storage. That's real analog. Why should we use virtual synths? I don't want to use a mouse to put a virtual cable into a virtual jack socket! Why should I buy an analog, or, more precisely, an analog-*featured* synthesizer with only six voices for thousands of Deutschmarks, only then to have to pay even *more* money to have it upgraded to 16 voices, or whatever? Why?"

Edgar proceeds: "For *whatever* reason, these instruments always seem to be championed by people who don't want to go forward. If I have the possibility of making my bloody life as a composer *easier* and *faster*, as far as the storage of the *composition* process is concerned, then I'll *definitely* use new technology. But there is *no reason* for me to spend good money on lots of so-called 'analog' equipment, just to turn knobs like I did 20 years ago!"

The Martian Chronicles

Of course, an impressive studio inventory does not a successful recording make. There's *using* technology, and there's knowing *when* to use technology. Needless to say, given the TDI Music output of late — both quality and quantity-wise — Tangerine Dream unquestionably falls into the latter category, as is evident on their latest studio album: "*Mars Polaris* is, I guess, the highest possible standard we could achieve at the time we recorded it — as far as sounds and recording techniques are concerned," concludes Edgar. "Unfortunately, it's associated with that damn flying vehicle that disappeared over Mars! There was even a Tangerine Dream performance planned to take place in Los Angeles on December 10, 1999 to coincide with the Mars Polar Lander touching down, so we obviously had to forget about that! But what's left is, in our view, quite an interesting musical statement; a kind of step in the direction we hope to head for further on. A little glimpse into what we, as a band, want to do in the future — maybe less guitar and acoustic stuff; a bit more of what we see as the futuristic side of sounds.

"I know we've hinted at similar changes in the past, but we've realized that even most of our fans would not understand what we are doing if we gave them 100 percent of what is really achievable right now. If we applied all the technology we have today — which is *much* more powerful than can be heard on *Mars Polaris* — on a record straight away, then most people simply wouldn't understand what we are doing. They'd probably say, 'Is this the future of music?' And we'd say, 'Yes. And not only that, it can go much further.' And we could lose contact with our listeners. So we have to cut these changes down into little digestible portions."

The story of Tangerine Dream could easily fill a large book and would undoubtedly make for fascinating reading. Suffice it to say, their contribution to modern music production has been immense, as evidenced by numerous Grammy award nominations and a host of other accolades. No doubt they will continue to be among the first to try out exciting new technologies and endeavor to remain on the cutting edge of music for many years to come.

Jonathan Miller is a British freelance writer living in...well, England. He specializes in the "ancient art" of the hi-tech music interview, and can be reached at jonathan.millermusicmedia@virgin.net.

World Wide Audio, without leaving your studio.

Rocket Network takes audio production beyond the boundaries of studio walls, making connections that let you work with anyone, anywhere, anytime. It's like a global multi-track.

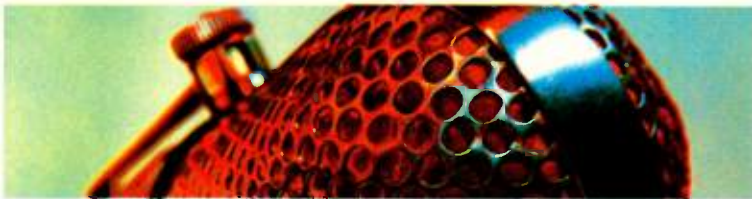
On-line Flexibility.

Rocket Network uses the Internet to allow professionals to work together on audio productions without having to be in the same physical space. Instead of shipping tapes from place to place or renting high-capacity phone lines, you log into your Internet Recording Studio, where Rocket Network handles the details of passing your parts to others and vice versa. That leaves you free to concentrate on capturing the perfect take, using your own local system to record and edit. Whenever you're ready for others to hear your audio or MIDI parts, you simply post your work to the Internet Recording Studio, automatically updating everyone else's session.



Professional Tools.

Through partnerships with leading audio developers, Rocket Network is bringing RocketPower™ to the professional tools you already use, starting with Steinberg Cubase VST and Emagic Logic Audio. A multi-level permission system lets you control access to your Internet Recording Studio. And our RocketControl™ client offers built-in chat capabilities, so everyone in the session can chime in with feedback as the project takes shape. The Rocket Network Web site offers additional resources and services for audio collaboration.



Full Audio Fidelity.

With Rocket Network, there's no compromise in audio quality—the system handles files in a vast range of formats and compression levels, all the way up to uncompressed 24 bit/96kHz. And you don't need access to a super-fast connection; DSL or T1 is great, but you can also work productively over a humble 28.8 dial-up. The system supports multiple user-defined presets for posting and receiving, and handles all conversions, letting everyone participate in their own preferred format. That means you can conduct a session in a speedy, low bit-rate "draft" mode, then move on while the final parts are posted in the background at full-fidelity.



A Powerful Connection.

Rocket Network adds a new level of freedom to creative collaboration, allowing you to choose your team—singers, musicians, voice-talent, composers, engineers, producers—based on who's right for the project, wherever they happen to be. With full fidelity, plus anytime, anywhere productivity, Rocket Network is a powerful new connection to the world of audio production.

Escape the boundaries of your studio walls.

Register at www.rocketnetwork.com

source code: RN20



All rights reserved © Rocket Network, Inc. 2000. All other product and company names are ™ or ® of their respective holders.



Internet Recording Studios

CIRCLE 48 ON FREE INFO CARD

LEXICON 960L

EFFECTS PROCESSOR

As many readers of EQ are already aware, Lexicon has been producing state-of-the-art, world-class effects processing for much of the last 25 years. Given that celebrated history, it isn't surprising what they're claiming with their latest effects system, the 960L. The 960L has been promoted as the next step after the 480L — that's a very large claim to live up to, as practically every commercial studio on the planet has a 480L. Virtually every engineer has either used one, owns one, or knows about using one. Artists and producers request one when they record and mix. You get the idea. So now Lexicon is promising a successor to the throne of the almighty studio effects system. Can and does the 960L live up to the expectations? Does it justify its nearly \$15,000 price tag? Will users of the 480L transition to the 960L with success? I spent a couple of weeks with the 960L to help answer those questions and see what's under the hood.

MORE THAN JUST A PRETTY FACE

The 960L effects system consists of two components; the Mainframe and the LARC2. The Mainframe is where all of the I/O and processing is done and the LARC2 provides the user interface to actually operate the 960L. Both components are required in order to use the 960L. The Mainframe is housed in a 4U rack with a floppy drive and standby switch on the front. There are thumb-screws to easily open a drop-down front panel. Upon doing this, you'll find a CD-ROM drive and card slots for DSP cards (there are open slots for future expansion — the foundation of the 960L's open architecture).

On the rear panel, there are MIDI in, out, and thru jacks. (Sadly, the 960L's MIDI is woefully basic. It can only respond to MIDI program and bank changes. Hopefully this will change in future revs). There's also word clock in, out, and thru, as well as a nine-pin port for connecting the LARC2. The original LARC cannot connect to this unit, nor can the LARC2 control any Lexicon processor other than the 960L. It would be nice if Lexicon addressed this in future revisions and supported their older devices with the LARC2. Mixing consoles are starting to get a bit crowded with control surfaces these days!

Analog audio I/O consists of eight balanced XLR inputs and eight balanced XLR outputs. On the digital side of things, there are eight channels of AES format I/O appearing on four XLR male and four XLR female connectors. All audio is 24-bit/96 kHz resolution. I'm happy to see that Lexicon chose to provide individual connectors for all audio I/O, rather than following the recent trend of using multi-pin connectors, which usually require proprietary breakout cables (not very practical in a pinch). As is consistent with this unit, there is an unused I/O option plate as well as a rather large plate simply described as "option plate" on the rear panel. This further emphasizes that Lexicon has designed the 960L around an open architecture. This is a critical reason why the 960L's price tag makes sense — the 960L is designed to keep pace with whatever changes occur in the professional audio world. (Remember that the 480L is still the standard in studios worldwide. That unit was designed in the '80s — imagine that!)

The reverb legend continues...in surround

BY DAVID FRANGIONI



lexicon

Midrange RT: 2.17 Seconds

B01 P1: Large Hall

NAME	PROG	PROG	PROG
01 "Intro 1"	1 Large Hall	17 Acoustic FX	
02 "Intro 2"	2 Small Hall	7 Long, Short Space	
03 "Chorus 1"	3 Small Hall	8 Jazz Hall	
04 "Chorus 2"	4 Mid-Large Hall	9 Large Church	
05 "Bridge 1"	5 Key Hall	9 Small Church	

A large, stored random fill with the automation placed in the middle and a relatively long RT BNO.

2 3 PROGRAM REVERSE

4 5 6 MARK STORE

7 8 9 EDIT CONTROL

0 MUTE ALL MACHINE ENTER

6 faders

lexicon

TM40 TM17 TM18 TM19

TM41 TM42 TM43

LEXICON 960L

EFFECTS PROCESSOR

As mentioned above, the LARC2 is the second component necessary to use the 960L. It measures a convenient 8" x 10.5" x 5.5" and packs a lot of punch. It has a large, color LCD with lots of soft buttons for instant access to parameters. There are numeric keys for selecting Banks and Programs (à la the original LARC). Large, dedicated buttons are provided for accessing the eight primary functions for navigating around the 960L (Program, Bank, Edit, Machine, Register, Store, Control, and Enter). There are eight 3-stage, LED meters that indicate signal present (-60 dB), -6 dB, and signal clipping (-0.5 dB). I must say that this is one part of the 960L that could be better. I was disappointed with the metering, or lack thereof. The original LARC had better metering. I trust that Lexicon will deal with this in a software upgrade where more extensive metering is offered in each preset in addition to the limited global hardware meters.

The really exciting news here, though, is the joystick and motorized, touch-sensitive faders on the LARC2. These

use, will be familiar to anyone who has ever used a LARC, and looks and feels great.

THE OPERATING ROOM

Using the 960L is very easy, especially considering the complexity of its algorithms. The unit offers up to four "machines," which can be thought of as separate processors that can be combined and used in various ways. The first choice that needs to be made is what machine configuration will be loaded. There are four choices:

1. Quad machine — (4) discrete stereo I/O machines
2. Dual machine — (1) 5-in/5-out and (1) 2-in/5-out machine
3. Dual machine — (2) 2-in/5-out machines
4. Single machine — (1) 8-in/8-out machine

Upon selecting a particular Machine Configuration, a signal flow chart is displayed showing how the inputs and outputs are routed. You can

take the LARC2 to a new level of control surface interfaces [effects processors or otherwise]. The joystick can be assigned to control movement of the source. Those working in the film world will find this simply awesome. The joystick and faders can be programmed from the "V-Page," which stands for "virtual page." Settings are program-specific, meaning that each program can have its own collection of parameters assigned to those controllers. Both input and output panning is supported. You have to hear this to believe it.

The motorized faders can be used to adjust the many parameters available for editing each preset. There are buttons for "Fine Adjustment," which is useful when using the faders to make small changes. "+" and "-" switches do the same small adjustments with buttons rather than faders, and a toggle button (aptly named "Lexicon") is used to compare the edited preset with the original factory preset (non-destructive A/B compare). The LARC2 is easy to

see where the inputs are mixed together at the outputs (such as in Config #3). This interface is fantastic and makes the immense power of the 960L's routing and mixing seem easy. One note: Either the analog or digital inputs can be selected, not a combination of digital and analog inputs — it's one or the other for all of the machines in the configuration. The analog and digital outputs can be used simultaneously.

Another great user interface feature is that, as you change machines, you actually change the Bank and Program choices applicable to that particular configuration. For example, if you're using Machine Config #1, then you can only access Stereo Programs (which are the only ones that could be loaded into that particular configuration's stereo machines). If you are in Config #2, Machine 1, you can only access the surround sound programs, and so on. This is very elegant and user-friendly, and goes a long way toward simplifying the operation of the 960L.

EQ LAB REPORT

MANUFACTURER: Lexicon, 3 Oak Park, Bedford, MA 01730-1441. Tel: 781-280-0300. Web: www.lexicon.com.

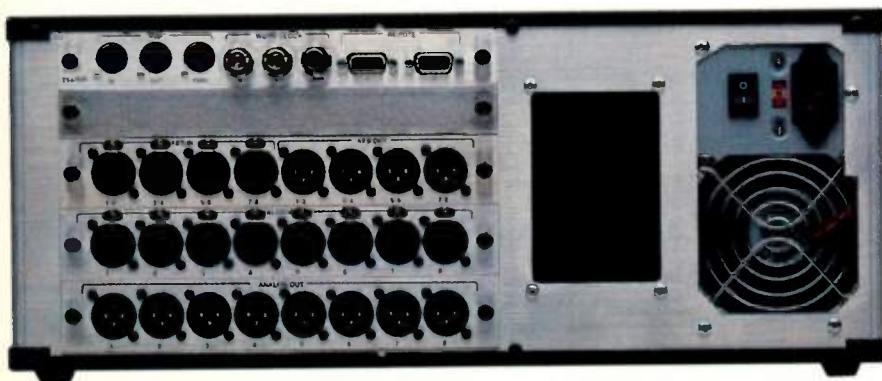
SUMMARY: Top-of-the-line multichannel reverb and effects processor.

STRENGTHS: Staggeringly good sound quality. Eight-channel effects and reverbs. LARC2 control surface. Joystick and motorized fader controllers.

WEAKNESSES: Limited metering. Limited MIDI support. Can't use digital and analog I/O simultaneously.

PRICE: \$15,000

EQ FREE LIT. #: 112



"In the future, hundreds of microphones will fit in a single rack space."

> H. D. Wells,
Bromley, England, 1899*



Thanks to the new AMM-1 Microphone Modeler from Antares, the future is now.

Inside this unassuming (but stylish) 1U rack is contained the spirit of many of the world's most revered microphones. Based on the same technology that made our Antares Microphone Modeler the most talked-about software plug-in of 1999, the AMM-1 lets most any reasonable quality microphone sound like any of a wide variety of high-end studio mics.

From historical classics to modern exotics to a selection of industry-standard workhorses, simply tell the AMM-1 what microphone you are actually using and what microphone you'd like it to sound like. It's really as simple as that. You can even mix and match the bass

and treble characteristics of different microphones or add the warmth of classic tube saturation.

And with over 100 mic models built in, as well as the ability to add new models downloaded from our web site, the AMM-1 will insure that you always have the right mic sound for every track.

So check out the new AMM-1 at your local Antares dealer. Where the future is still what it used to be.



And don't forget the plug-in version available for TDM, MAS, RTAS, DIRECTX and MAC VST

H. D. Wells, H. G. Wells's little-known older brother, shared his more famous siblings's visionary acumen but, due largely to his futile desire to be a rock star fully 50 years before the arrival of rock, lived most of his life in obscurity, playing in a succession of Gilbert & Sullivan cover bands in pubs in and around Bromley.*

ANTARES

WHERE THE FUTURE'S
STILL WHAT IT USED TO BE

***OK, we made all that up. Think you can do better? Then send your own H. D. Wells Biography (in 100 words or less) to biography@antarestech.com (or to the address below) by October 1, 2000. Using arcane criteria known only to us, we'll pick our favorite and send the author a free Antares plug-in of his or her choice. Really.*

CIRCLE 04 ON FREE INFO CARD

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

©2000 Antares Audio Technologies. All rights reserved. The "Don't Sue Us!" Disclaimer: All trademarks are the property of their respective owners. Manufacturer names and model designations are used solely to identify the microphones analyzed in the development of our digital models and do not in any way imply any association with or endorsement by any of the named manufacturers.

LEXICON 960L

EFFECTS PROCESSOR

Once inside a Machine Configuration, there's a System Status box on the right side of the LARC2 indicating the current configuration, as well as which machine is selected. In addition, you can view the current sample rate and the lock status of the sample rate (useful for monitoring the validity of external sources to which you may be clocked).

The 960L comes loaded with close to 100 stereo programs and nearly 120 surround programs. These are arranged in banks, each of which contain up to 10 programs. Each Bank is named with a useful description of what type of programs it contains, such as Hall-1, Ambience, Plates-1, Rooms, Wild Spaces, and so on. The heart of a 960L program is its algorithm. The core algorithms available in the 960L are Random Hall, Surround Hall, Chamber, Plate

ing point for creating your own effects. Of course, it's the Surround Programs that are really going to turn people's heads (yeah, pun intended). These programs represent a collection of Lexicon classics presented in full-blown, stunning surround sound. There are also lots of new, fresh surround programs such as "Echo Hall," "Rock'n Echoes," "Long Brite Space," and "Snare Strainer." Even if you've seen a program in the past named the same as one in the 960L, trust me, you have never heard them sound like they do here. This is a great sounding box, to say the very least.

In my extensive listening tests with the 960L, I often thought about two of the primary candidates for this unit. It seems logical that mixing engineers (many of whom are already familiar with the 480L) and post/film engineers will

be the core group of professionals needing a piece of equipment this powerful. Given that premise, I can assure you that the 960L lives up to Lexicon's reputation for world-class effects. The 960L definitely picks up where the 480L left off and goes far beyond. It certainly brings Lexicon's legendary sound into the new millennium (L2k anyone?). The sound of the 960L is as staggeringly good as you would imagine. Both the stereo and surround algorithms sound great. The unit is dead quiet. What I really love about the 960L is that it retains all of the classic "Lexicon Sound," but with the sonic advantage of 24-bit/96 kHz processing. I predict that anyone owning a 480L will want to buy this unit. I also predict that anyone doing surround sound work will have to have the 960L. It doesn't sound anything like the competition (unless you consider Lexicon's other effects processors the competition). It sounds as

unique and as great as high-end Lexicon has always sounded, but even better.

What can I say about Lexicon's top-of-the-line effect processors that hasn't already been said? They've always been among the best there is at doing what they did (and continue to do with the 960L). Awesome reverbs, transparent sound, flexible routing, up to four machines simultaneously, lots of inputs and outputs. It's all there. And then some.

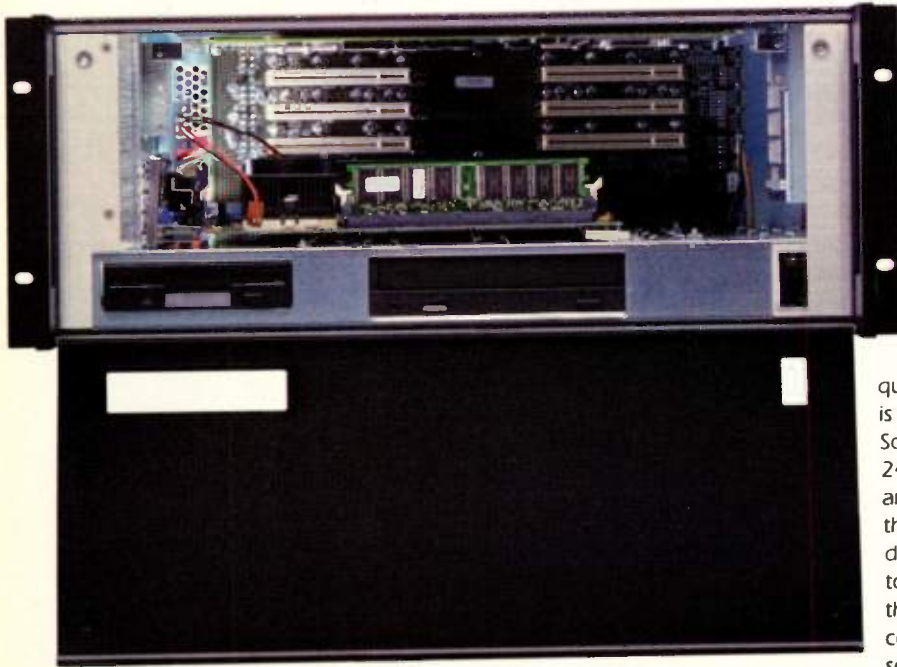
Even better, I have one before Roger Nichols. Now that's worth writing about.

David Frangioni is a renowned surround-sound mixing engineer having recently completed DVD surround mixes for Kiss, N'Sync, Backstreet Boys, Limp Bizkit, and Stone Temple Pilots. He can be reached at www.audio-one.com/david.htm.

and Surround Plate, Ambience and Surround Ambience, Ambient Chamber, Reverse, and Surround Reverse. There are over 40 parameters available for editing the algorithms. If I haven't already made it clear, let me go on record stating that this review would be at least 30 pages long if I covered everything that this unit can do. If it's in anyway related to reverb, it's probably in the 960L. In fact, anything that you have heard a PCM91 or 480L do, the 960L does better (or in some cases "different").

WE'RE SURROUNDED....

The Stereo Programs are, for the most part, enhanced versions of Lexicon's vintage programs. Standbys such as "Large Hall," "Snare Chamber," "A Plate," and "Auto Park" are all there, sounding better than ever. I found that all of the factory programs were both usable and provided a great start-



Three ways the
RFX-300
can turn your
tracks into
professional
recordings.

1.

The RFX-300 can make your dynamic mics sound like high-priced condensers. It also adds warmth, and fullness when miking vocals, pianos and acoustic guitars.

2.

Pump up your mixes with our new "mastering mixdown" effects to make them sound wider, brighter, deeper and more dynamic.

3.

22 new Zoom reverbs, delays and modulation effects to make your vocals, instruments and drum tracks sound bigger than life.

And that's just the first three. Audition the RFX-300 at a dealer near you. Discover what it can do for your recordings.



THE ZOOM RFX-300 STUDIO EFFECTS PROCESSOR

ZOOM
CATCH US IF YOU CAN

Every cool ZOOM processor is distributed in the USA by Samson Technologies Corp., P.O. Box 9031, Syosset, NY 11791-9031
tel. 516-364-2244 fax. 516-364-3888 www.samson-tech.com ©1999 Samson

CIRCLE 86 ON FREE INFO CARD

Focusrite ISA430 Producer Pack

Focusrite's do-it-all input channel sets a new flexibility standard for the industry to chase

BY MITCH GALLAGHER

The *modus operandi* of many of us these days is to use as short a signal path between source and recorder as possible—mic to preamp to recorder. Maybe you'll insert a compressor, EQ, or limiter in there, but the idea is to avoid going through mixers, etc., to keep the signal path pure. Because of this method of working, we've

and you can expand the unit with a stereo high-resolution A/D converter. The ISA430 is a single-channel unit, although the converter can accept stereo signals (see the "Digital Option" sidebar for more on this). Let's take a short tour.

BEHIND THE SCENES

The stock ISA430's back panel is loaded with connectors. Input can be at instrument (unbalanced 1/4-inch) or line or mic level (both balanced XLR). Analog output is available at two places in the signal path on balanced XLR connectors. Also provided are balanced XLR insert send and return connectors, and balanced XLR and 1/4-inch connectors for routing external signals into the optional A/D converter card. Two balanced 1/4-inch connectors provide sidechain (key) inputs for the compressor and gate, and a balanced 1/4-

those colored lights....) An analog VU meter indicates input level, insert return level, or compressor gain reduction, two LED ladder meters indicate digital output level, and an overload LED monitors the signal at four points in the signal path. Plus, most of the switches either light up or have one or more status LEDs associated with them.

On the input side of things, a selector switch toggles between the line, mic, and instrument inputs (a duplicate 1/4-inch jack is provided on the front panel). Mic and line levels are controlled with stepped rotary switches, gain fine-tuning is accomplished with a trim knob, which doubles as a level control for the instrument input. A phase (polarity) reverse switch and 48-volt phantom power on/off switch round things out. Below the input section are the controls for setting the resolution, sample rate, and clock source for the optional A/D card. Next to this are switches for turning on and positioning the insert loop, which allows you to use external processors in the ISA430's signal path. The insert point can be located right after the mic preamp, between the EQ and dynamics sections, or after the EQ/dynamics processors. Two other switches allow you to swap the order of the EQ and dynamics sections in the path (EQ before the compressor or vice-versa) and to put the unit into "Split" mode, where the dynamics processors can be pulled out of the ISA430's main signal path and accessed separately by external signals using the insert jacks. Very cool.

The EQ section is full-featured. You're given both low- and high-pass filters with 18 dB/octave slopes; the filters have enough range to allow them to serve as a tight band-pass filter. Also provided is a two-band parametric EQ; one

EQ LAB REPORT	
MANUFACTURER:	Focusrite, distributed in the U.S. by Digidesign, 3401-A Hillview Ave., Palo Alto, CA 94304-1348. Tel: 800-333-2137. Web: www.digidesign.com or www.focusriteusa.com
SUMMARY:	The Producer Pack incorporates everything you need (and more) for getting a signal down to tape or disk with excellent sound quality, especially with the addition of the optional A/D converter card.
STRENGTHS:	Unmatched routing flexibility. Stellar sound quality. Comprehensive selection of signal processors. Optional A/D converter card. Lights up like a Christmas tree.
WEAKNESSES:	Back panel layout is confusing.
PRICE: \$3,495	EQ FREE LIT. #: 103

seen an explosion of stand-alone mic preamps and channel-strip-in-a-box-type products that all purport to be the ultimate direct path from source to tape or disc. The Brits at Focusrite have released a number of channel strip-type products over the years; their most recent offering, the ISA430 Producer Pack makes a strong bid for King of the Hill, offering more flexibility and power than any similar product I can think of.

At its core, the ISA430 comprises a mic/line/instrument preamp, EQ section, compressor, expander/gate, de-esser, and multi-band limiter. But the implementation of these building blocks takes the ISA430 to a new level of capability; you're given unprecedented access to signal path routing, comprehensive controls,

inch Link jack allows the response of the dynamics section in two ISA430's to be tied together. (See the sidebar for additional connectors provided by the A/D option card.)

WHERE THE ACTION IS

Around front is where the fun begins. A plethora of knobs, switches, and indicators adorn the blue and gray front panel; when the ISA430 is in full flight, it lights up like a Christmas tree. (C'mon, you know you love all



ISA430 DIGITAL OPTION

To truly complete the Producer Pack's claim to being an all-in-one input channel, the company is offering an optional internal analog-to-digital converter card. The Digital Option (\$495) provides A/D resolutions of 16, 20, and 24 bits, and 44.1, 48, 88.2, and 96 kHz sample rates. Using separate switches on the front panel of the ISA430, you can combine whatever resolution and sample rate you desire.

The card adds five connectors and two switches to the ISA430's back panel. Digital output is provided simultaneously on an XLR AES/EBU output, RCA (coaxial) S/PDIF output, and an optical S/PDIF output. Word clock sync is accepted on a BNC input, as is Digidesign's Super Clock sync. A front-panel switch selects between internal clock, external word clock, and external Super Clock; a lock LED indicates valid clocking. Switches are also provided for terminating the word clock input with a 75-ohm resistor and for charging the zero reference of the output LED meter from +20 to +24 dBu.

As an added bonus, the A/D converter in the unit is actually stereo. By routing one signal through the ISA430 main signal path and another into the ISA430's "Ext IP A/D Direct" jack, both channels can be accessed. This is very cool if you're using a pair of ISA430's to record or process audio; only one option card is required for stereo A/D conversion. By using the ISA430's "Int A/D Direct" and "Ext IP A/D Direct" jacks, the Digital Option can also be accessed as a stand-alone stereo A/D converter.

Installing the Digital Option is easy enough; remove a cover plate on the back panel, and pop the ISA430's top off. Slide the card into place, tweak a couple of screws, crank down two nut/lockwashers, and attach a ribbon cable. The biggest challenge is finding the black cover screws in your forest-green carpet after spilling the little container you put them in for safe keeping

band is configured as low-mid with switchable range from 40–400 Hz or 120–1,200 Hz and the other high-mid with switchable range from 600 Hz to 6 kHz or 1,800 Hz to 18 kHz. Q is specified only as variable from narrow to wide, but functionally works well for either broad shaping or surgical precision. Rounding out the EQ are high and low shelves, each with six selectable cut-off frequencies. (Focusrite tells me that the parametric and shelving bands of the EQ were taken straight from Rupert Neve's design for the vintage ISA110 preamp/EQ.) You can bypass any of the three EQ sections (filters, parametric, shelves) individually or the entire EQ can be bypassed. As an added bonus, any or all three of the sections can be switched into either the compressor or the gate sidechain path — even if the ISA430 is in "Split" mode and the dynamics are being used externally. This lets you do

extremely precise frequency-dependent compressing or gating.

The ISA430 dynamics comprise four sections: a compressor, an expander/gate, a de-esser, and a multi-band limiter. The compressor provides ratio, threshold, attack, release, and make-up gain controls. Turning the release control fully clockwise puts it into "adaptive" or "auto" mode. You can choose to monitor the compressor sidechain; a "Listen" LED lights up by the VU meter when you're doing so. The compressor sidechain can take its signal either internally or from the external key input.

The expander/gate is similarly full-featured. You're given a choice of gating or expansion, as well as variable control over range (amount of attenuation), threshold, gate hold time, and release time. Switches put the gate in fast-attack mode to catch transients, turn on "hysteresis," which helps

IN REVIEW

TABLE OF CONTENTS

Focusrite ISA430 Producer Pack

By Mitch Gallagher.....104

Herman Miller Aeron Chair

By Mitch Gallagher.....108

Event 20/20/15 Subwoofer

By Mitch Gallagher.....110

Yamaha CDR1000 CD Recorder

By Howard Massey.....114

Aphex 1100 Stereo Tube Mic Preamp

By Rich Tozzoli.....120

TerraSonde Audio Toolbox

By Bobby Owsinski.....124

Access Virus Modeled Synth Plug-In

By Mitch Gallagher.....128

Jensen ISO-Max Kit Isolation Transformers

By Rob McGaughey.....130



WHAT CAN THIS THING DO?

- **Mic/Line/Instrument Preamp**
- **EQ**
 - Low- and High-Pass Filters — alternately routable to compressor or gate sidechain path
 - Two-Band Parametric EQ — alternately routable to compressor or gate sidechain path.
 - High and Low Shelving EQ — alternately routable to compressor gate sidechain path.
- **Dynamics** — in "Split" mode, can be independently accessed by external signal sources.
 - Compressor — keyable externally or from any or all of the three filter/EQ sections.
 - Gate/Expander — keyable externally or from any or all of the three filter/EQ sections.
 - De-Esser
- **Three-Band Limiter** — protects internal or external A/D converter from overload.
- **Stereo A/D** — with addition of Digital Option, see sidebar.
- **External Insert Point** — access can be placed post-preamp, between the EQ and dynamics sections, or post-EQ/dynamics.
- **EQ/Dynamics Swap** — the filter/EQ section can be placed either before or after the compressor/gate/de-esser section in the signal path.
- **External Input** — can accept external signal source and mix it with internal signal path, or can be sent to unused side of the optional stereo A/D converter (if one is installed).
- **Signal Can be Output in Several Places:** post-preamp/pre-processing, post-EQ (in "Split" mode), or post-everything, which introduces a transformer into the signal path. You could also use the Insert Send output to extract signal from other points in the signal path. The optional A/D converter card takes its input post-processing but pre-transformer by default, although you could tap the signal out of the ISA430 at some other point and bring it directly back into the A/D converter using the external input jacks.

prevent the gate from chattering with signals around the threshold, and turn on the external key input. Like the compressor, you can choose to monitor the gate's sidechain (key) input rather than the main signal path.

The de-esser ostensibly is designed to be used for controlling vocal sibilance, but, with variable frequency control from 2.2 kHz to 9 kHz, it can be used for a variety of frequency-dependent compression tasks. I used it, for example, to tone down the strident "click" of picking on an acoustic guitar track. Yes, you can also choose to monitor the de-esser's sidechain input should you want or need to.

The multi-band limiter offers three fixed bands of limiting; the only control you're given is an on-off switch. The limiter is intended mainly to prevent the optional internal A/D converter or an external converter from clipping, and it does this job well. An output level knob provides control over both analog and digital output signal levels.

The front panel also provides control over one of two external signals (aside from the main signal path and the insert path). One of these signals can be routed into the ISA430 and either summed with the main signal path or routed to the unused channel of the optional A/D converter; you're given control over the level of this signal, as well as the ability to mute it. A second external signal can be fed directly into the optional A/D converter (it also passes through the limiter and metering). This allows you to use the A/D option card as a stand-alone stereo converter. If you want, you can still simultaneously run signal through the ISA430's main signal path and out the analog output.

IN USE

The ISA430 is a heck of a lot harder to describe than it is to use! The front panel makes sense, with parameters grouped and arranged by function. The back panel is a bit more confusing; rather than following the

signal flow from left to right, the insert jacks appear first, then the inputs, etc. I'd like to see this made clearer — if nothing else, better labels would help. Fortunately, the manual is good, and provides a number of block diagrams, including seven sample routings. This also brings up the point that, in order to get the most out of the ISA430, you'll either need to connect it to a patchbay or situate it such that you have easy access to the back panel. If you'll never use the extended routing capabilities, this won't be an issue, but truly tapping the immense power of this box requires easy access to the connectors.

I tried the ISA430 with Neumann KM 184 and Audio-Technica AT4050 mics on guitar and voice at line level with a Korg Wavestation and a CD player, and with my Strat plugged straight into the instrument-level input. I fed its output digitally into my Pro Tools system at 44.1 kHz/24-bit resolution, and used its analog outs to feed an Aleis MasterLink. I also used the digital option card to feed the MasterLink at all 12 possible digital resolutions. Because I have nothing better to do (yeah, right), I set up the ISA430 as a line-level insert device in my Pro Tools system and tried as many back- and front-panel routing configurations as I could come up with — there's a day down the tubes! In every situation, the ISA430 performed like a champ.

THE SOUND

Awesome — it's a high-end Focusrite; need I say more? All the quality you expect is immediately evident in the preamp as well as in the EQ and dynamics processing. As with other gear that's on this level, it's easy to dial in usable sounds very quickly, although, with this much control and flexibility, there's no end of ways to screw things up, too! Suffice it to say, all the rambling in this review would ultimately be meaningless if the sound wasn't there, but, fortunately, it *is* there — in spades.

THE FINAL WORD

From the moment I plugged the ISA430 in, I had a smile on my face. I love gear that redefines the word "flexible" and that has the power and quality to live up to what it promises — and the ISA430 certainly does both. Some might call it pricey, and, yeah, its sticker will hit the ol' credit card hard. But add up the list of what this thing can do and how much gear you'd need to accomplish that list with equivalent quality, and I think you'll find the total price tag will be much higher — the value of the box is high. Top marks and kudos to Focusrite for a job well done.



**NOW
SHIPPING!**

Record 24 tracks of 24-bit audio*. Edit from the front panel or on your computer. Interface with your DAW system. Backup to your favorite media. Make records. Be famous. Have fun.

With the TASCAM MX-2424™ 24-Track Hard Disk Recorder/Editor, you might get more than you expected. Though it's hard to imagine getting much more from a recording system. Any system.

Start with 24 tracks of 24-bit/48kHz digital audio. Take your choice of 24-bit analog, TDIF, ADAT® or AES/EBU optional I/O modules...digital and analog interfacing available simultaneously, of course. Use the front-panel drive bay and fast/wide SCSI port to extend recording time with external hard drives and create backups with tape drives and DVD-RAM. Get file format and drive compatibility with your favorite DAW system on Mac® and PC.

Time to edit? No computer required. All the controls you need are right there on the front panel. Or get visual editing and transport control with the included ViewNet MX™ graphic user interfacing software. Need more tracks? Chain up to 32 machines for a huge integrated system with true single sample accuracy.

Surprisingly affordable, incredibly powerful, feature-packed and (most importantly) unbelievably great sounding. And (alas), far too cool to give you everything you need to know on this page. So go to www.tascam.com for the whole story. Because the more you find out about the MX-2424, the more likely you'll be to, well, uh...buy one. Available today at your authorized TASCAM dealer.



The MX-2424 (shown with optional IF-AN24 analog I/O and IF-AE24 AES/EBU multichannel digital I/O) features built-in SMPTE Sync, MIDI Time Code, MIDI Clock, Video Sync, stereo AES/EBU and S/PDIF ports and much more.

* 12 tracks of 96kHz recording available later this year

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640
323-726-0303 www.tascam.com

All copyrights are the property of their respective holders

CIRCLE 52 ON FREE INFO CARD



TASCAM
a whole world of recording

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

Herman Miller Aeron Chair

Make those long sessions less fatiguing

BY MITCH GALLAGHER

I can hear it now: "What's that nut-job Gallagher up to? He becomes editor, and *EQ* starts reviewing chairs... what's next, sofas?" (Now that I think of it, many studios do have sofas in them....) Here's the deal: Recording engineers sit. We sit a lot. But, often, little thought is given to what we sit on — okay smart guy, enough with the jokes, I'm talking about chairs here. How many times have you finished a long day in the studio and found your shoulders and upper back tight and sore? Lower back ever get stiff? Backs of your legs feeling tight or a bit numb? If so, point at least one finger of blame at your chair — it may very well be at the root of much of the fatigue you're feeling. We spend time and dollars making sure our gear is perfect, our studio is ergonomically laid out, and that the sound is right. Then we grab the first cast-off chair we can find and plant our butts in it for way too many hours. I'm here to tell you there's a better way.

The Herman Miller Aeron chair is specifically intended for workplace applications, mainly sitting at a desk. The chair was designed from the ground up to

be flexible and suitable to a broad range of body types. Three sizes are available to properly fit sitters of various heights and weights. Once you have the correct-size chair, eight parameters can be adjusted to perfectly fit it to your body. (See sidebar, "Manning the Controls.")

Right out of the box, you'll find the Aeron chair very comfortable. Rather than foam padding and leather, vinyl, or cloth covering, the Aeron chair seat and back consist of a mesh material; this material supports you firmly and comfortably, but breathes extremely well, keeping your body cooler and allowing blood flow. Most of your weight is supported by your hip bones, taking the stress off other parts of your body.

If the chair is comfortable right from the start, it becomes far more so once you've adjusted the various settings to match your frame. It took me a few minutes to dial things in close, then, over the next few days, I tweaked the settings to perfection. I was truly impressed; once the chair was set up properly, I was able to sit comfortably through 12- and even 14-hour days without coming away with stiff muscles or feeling as if I had been run through the wringer.

I suffer from chronic lower back problems and normally must use a "kneeling" chair to make it through the day — a regular chair just becomes too painful. With the Aeron chair, I found my back well supported and that I was sitting



EQ LAB REPORT

MANUFACTURER: Herman Miller, Inc., 930 Calle Negocio, Suite B, San Clemente, CA 92673. Tel: 800-883-9697. Web: www.sittingmachine.com.

SUMMARY: Highly adjustable work chair makes long sessions less fatiguing and far more enjoyable.

STRENGTHS: Adjustable. Industrial strength. Very comfortable for long periods. Three sizes to choose from.

WEAKNESSES: Lumbar support pad moves and pops out too easily.

PRICE: \$750

EQ FREE LIT. #: 104


MANNING THE CONTROLS

The Aeron chair features a number of adjustable parameters for matching it to your use and body.

- Seat height is adjustable from 15 to 20.875 inches. Set it so that your feet are comfortably supported by the floor, not dangling. This prevents excess pressure on the back of the legs, which can restrict blood flow.
- Tilt tension controls the resistance felt when leaning the chair back.
- Forward tilt allows the chair to come up as well as forward five degrees. If you find yourself leaning forward over a mixing console, this feature will let you do it much more comfortably.
- Tilt limiter controls how far the chair will lean back. It can also lock the chair into the upright position.
- Arm height independently adjusts the two arm supports over a range of four inches. Supporting your arms properly reduces fatigue and tension in the shoulders and upper back.
- Arm angle allows the arm supports to swivel outward 15 degrees or inward 17.5 degrees. Swing the arms in when you're typing at a keyboard to maintain proper support.
- Lumbar height positions the lower back support.
- Lumbar depth switches between .75 and 1.25 inches forward.

correctly. This increased comfort translated to a better state of mind, more productivity, and less distraction from the task at hand. It may sound ridiculous to attribute those kinds of things to something as mundane as a chair, but I really believe it to be true.

PULL UP A CHAIR AND SET A SPELL

For most of us, the chair we sit in to do our engineering work is the last thing we worry about. This policy should be re-thought. Get yourself a decent chair, and you'll find your productivity will increase, you'll enjoy yourself more, and you'll feel a heck of a lot better at the end of a long session. And if you want the best work chair available, the Herman Miller Aeron chair is hard to beat. A marvelous combination of proper support and great comfort, the Aeron chair isn't cheap, but the best rarely is. I consider myself an expert at sitting around, so take it from me: The Aeron chair is the one to get. Very highly recommended. 

Every Studio's Best Friend!



LOOKING for that perfect piece of gear to take your project studio to the next level? **CALL US FIRST.** We have the **LATEST** and **GREATEST** sound and studio gear, **IN STOCK** and **READY TO SHIP.** You'll like our **LOW PRICES;** our **FAST, FRIENDLY SERVICE;** and our **QUICK DELIVERY,** plus we **GUARANTEE** your **COMPLETE SATISFACTION.** Ask about our **PLATINUM CARD** financing.

 **musiciansfriend.com**

Get a **FREE CATALOG!** Call **800-776-5173**
Win **FREE GEAR** at **www.musiciansfriend.com**

Refer to this code 125-0007

www.musiciansfriend.com

CIRCLE 27 ON FREE INFO CARD

The Audio Toolbox™

The Amazing Multi-Function, Acoustical Analysis, Test, Calibration, and Troubleshooting Tool.

Functions:

- Acoustic Analysis Tools:** SPL Meter
Real Time Analyzer · Energy-Time Graph
RT60 · Speaker & Mic Polarity
- Session Helpers:** Tuner · Tempo Computer
MIDI Data Monitor · MIDI Transmit
SMPTE Reader / Generator / Re-gen
Hum Cancellation
- Test Functions:** Signal Generator · S/N
Impedance Meter · dB/Frequency Meter
Frequency Response & Impedance Sweeps
Sample Scope · Distortion Meter
- Utilities:** Headphone Monitor Amp w/guitar
fx · Cable Tester · Phantom Power Tester
PC / Mac Interface · and more...



Inputs: Built-in microphone · Stereo balanced XLR · Stereo 1/4" TRS · Stereo RCA phono
MIDI Outputs: Built-in speaker · Balanced XLR · 1/4" TRS · RCA phono · 1/4" stereo
headphone jack · MIDI (2) **Plus:** Graphical backlit LCD display · DSP powered · AC or battery power · 40 non-volatile memories · One-year product & software warranty

Rack-mount and all-metal versions also available!



\$999 msrp

WWW.TERRASONDE.COM

TerraSonde
303 545 5848
toll free 888 433 2821
fax 303 545 6066
sales@terrasonde.com

CIRCLE 81 ON FREE INFO CARD

Event 20/20/15 System Subwoofer

If you're in the market for house-rockin' low end, look no further

BY MITCH GALLAGHER

How low can you go? If you're using one of the many nearfield monitor models out there, it's likely that you aren't going low enough. Even if your small monitors claim to reach down into the bass part of the audio frequency spectrum, they probably don't do so with much accuracy. This is one reason that subwoofers — speakers dedicated to reproducing low frequencies — are becoming more common in studio monitoring rigs. Another is that much video or film sound work requires LFE (Low Frequency Effects) monitoring. A third? Subwoofers are standard in home theaters. If you're producing audio that will be heard in that environment, then you need to know what your listeners will be hearing.

Event Electronics has created two powered subwoofers for studio applications, the 20/20/12 with a 12-inch driver and the unit on review here, the 20/20/15, which sports a 15-inch driver. Both models feature the same built-in 250-watt power amplifier. In addition, both models feature built-in bass management. A third model, the Project Studio Subwoofer uses the same cabinet and driver as the 20/20/12, but is

intended only for LFE monitoring, as it has no bass management. The 12-inch models should be available around the time you read this.

SET UP AND CALIBRATION

Be prepared, the 20/20/15 is an amply proportioned unit — in other words, you aren't going to hide this box discretely in the corner. As it turned out, it fit perfectly underneath my studio work desk; the only location available for it in my somewhat cramped studio. Initially, my reaction was that the sub was too big for my room, and had too much power. But after reconsidering, I realized this wasn't the case: Producing bass frequencies takes a great deal of power. Producing low bass frequencies cleanly and at decent volume levels requires massive amounts of power. I began setting up the sub for use with my 5.1 surround speaker system.

This is a more involved task than it might seem. In order to use the sub for both LFE and to extend the low frequencies of my nearfields required a total of 11 cables: One from the mixer to the sub for LFE, one for each of the five channel outputs from the mixer to the sub for bass management pass-



through, then five from the channel pass-throughs of the sub to my five monitors. (See sidebars for more on using a mixer with a surround system and on LFE and bass management.)

A bigger challenge is calibrating levels. Yes, you can just crank up the subwoofer and it will put out massive amounts of bass. The first time I turned on the 20/20/15 and routed my DVD player through it with an action movie loaded up, I almost caused myself internal injury — this baby can crank out the low end! But to use it effectively, you'll want to match it to your regular monitors. The 20/20/15 provides not only control over the input sensitivity of both the LFE and bass

EQ LAB REPORT

MANUFACTURER: Event Electronics, P.O. Box 4189, Santa Barbara, CA 93140. Tel: 805-566-7777. Web: www.event1.com.

SUMMARY: More than enough bass thump to drive the low end for just about any monitoring system, be it surround or stereo.

STRENGTHS: Built-in bass management system. Plenty of air-moving power. Capable controls.

WEAKNESSES: Skimpy manual.

PRICE: \$1,199

EQ FREE LIT. #: 105

INSPIRED BY YOU - DESIGNED BY SPIRIT

FX16



- 11 stereo inputs with high quality Ultrasonic preamps
- Professional 100mm long throw faders
- Built-in programmable Lazerac effects with
- 3 band eqd sweep EQ (with high pass filter)
- 4 bus stereo mix
- 28 inputs to mix
- 19" Rack-mount option

FXB



- 8 mono inputs with high quality Ultrasonic preamps
- Professional 100mm long throw faders
- Built-in programmable Lazerac effects with
- 3 band eqd sweep EQ (with high pass filter)
- 4 bus stereo mix
- 19" Rack-mount option

SX



- 12 mono inputs with high quality Ultrasonic preamps
- 4 stereo inputs
- Professional 100mm long throw faders
- 3 band eqd sweep EQ (with high pass filter)
- 4 bus stereo mix
- 19" Rack-mount option
- 20 inputs to mix

F1



- 8 or 8 mono input versions with high quality Ultrasonic preamps
- 4 stereo inputs
- Professional 100mm long throw faders
- 3 band eqd sweep EQ (with high pass filter)
- 4 bus stereo mix
- 19" Rack-mount option

NOTEPAD



- 4 mono mic line inputs with 2 band EQ
- 2 stereo inputs with variable preamps
- 24-bit digital filter stage in DAT CD
- Separate inputs and mixers for FX
- FX send for onboard FX units
- Optional mic line adapter

DID YOU KNOW...

...is it the **BRITISH EQ?**

EVERY SECOND OF EVERY MINUTE OF EVERY HOUR OF EVERY DAY - SOMEONE, SOMEWHERE IS USING A SPIRIT MIXER?

For 25 years, Spirit technology and engineers like Graham Blyth have continually improved equalisation. Spirit EQ is used by literally millions of people all around the world.

...is it the **FEATURES?**

Spirit mixers come packed with the essential features you need to make the best mixes and recordings. Because we continually strive to improve our products, you get the most up-to-date features in Spirit's Folio range.

That means you'll get a mixer with great sounding mic preamps, famed British EQ, low noise and high headroom.

...is it the **VALUE?**

Not only are Spirit mixers loaded with useful features, they're priced so you can afford them.

...is it the **NAME?**

Spirit pulls on the resources of its parent company Soundcraft in every way.

These are just a few of the reasons why so many people have Spirit. Shouldn't you?

IF IT'S GOING TO BE RECORDED, MIXED, OR HEARD

DO IT WITH SPIRIT



FX16

A RANGE OF MIXERS ARRANGE TO HEAR ONE



OUTPUT MASTER

FOLIO

- 0
- 2
- 4
- 6
- 8
- 12
- 15
- 20
- 25
- 30
- 35

For more information
[http:// www.spiritbysoundcraft.com](http://www.spiritbysoundcraft.com)
 email: spiritsupport@soundcraft.com

TEL: 1-800-255-4363

FAX: 615 360 0273

SPIRIT BY SOUNDRAFT
 AIR PARK BUSINESS CENTER 12, 1449 DONELSON PIKE, NASHVILLE TN 37217, USA

H A Harman International Company



CIRCLE 41 ON FREE INFO CARD



LEARN the ART of RECORDING®

You can get the practical, real-world skills needed to successfully start your career as a recording engineer or producer. For 29 years, thousands of students from the US and around the world have started their career at the Recording Workshop.

- The Original since 1971
- 2 Month, 300+ hrs Training
- 8 Studio Facility
- Very Affordable Tuition
- Latest Equipment
- On-Campus Housing
- Hands-On Training
- Job / Internship Assistance
- 3-6 Students per Class
- Financial Assistance

Contact us for a Free Brochure

800-848-9900

www.recordingworkshop.com



RECORDING WORKSHOP®

Outside USA: 740-663-2544

Fax Machine: 740-663-2427

email: info@recordingworkshop.com

455-Q Massieville Road

Chillicothe OH 45601

© Ohio State Board of Proprietary School Registration #80-07-069/T

CIRCLE 53 ON FREE INFO CARD

Better.

Super nice compression: three layered stereo compressors in one box.

Cleaner.

100 kHz bandwidth. Meticulous circuit design and layout.

Cheaper.

"Compression at a near-unbelievable price-performance ratio...absurdly cost effective"

—Craig Anderton, EQ



RNC1773

Really Nice Compressor

Pristine analog audio path & precise digital control creates what some professionals are saying is one of the best compressors you can buy for under \$2,000!

\$199.MSRP

FMR Audio

Austin, Texas

1-800-343-9976

www.fmraudio.com

CIRCLE 87 ON FREE INFO CARD

management system, but also control over the polarity of the subwoofer as well as its variable phase delay — this is far more control flexibility than most other subwoofers offer. The variable phase delay allows you to compensate for time alignment (phase) problems that may arise due to subwoofer placement; this is essential for correct frequency response.

Unfortunately, the sub's manual is less than forthcoming on how to set all this up. The manual has a basic chart covering how to set the crossover point, polarity, and phase if you're using Event monitors (which I was). Otherwise, the manual says, "These controls may need

adjustment...." Not a word on how to decide if you need to adjust, what to listen for, appropriate levels, or much else. Integrating a sub properly into a monitoring system isn't difficult, but it's not as easy as just plugging it in, either. At the time of this review, Event was finishing up a system calibration CD designed for subwoofer setup, which should ease this problem considerably. Contact the company for info on how to obtain this disc. In the meantime, surf over to EQ contributor and surround expert Bobby Owsinski's surroundassociates.com Web site for more information on how to place and calibrate subs

BASS MANAGEMENT VERSUS LFE

There are two applications common for subwoofers: LFE and low-end extension of the frequency response of "regular" monitors. LFE, or Low Frequency Effects, is a separate channel dedicated to carrying low-frequency information in film mixes. The stomach-thumping thud of explosions or dinosaur footsteps, the rumble of spaceship engines; the low-end part of these types of sounds is recorded onto a separate track at mixdown and sent directly to the subwoofer in the sound system.

Extending the response of regular monitors for, say, music playback, is something different. This is where bass management rears its head: The signal being fed to the monitors is summed together (whether you're talking about stereo or surround), then passed through a crossover. The low frequencies are re-directed to the subwoofer while the rest of the signal continues on to the monitors as usual. Bass management devices are designed to give you control over what's sent to the subwoofer and what's sent to the monitors.

Many subwoofers have just one input; this means that if the speaker is to serve both for LFE and extending low-end response, an external bass management system must be used. In the Event subwoofers, bass management is built-in and a separate input is provided for LFE. There are separate, independent crossovers and volume controls for the inputs, which lets you match the subwoofer to the natural rolloff of your monitors while still properly accommodating the LFE channel. —MG

DIGITAL MIXERS AND SURROUND LEVEL CONTROL

One of the challenges you face when setting up a 5.1 surround system is volume control for the speakers. You can no longer just reach up and tweak the monitor output on your mixer, since it won't simultaneously control all six speakers. Several companies manufacture dedicated multichannel volume control boxes, such as Studio Technologies and Martinsound, but these fall outside of my price range.

While visiting EQ contributor Howard Massey's 02R-equipped studio, it occurred to me that I could put my Yamaha 01V mixer to use as a surround level controller. Here's the idea: Bring the six channels of your surround source into the mixer. Then use the bussing in the mixer to feed these channels to your speakers. In my case, with the 01V, I use the stereo left and right outs to feed my left and right monitors. Aux outputs (on the 01V they're called "Omni Outs") 1-4 are used to feed the center channel, subwoofer, and rear left and right monitors. Here's the key: Group the faders for your six input channels so that when you move one, you move all six. Instant multichannel level control. I actually have two 6-channel groups set up; one for six outputs from my Pro Tools system, the other for the six outputs from the DVD player I use as a listening reference. Works like a charm. —MG

20/20/15 SPECS

Driver: 15-inch long-throw
Amplifier power: 250 watts
Frequency response: 28 Hz to 120 Hz, -3 dB
LFE crossover: -3 dB @ 120 Hz, 3rd order
Monitor pass-through crossover: -3 dB @ 30 to 80 Hz (variable), 3rd order
Noise: >100 dB below full power
Max SPL: 117 dB peak @ 1 meter
Inputs: LFE channel, 5 monitor channels (all XLR/1/4-inch combo connectors)
Pass-through outputs: LFE channel, 5 monitor channels (all XLR)
Controls: LFE Input Sensitivity, Polarity Invert, Phase Delay, Monitor Group Input Sensitivity, Monitor Input Disable, Monitor-Sub Crossover Tuning, Power Switch
Dimensions: 7-1/2" W x 21-1/2" D x 29" H
Weight: 100 lbs.

IN USE

After setting up the subwoofer in my studio, I began listening to a variety of stereo CDs, DTS-encoded surround CDs, and the audio portion of DVD videos, as well as several of my stereo mixes and surround mixes-in-progress. If you've never worked with or listened to a subwoofer before, be prepared to discover a whole new dimension to your audio. There's an entire octave of frequencies below where most nearfield monitors start rolling off that can contain all kinds of material, both desirable (such as bass drum thump and synth bass undertones) as well as undesirable (rumbles, thumps, and subharmonics). In one case, I had used Waves' MaxxBass plug-in to enhance the low end of some acoustic guitar tracks. What I'd never heard before was that the plug-in was also adding a very ugly and very loud low thump each time the pick struck the strings — filtering this out immediately gave me back several dB of headroom to play with in the track. And with a particular hand drum I'd used in a jazzier song, there was also an amazing amount of previously unheard low-end ringing in the track. Again, filtering it out allowed me to clean up the sound of the drum and to reclaim lost headroom. Sweet.

Listening to stereo CDs through the 20/20/15 and a set of Event PS6 monitors (see my review in the May '00 issue), the

sound smoothly transitioned from the bottom end of the PS6's into the subwoofer. Once the unit was properly calibrated, I was unable to detect that I was hearing a separate speaker cabinet driving the lowest frequencies.

Typically I monitor at very low levels. I calibrated the system to average 95 dB C-weighted — much louder than I would normally mix or listen — and, at this level, the 20/20/15 had no difficulty pumping out adequate bass (it's rated to peak at 117 dB), even on the loudest explosions and thumps.

THE BOTTOM LINE

Whether you're using the 20/20/15 to fill in the lower octaves below what your regular monitors can produce, for LFE in film applications, or as the ".1" in a 5.1 surround system, it will fill the room with clean, clear, pumping low end. The only problem? It's addictive. Once you've heard your music with that lower octave present, you'll miss it everywhere else you listen.

Okay, the manual bites; but hopefully the setup CD will resolve this. In every other way, the 20/20/15 is a definite winner. Put it this way: I've purchased the review unit and am permanently incorporating it into my monitor rig. If you're in the market for a production subwoofer, the 20/20/15 should be a prime candidate.

BUY GEAR ONLINE
RECORDING • GUITARS • PRO AUDIO • MICROPHONES • KEYBOARDS • AND MORE
www.Sweetwater.com

Sweetwater goes beyond the typical Web Store to provide you the same award-winning personal service that's made us America's Fastest Growing Music Retailer. Why risk dealing with other Web stores? Join the thousands of musicians and audio professionals all over the world who've discovered the Sweetwater Difference!



(800) 222-4700
sales@sweetwater.com

CIRCLE 43 ON FREE INFO CARD



Yamaha CDR1000

CD-R/CD-RW Audio Recorder

Top-of-the-line
CD recording with
sample-rate conversion
and UV22 encoding

BY HOWARD MASSEY

One of the inviolable rules of the audio world is that technology tends to improve drastically toward the end of its life cycle. Take analog recording, for example: The quality of transport logic, analog electronics, head block materials, and magnetic media has never been better — even as Studer announces that the last multitrack machine will shortly be rolling off their assembly line. So it should come as no surprise that CD technology is reaching a high-water mark just as its likely successor — DVD — is beginning to poke its head around the corner.

Yamaha's CDR1000 is a flagship product, representing the state of the art in audio CD recording. Built like a tank and outfitted with pretty much every feature imaginable, it's designed to fare equally well on the

road and in the recording studio (even though it's got a cooling fan, it's exceedingly quiet). Yet, for all its complexity and flexible design, it's remarkably easy to use, making burning a CD as easy as recording a DAT or analog tape. Integrating the CDR1000 with your existing equipment is a snap, thanks to its wealth of input and output connectors. There's both AES/EBU and S/PDIF digital I/O (on XLR and RCA jacks, respectively),

along with a word clock input/throughput for improved clocking stability. If you don't have word clock available, there's an internal clock, or, alternatively, timing can be derived from the incoming digital data stream; a "lock" message shows when the CDR1000 is receiving valid clock signal and is correctly synchronized. Balanced analog I/O is provided on XLRs, and there's even a switch that allows you to select a +4 or -10 input sensitivity. All connectors can be plugged in simultaneously, so you can use it with a patchbay; the desired input and clock signal is selected from the front panel. An infrared remote that duplicates all front-panel functions is included; its operation can be defeated if necessary — a thoughtful touch, especially if you've got inquisitive and/or mischievous clients in the room with you.

Despite the fact that the A/D and D/A converters are "only" 20-bit (yeah, yeah, we know, 24-bit is four better), the CDR1000 cranks out great-sounding CDs. I recorded to a wide variety of CD-R and CD-RW media — of both the standard "data" and higher-priced "audio" type — and never created a single coaster. More impor-

One of the most important criteria for any digital media is whether or not it is "bit-transparent." In other words, when you're inputting a digital signal, you want to be sure that the data being recorded is exactly the same, bit for bit, as the incoming bitstream (for more information, see Tomlinson Holman's excellent article "Bit Transparency In Digital Audio" in the March 2000 issue of our sister publication *Surround Professional*). This was a particular area of concern since the CDR1000 has a built-in sample-rate converter that cannot be bypassed. To test its transparency, I recorded a 44.1 kHz stereo file from Pro Tools onto a CD using the CDR1000 and then recorded it back from the CDR1000 into Pro Tools. Both data transfers were done via AES/EBU, with the source device acting as master clock and the target device acting as slave. I then sample-aligned the two files visually and inverted the polarity of one of them. When bounced together, the end result was a perfect flat line — total cancellation, indicating that the CDR1000 is completely bit-transparent. (See fig. 1)

As another, perhaps even more demanding test, I used the CDR1000 to copy a DTS-encoded CD (again via the AES/EBU inputs) played from a con-



tantly, they all sounded superb. Monitored through my Yamaha 02R console, the analog output of the CDR1000 didn't sound quite as bright and well-imaged as the digital output (plus it's a few dB lower in level), but it was still excellent, and certainly better than what you'll get from the analog output of any consumer CD player.

nected DVD player. The resulting disk played back perfectly through my DTS decoder, with all the complex surround panning moves intact along with the audio quality. This degree of accuracy is, of course,

THE ORIGINAL DJ POSSE

THOMAS EDISON'S PHONOGRAPH DESIGN TEAM.



FROM INVENTION
TO PERFECTION

PT-2100

High-Torque Direct-Drive Quartz Lock Professional Turntable
with Locking Platter Reverse Button and Pitch Bend



gemini®

© 2000 Gemini Sound Products Corp. 8 Germak Drive, Carters, NJ 07008
Phone: 732-969-9000 Fax: 732-969-9090 E-mail: sales-usa@gemini.com Website: www.gemini.com
OFFICES: California • Florida • France • Germany • Spain • United Kingdom
Picture courtesy of the U.S. Department of the Interior, National Park Service Edison National Historic Site

CIRCLE 23 ON FREE INFO CARD

EQ LAB REPORT

MANUFACTURER: Yamaha Corporation of America, 6600 Orangethorpe Avenue, Buena Park, CA 90620. Tel: 714-522-9000. Web: www.yamaha.com.

SUMMARY: Makes burning CDs as simple as recording to DAT or analog tape. A great choice if you're doing a lot of 24-bit recording.

STRENGTHS: Makes bit-transparent copies. Works with a wide variety of CD-R and CD-RW media. XLR AES/EBU and coaxial S/PDIF digital I/O plus word clock input/throughput. Balanced XLR analog I/O with input switchable between +4 and -10. Built-in Apogee UV22 encoding. Unique input delay buffer. Flexible copy protection implementation. High-quality sample-rate converter. Sync recording automatically imports track and index numbers from CDs, DATs, or MDs. Digital fade-ins and fade-outs. A-B repeat (looped) playback. Nine-pin parallel general purpose interface for machine control.

WEAKNESSES: Expensive. Does not support 88.2 or 96 kHz sample rates. Sample-rate converter can't be bypassed. Occasionally locks up when stopping playback. Sync recording doesn't work with all DAT recorders. A/D and D/A converters are 20-bit.

PRICE: \$1,799

EQ FREE LIT. #: 106

an absolute requirement for making reference CDs. In fact, one strong advantage of using CD-Rs and CD-RWs for both mixing and reference purposes is that, unlike DAT, they don't use error correction; that's why, even

in the most stringent conditions, DATs are rarely bit-transparent.

The aforementioned sample-rate converter is very high quality and allows you to directly input 48 kHz digital signals (or any

signal with a sample rate ranging from 30 kHz to 50 kHz, for that matter). I put it to the test with a piece of electronic music (recorded on DAT at 48 kHz) that, due to its preponderance of sine waves, has been notoriously difficult to sample-rate convert downward without audible artifacts. It proved to be no problem for the CDR1000, which did an outstanding job of converting the data to 44.1 with no discernible coloration of the signal. However, the CDR1000's sample-rate converter is not capable of handling the newer double-speed sample rates of 88.2 and 96 kHz. To be fair, no two-track digital recorder I'm aware of (other than the Alesis MasterLink) does that, either, and you can, of course, always use external converters. In addition, even though the bit-transparency test indicated that the onboard sample-rate converter is completely inactive and therefore leaving the signal untouched when a 44.1 data stream is being input, I'd prefer to have the security of being able to physically switch it off.

One of the features that sets the CDR1000 apart from the competition (and that is probably also partly responsible for its relatively steep price tag) is the inclusion of

HEY, IF YOU WANT THE PERFECT MIX, WHY NOT DO IT YOURSELF?

NOW, MUSICIANS CAN CREATE THEIR OWN PERSONAL, ON-THE-FLY, MIX RIGHT ON STAGE OR IN THE STUDIO.

Why is it always so hard to get a simple thing like your monitor or headphone levels correct. Sometimes it takes longer to tell the sound board guy what you want than it does to tune your guitar. Well, Furman just made what should be a simple task—well—simple!

The Furman Remote Mixer, and its accompanying distribution system, allow you to have your very own personal mixer sitting next to you on a mike stand. It gives you (and fifteen others) up to 8 mono and 4 stereo signals for on-the-fly control. No more hand signals to the engineer. And it doesn't even need its own power—so no hook-up hassles.

So why get aggravated listening to a lousy mix that's anything but a pure delight. Get Furman. And purify your mix.

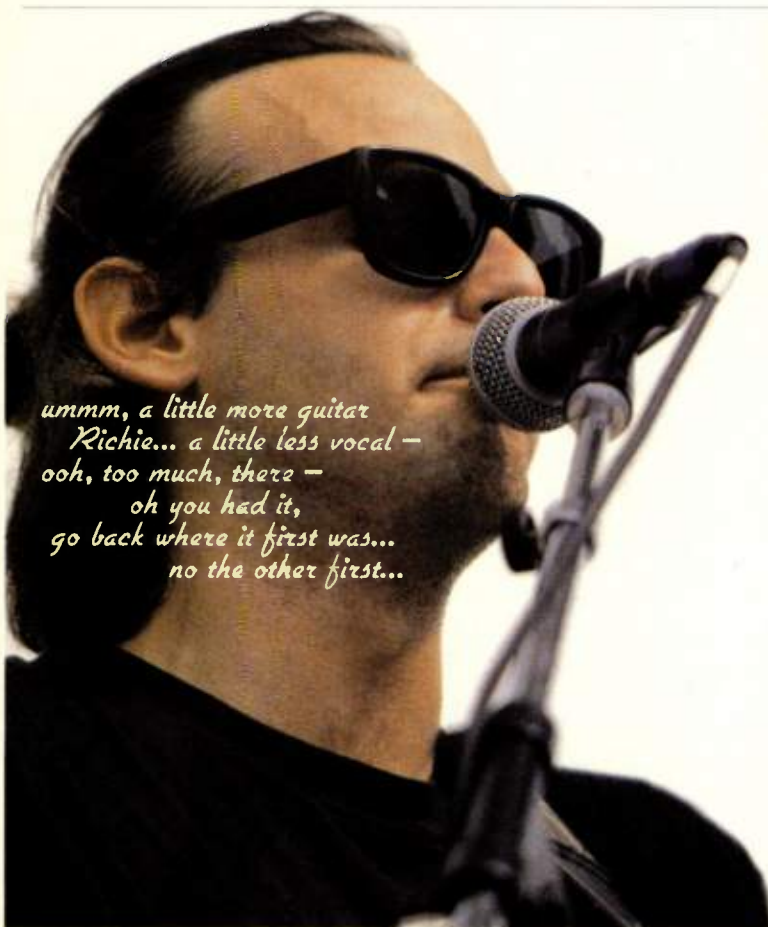
The HRM-16
The remote mixer that sits right next to you on a mike stand.



The HDS-16
Connects up to 8 remote mixers.



FURMAN
REMOTE MIXER SYSTEMS
PURIFY YOUR MIX



*ummm, a little more guitar
Richie... a little less vocal —
ooh, too much, there —
oh you had it,
go back where it first was...
no the other first...*

Apogee UV22 encoding, which can be switched on or off as needed. This is a single-ended system (no decoder is required) that preserves much of the sonic detail of a 20- or 24-bit recording during the necessary conversion to CD-standard 16 bits. I transferred a number of 20- and 24-bit recordings digitally into the CDR1000 (as well as through its 20-bit analog inputs) and found that I could easily discern between

the recordings made with UV22 and those made without it. The former clearly had more definition and better imaging than the latter — not exactly as well-defined and as well-imaged as the original 20- or 24-bit source signal, but still a lot closer than the recordings made without UV22 encoding. If you're doing a lot of 20- or 24-bit recording, this feature alone will make the CDR1000 an invaluable addition to your rig.

If you're planning on using the CDR1000 to record live performances, you'll love the unique Input Delay function. This allows you to preset a buffer of up to 4,950 ms (nearly five seconds) into which incoming audio is placed before you start recording. This can be a lifesaver if you hit the record button a couple of seconds after the start of a song. The only downside here is that, when Input Delay is switched on, you can't monitor through the CDR1000 in real time — the outputs are delayed by the same amount.

Speaking of monitoring, all outputs are always active, so the CDR1000 can feed multiple devices simultaneously. There's also a Digital Output Thru mode, which passes signal received at the digital inputs to the digital outputs, allowing multiple devices to be chained together. There's a nine-pin parallel machine control port, and a footswitch can be connected for start/stop of playback or recording. An Auto Record mode will kick the CDR1000 into record when a user-determined audio threshold (down to -96 dB) is exceeded. When I first tried this, it seemed that, even when set at the minimum threshold, initial transients were being lost, but it turned out that they were actually there — it was just the track numbers that were sometimes written a bit late. This was only a minor annoyance, except when the track in question was the first track (since you can't

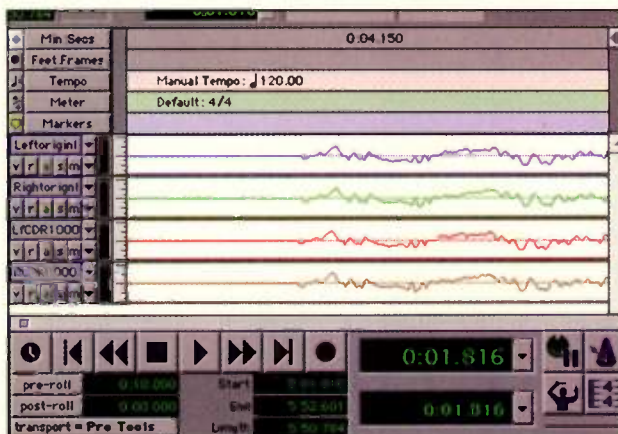


FIGURE 1. Bit transparency exemplified: The first two tracks — the original stereo file — are identical to the second two, which were recorded on the CDR1000.

rewind past its start point). The workaround was to use Auto Record in conjunction with Input Delay, which neatly used one feature to solve the limitations of another.

Although there's no provision for access to the PQ control subcode as you'd find in a non-real-time computer-based CD recording system (such as Digidesign's MasterList or Adaptec's Toast CD-DA), the CDR1000 automatically increments the track number each time you start a new recording. Indexes — a rarely implemented but useful function — are also supported. In addition, there are manual track and index increment functions, which advance the track or index number when the corresponding front-panel or remote button is pressed; however, this has to be done in real time, during the actual recording. It would be really cool if the CDR1000 operated more like a DAT recorder and allowed track and index numbers to be recorded, erased, or moved around after the fact, though, in fairness, I haven't seen this implemented in any other CD recorder. The CDR1000 does make a rather annoying assumption that you'll always be a little late in performing this incrementation — using its buffers, it writes the new value 300 ms before the point at which you physically press the button.

Another powerful function is called Sync Recording. When placed in this mode, the CDR1000 automatically reads the track and index numbers from a CD or MD (as well as the start and skip ID number from a DAT) player connected to its S/PDIF input (the AES/EBU interface doesn't transmit this information). In "All-track" mode, this enables you to burn a complete CD from a prepared and properly indexed DAT or MD, and also allows you to "rip" any audio CD (a practice I am *not* endorsing). In "One-track"



grandma's
music & sound
Albuquerque, New Mexico

CIRCLE 16 ON FREE INFO CARD

**GREAT
SOUND
GREAT
PRICE**

Really Great Mic Pre-Amps.

MP-2: Jensen Xformer class-A discrete.
MP-2X: Xformerless balanced throughput.

Both are ultra-clean, ultra-low-noise,
ultra-great value.



Great River
ELECTRONICS

651-455-1840 www.greatriverelectronics.com

CIRCLE 64 ON FREE INFO CARD

mode, the CDR1000 automatically goes into record as soon as a track number or start ID is received and then stops when the next one is received. I tried Sync Recording from a number of different CD and DAT players — even from a DVD player playing an audio CD — and it worked fine, except when it came to my TASCAM DA-45HR DAT recorder, which the CDR1000 steadfastly ignored. Whether this is a problem with the DA-45HR or the CDR1000, I can't say, but you might want to check with Yamaha or your local dealer to make sure that this

feature will work successfully with the CD, MD, or DAT players you have in your rig.

As you might expect, pretty much all the standard features you'd expect from a high-end CD recorder are here as well. These include record muting (inserts two seconds of silence at the beginning of a track); fade-ins and fade-outs (each up to 10 seconds, incremented in whole seconds); forward and backward search, as well as previous and next track jump; selectable time display (remaining time to the end of the disk or elapsed time since the beginning

of the track or disk); repeat playback (one-track, entire disk, or A-B point looping); ganged stereo analog input level controls (which can be set independently if need be); a dedicated front-panel headphone jack with its own volume control; and switchable peak hold metering (metering can also be switched between fast and slow response times). All types of copy protection are supported (one copy, unlimited copies, or no copies) and emphasis signal (used by some older digital recorders) is automatically detected and recorded.

The CDR1000 performs an automatic OPC (Optimum Power Control) test every time an unfinalized recordable medium is inserted so as to determine the laser power necessary for recording; this process takes about 10 seconds to complete. When using a CD-RW, there's provision to erase either the last track or the entire disc, and when using either a CD-RW or CD-R, a temporary table of contents is created until the disc is finalized. Even if you're using a CD-R, this allows you to add tracks at a later date as needed; however, while the CDR1000 has no problem playing an unfinalized disc, such a disc cannot be played in a standard CD player until it is finalized (at which time, in the case of the CD-R, the table of contents is written permanently and can no longer be changed).

The only problem I had with the CDR1000 in many hours of use was an occasional lockup that occurred when stopping playback (powering down and restarting was needed to bring it back to life). This wasn't consistent and could not be duplicated — and it never happened during critical operations such as recording or playback itself. My wish list for the unit is remarkably short: support for 88.2 and 96 k sampling rates, a sample-rate converter bypass switch, and perhaps a SCSI port so it could be used in conjunction with computer CD burning software. For all that, this is still a tremendous piece of gear. The days of the CD may arguably be numbered, but for as long as you need to be cranking out those shiny little silver discs, the CDR1000 is as good as it gets, especially if you're venturing into the brave new world of 24-bit recording.

Howard Massey heads up On The Right Wavelength, an audio consulting company, as well as Workaday World Productions, a full-featured project studio. His latest book, Behind The Glass (Miller-Freeman Books), is a collection of interviews with record producers.

REVEAL ACTIVE NEARFIELD MONITOR



ACTIVELY DIFFERENT

The distinctive front panel of the Tannoy Reveal Active is not just for show, the curved baffle has been precisely designed to reduce diffraction. At 1 1/2" thick, it is massive enough to provide the most rigid mounting platform for the drive units. Two 50Watt amplifiers and an electronic crossover are matched to a 1" soft dome tweeter and a 6.5" long throw bass unit. Both drivers are magnetically shielded, allowing operation close to video monitors. Tannoy professional quality and accuracy, at a semi-professional price.

Tannoy/TGI North America Inc.

300 Gage Ave., Suite 1 Kitchener, ON Canada N2M 2C8

Tel: (519) 745-1158 Fax: (519) 745-2364

Toll Free Dealer Faxline: (800) 525-7081

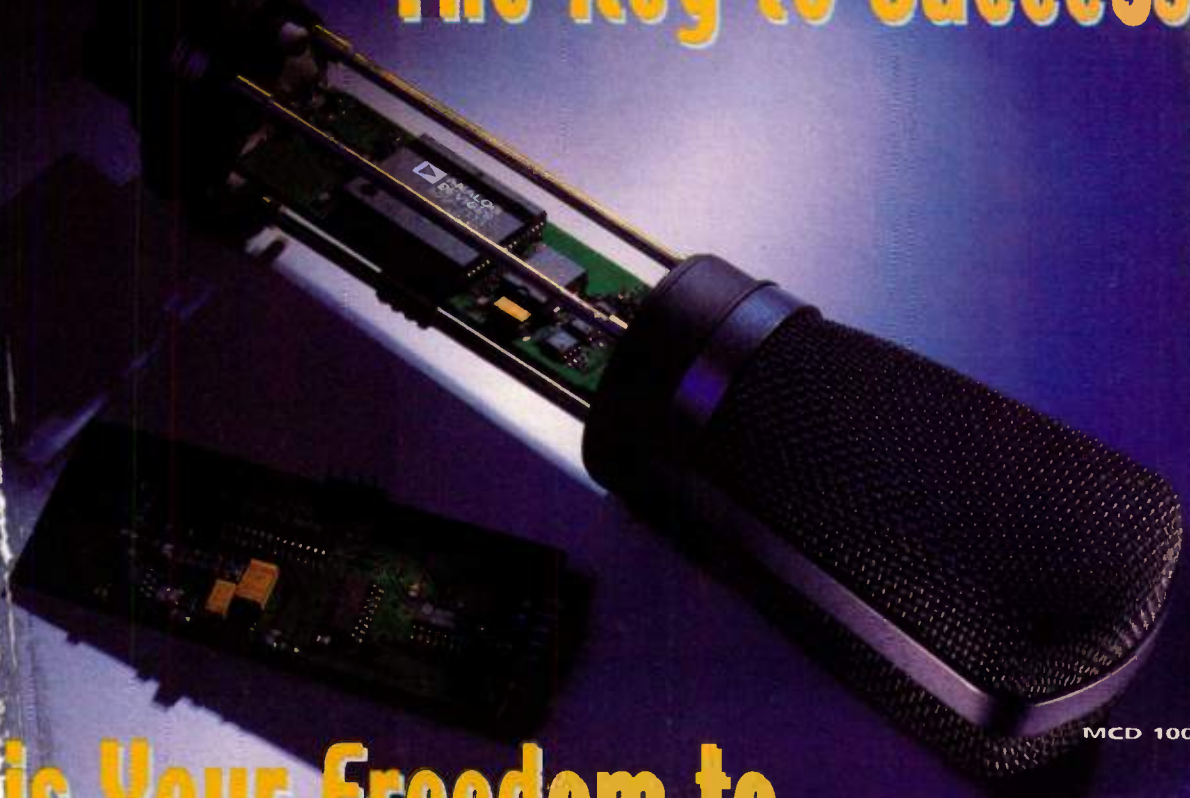
LITERATURE HOTLINE: litplease@tgina.com

Website: www.tannoy.com



CIRCLE 50 ON FREE INFO CARD

The Key to Success...



...is Your Freedom to Choose Quality.

MCD 100:

- 24 bit A/D conversion on board
- Gold vapor, true condenser capsule
- Proprietary TrueMatch™ "look ahead" DSP prevents the A/D converter from overloading, eliminating digital clipping
- AES/EBU digital output from the microphone

MC 740:

- The best true condenser microphone available anywhere. Multi-pattern with equalization. Remote control available.

MCE 90:

- Ultra-low noise, large diaphragm condenser microphone ideal for the home and project studio. Shockmount is included.

MC 834:

- Single pattern, large diaphragm true condenser microphone for recordings demanding absolute transparency in recording.

The MCD 100 is the ultimate tool for the digital recording environment. One of a long line of excellent, high quality condenser recording microphones from beyerdynamic.



beyerdynamic... *Fidelity in Audio.*™

for more information
1.800.293.4463
Fax (516) 293-3288
e-mail: salesUSA@beyerdynamic.com
56 Central Ave., Farmingdale, NY 11735



beyerdynamic

CIRCLE 08 ON FREE INFO CARD

Aphex 1100 Stereo Tube Mic Preamp

Clean, punchy tube mic preamping plus a handy assortment of extra features

BY RICH TOZZOLI

I could simply write this preamp review by using two words, "sounds awesome," but an offering of this caliber certainly deserves further explanation. The Aphex 1100, the flagship product from the company's new Thermionics Division, is a stereo Class A discrete tube microphone preamp with

indicator, and a 20-step LED headroom meter shows level from 50 to 0 dB, the analog clipping point.

The back panel features an XLR AES/EBU digital out, as well as BNC word clock in and out. Pin 2 hot XLRs are provided for mic in and line outs, TRS jacks for 1/4-inch line outs, a 1/4-inch jack for an external mute switch, and a switch for +4 dBu or -10 dBV output. The internal power supply can be switched for 100/120/220/240-volt operation. Aphex notes in the manual to make sure to provide proper ventilation above the unit where the vents are located, as the tubes will run hot in use.

Aside from the sleek beauty of this unit, it's the performance that really matters, and that's what really makes

path. If you press the Tone button in for one second, a 700 Hz reference tone at -20 dB is generated. This showed me that my calibration was correct. A quick touch of the button shuts it off.

I was impressed with how high I could crank the gain with no noise. Not too surprising, since the unit's EIN specs out at -135 dBu at 65 dB of gain. After setting proper levels and recording some takes, I immediately noticed how wide the dynamic range was, and I could almost hear "air" on top of the sound. The bass response was deep and smooth, and the natural "reverb mist" of the piano was accurately captured, something I don't often hear. I could actually position the mics out farther than I normally would, as the extreme sensitivity and low



built in 24-bit/96 kHz analog-to-digital conversion.

This sharp-looking single-rack-space unit features a brightly polished deep blue faceplate, chrome rack ears, and dual illuminated display windows. Each channel provides a rotary gain switch, moving in 4 dB steps from 12 to 65 dB, as well as a low-cut (high-pass) switch with 11 settings ranging from 30 to 195 Hz. The left window features push-buttons for -20 dB pad, polarity, tone, phantom power, mute, the MicLim limiter, and clock source (internal, external, locked) for the A/D converter. The right window is similar, except the source button is replaced by a 44.1, 48, or 96 kHz sample-rate selector. Each channel also features a Line Output Calibration control for attenuating the analog output stage gain from 0 to -12 dB, allowing you to match the output of the 1100 to your recorder or console. Above each button is an LED status in-

this baby a complete package. My first experience with the 1100 was on a solo piano recording at IIWI studios in New Jersey, where owner John

noise floor allowed me to capture more room sound. A very impressive start.

To test some of the other features on the 1100, we used it at a post-



LAB REPORT

MANUFACTURER: Aphex Systems, 11068 Randall St., Sun Valley, CA 91352. Tel: 818-767-2929. Web: www.aphex.com.

SUMMARY: A stereo Class A discrete tube microphone preamp with built-in 24-bit/96kHz analog-to-digital conversion.

STRENGTHS: Clean, clear, warm sound. Very low noise floor. Built-in high-resolution analog-to-digital conversion. MicLim peak limiter. LoCaf low-cut filter.

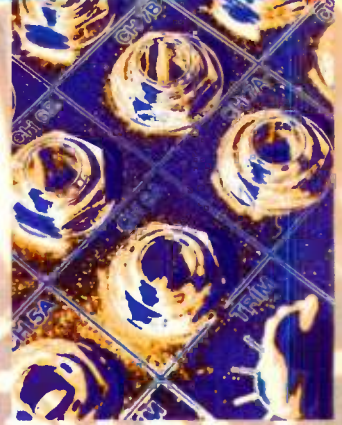
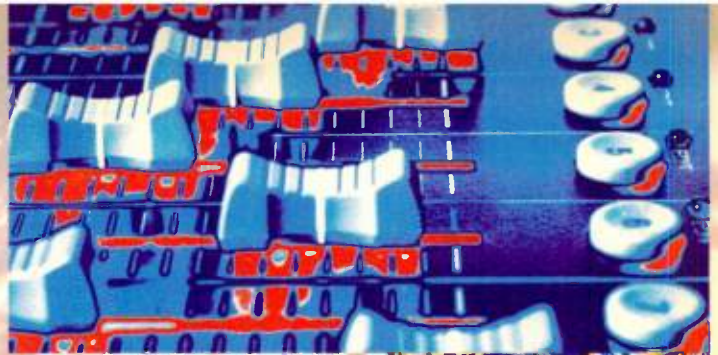
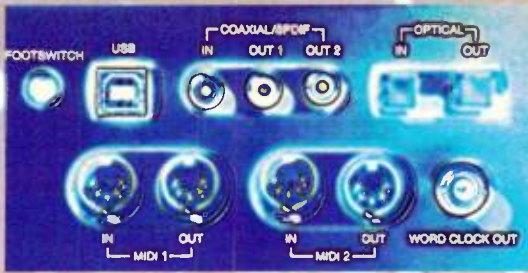
WEAKNESSES: None to speak of.

PRICE: \$2,495

EQ FREE LIT. #: 107

Hanti has a mint 1907 Steinway B. Coupling the preamp with a pair of Neumann U 87 mics, I went digitally into an Alesis MasterLink at 96/24 kHz using an all Monster Cable signal

house in New York City, on a commercial television voice-over to Pro Tools 24 running at 24-bit/44.1 kHz resolution. Using a different U 87, the session engineer was impressed with



When a Tune Hits...

...you need to respond *fast*—before the magic moment is lost forever. So when inspiration strikes, which would you rather do: bust open your computer, wrestle with IRQ conflicts, and troubleshoot a couple of failed driver installations, or hot-plug a full-blown 24-bit audio recorder/processor/controller/mixer into your computer's (or laptop's) external port and get busy making music?

(Now *that's* a tough question.)

We made a pretty good name for ourselves defining the state-of-the-art in professional recording gear. But that's yesterday's news (and we're not about to rest on our laurels). Today's musicians demand—and deserve—capabilities far beyond those offered by the current crop of run-of-the-mill audio interfaces. Capabilities that put a host of powerful, easy to use studio tools at your creative fingertips:

24/96 precision mic/instrument/line inputs. Comprehensive digital mixing with sophisticated EQ and a compressor/gate/expander on every channel. Remarkably flexible—but amazingly simple—signal routing. Fully configurable hardware control of your audio software. Total parameter recall. Plus more analog and digital ins and outs than you ever dreamed of. Oh, yes, and a user interface that makes a manual about as necessary as snow tires in the Sahara.

Sound interesting? Just wait 'til you hear it. Better yet, wait 'til you use it—either with your computer, or live at the gig. (By the way, it's priced lower than most single-purpose digital audio interfaces.)

EZbus

Computer Audio Recording Interface
Software Control Surface
Stand-Alone Digital Mixer

The EZbus is coming—get on it.



Specifications subject to change without notice.



P.O. Box 4189
Santa Barbara, CA 93140-4189
Voice: 805-566-7777
Fax: 805-566-7771
E-mail: info@event1.com
www.event1.com

CIRCLE 76 ON FREE INFO CARD

the 1100's punch and clarity, noting that the voice cut through the music mix like it should, and even "sat above it." Kicking in the MicLim limiter allowed for virtually worry-free operation; this feature uses an optically coupled attenuator before the preamp stage, driven by a very fast peak detector. Using MicLim, up to 16 dB or even higher peaks above the normal preamp saturation point can be smoothly attenuated, and, by using new CdS photocell technology, the dynamic range is maintained. Basically, this means you can drive this preamp hard without worry about digital overloads, and even possibly avoid having to patch a compressor in-line. I purposefully pushed the signal into overload to listen to the results, and while you can certainly hear the limiter "kick in" when you really nail the levels, it did maintain a usable signal.

I next tried the 1100 out on a nice jumbo Guild 12-string, using a pair of my favorite (although slightly noisy) Earthworks TC-30K omni mics. It takes a lot of gain to drive these mics, and the 1100 was up to the task, giving me a

clean, open sound with lots of low end. I noted that the phantom power switch slowly ramped up and down the voltage, saving my mics from unwanted surges. Once I was tracking, I set the low-cut filter to 77 Hz, nicely reducing the "boom" of the Guild's bass notes, which have previously been a problem since I like to mic acoustics in close. This filter, called LoCaf, uses a servo cancellation circuit to reject low-end input overload — an effective solution for eliminating low-end rumble, breath pops, and overall low-frequency garbage.

The 1100 features three stages, first, a Class "A" PNP low-noise amplifier stage coupled to the second Aphex-patented "Reflected Plate Amplifier" (RPA) tube stage, which is also found in the company's Model 107 preamp. The output of the second stage drives the A/D converters. The third, another RPA, is an impedance balanced output stage, allowing for balanced or unbalanced output of up to +27 dBu. The unit comes stock with either dual-triode Russian 6N1P 6-volt filament tubes, or

the American 6DJ8's. One triode of each tube is used in the second stage, and one in the impedance balanced output stage. Users can swap tubes (including 12-volt tubes) for different sounds, but other tube models may produce unwanted distortion.

The well-written manual features a list of those tubes known to work and those believed to work, but this part is up to the user to try. The unit also features high-grade, bifurcated gold contact relays on the buttons, as well as sealed gold contact rotary switches for gain and the filter cut-off controls. I used the handy rear-panel 1/4-inch mute switch jack with a footswitch to silence the unit's output when setting myself up for the 12-string guitar recording.

Many small but important touches in this new design make this an exceptional preamp, and the unit is capable of excelling in most any recording situation. The sound is open and airy, and features a killer combination of Class A cleanliness and tube punch. Aphex has a true winner here with the 1100. My sincere compliments to the chef. **EQ**

MERGING
PROUDLY ANNOUNCES
THE RELEASE OF

Pyramix VIRTUAL *Studio* 3.1

*The complete
integrated digital audio solution
for professionals*

Pyramix is powered by **Mykerinos**
Most Powerful
PCI AUDIO BOARD

ever
designed

- Version 3.1
- Enhanced Automation Model
- Fast, Precise Built-in Video Support AVI, MPEG, MOV...
- First MADI to / from PC Solution

MERGING

Visit us at: www.merging.com

109th AUDIO ENGINEERING SOCIETY CONVENTION

September 22-25, 2000
Los Angeles Convention Center

BY SOUND

AUDIO ENGINEERING SOCIETY

60 E. 42nd Street, New York, NY 10165 USA

For information: 800-541-7199 (North America except NY)

Ph: 212-661-8528 Fx: 212-682-0477 E: HQ@aes.org

www.aes.org

SURROUNDED

Terrasonde Audio Toolbox

Audio Analyzer, Session Helper, and Tester

Audio analysis and multi-function testing and session help in the palm of your hand

BY BOBBY OWSINSKI

Every once in a while a product comes around that's so neat and useful that it eclipses just about everything else around it. For me, the TerraSonde Audio Toolbox, a jack-of-all-trades audio test machine in a box, is one of those products. Why would an audio test device be more fun than a box that actually manipulates sound, you might ask? Because it lets me tune my entire acoustic and electronic signal paths much more precisely and quickly so I can get on with the business of playing with the sound a whole lot faster, that's why.

The look of the Audio Toolbox is deceiving because its unassuming design leads you to underestimate the power that lies under its hood. In reality, this is a dedicated, handheld device that performs 29 different useful and helpful functions that can not only make your everyday studio life easier, but also makes those functions inexpensively available for the first time. The functions are broken down into four categories: Acoustic Analysis, Session Helpers, Test Functions, and General Utilities.

The Acoustic Analysis tools feature a sound level meter, real-time analyzer, reverb decay time calculator, energy time graph calculator, polarity tester, and noise criteria analyzer. Each of these has several variations and is capable of displaying far more information than you might initially think. Take the RTA, for example. It measures at 1/3-, 1/6-, 1/12-, or full-octave, allows you to vary how fast the

display refreshes, displays the dB level of any frequency band, displays the full-band SPL, and allows you to freeze the display and store it in any of 40 memory locations.

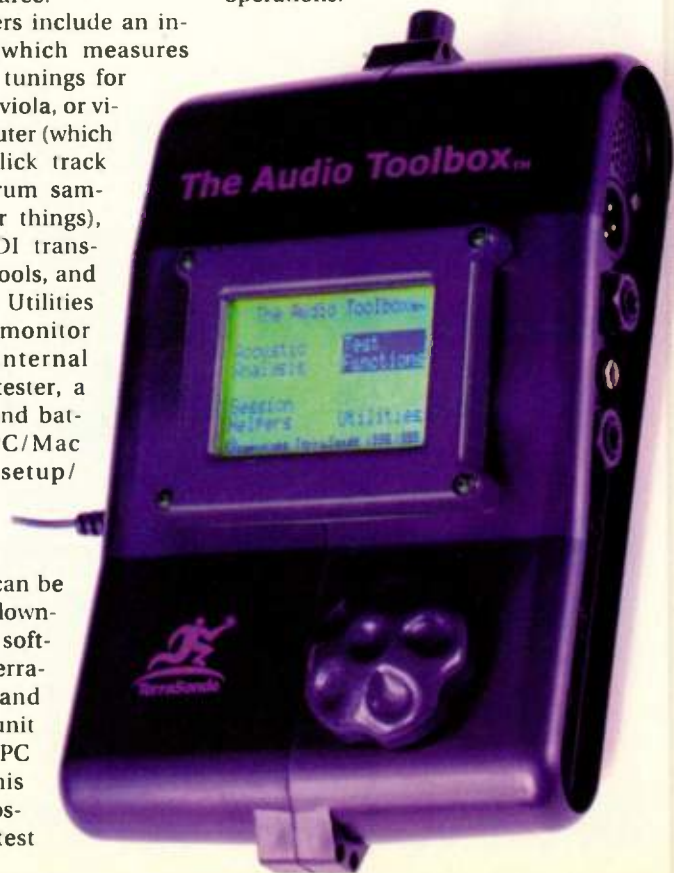
And that's not even everything that it will do!

Test Functions include a signal generator, a frequency counter, signal-to-noise ratio measurement, frequency response and impedance sweeps, a sample scope, and a distortion meter. Again, each one of these has multiple functions and variations. If we look at just the signal generator, for example, it outputs sine, square, white, and pink noise and polarity waveform variable by octave, 1/3-octave, or sweep. It even acts as an impedance tester and, in many cases, is simultaneously available with the other test functions that require a signal source.

Session Helpers include an instrument tuner (which measures standard or open tunings for guitar, bass, cello, viola, or violin), tempo computer (which can generate a click track from on-board drum samples, among other things), MIDI helper, MIDI transmitter, timecode tools, and hum cancellation. Utilities include a small monitor amplifier and internal speaker, a cable tester, a phantom power and battery tester, a PC/Mac interface, and setup/calibration. The computer interface is important because the unit can be field-upgraded by downloading the latest software from the TerraSonde Web site and transferred to the unit from your Mac or PC via MIDI. Using this method, it's also possible to transmit test

data to your computer for printing.

Despite the abundance of functions, the user interface of the Audio Toolbox is simplicity itself and should be used as a model for all menu-driven devices. With nothing more than a display and a single encoder knob on the front of the unit, the user can navigate to any function quickly and easily using the concept of "focus." Focus means that any item, whether menu or data entry field, must be first selected by turning the knob until the field is highlighted and then selecting it by pushing the knob. Turning the knob then changes the value of the data field. Believe me, this is much easier in practice than it is just reading about it, and takes all of about ten seconds to get the hang of. The manual is basic, yet completely and concisely outlines the various operations.





ONE STOP SHOP!

Even if you live in the middle of NOWHERE!



FREE CATALOG!

Call **800-776-5173**

or Visit Us **Online** at

www.musiciansfriend.com

Sign up for our weekly Web giveaway
and **win up to \$1000 in FREE gear!**

HUGE SELECTION!
In Stock & Ready
to Ship!



The Musician's Choice for Over 17 Years!

Rapid Delivery!

- Most packages delivered in 2-3 business days at no extra charge

45-Day Double Guarantee!

- Money-Back Satisfaction Guarantee
- Best Price Guarantee

5 Easy Ways to Order!

- Phone
- Online
- Mail
- Fax
- Email



To get your **FREE** catalog subscription, fill out this handy coupon and mail to: Musician's Friend, Dept. 125, P.O. Box 4520, Medford, OR 97501

FREE One-Year Catalog Subscription!

Name: _____
 Address: _____
 City: _____
 Email Address: _____ State: _____ Zip: _____
 Area(s) of Interest: Guitar Bass Keyboard & MIDI Drums
 Stage (PA, lights, etc.) Studio (recording) DJ
 Refer to this code: 125-0006

CIRCLE 27 ON FREE INFO CARD

EQ

LAB REPORT

MANUFACTURER: TerraSonde, 1751 Redwood Ave, Boulder, CO 80304. Tel: 888-433-2821. Web: www.terra-sonde.com.

SUMMARY: A high-powered handheld jack-of-all-trades audio test/analysis machine.

STRENGTHS: Compact. Twenty-nine useful functions. Simple user interface. AC-power or battery operation. Precise.

WEAKNESSES: None to speak of.

PRICE: \$999

EQ FREE LIT. #: 108

Ghost gets you closer to the music



When it comes to music recording, sound quality is everything. So perhaps it's no surprise that most of the world's top studios insist on analogue technology when it comes to mixing consoles.

Now, thanks to Ghost, you can too.

With a pure, sweet analogue signal path, Ghost is a flexible, instant access, 8-bus console that's ready to work whenever you are. And despite its 'project studio' price tag, Ghost is packed with 'big studio' features like ultra-quiet mic preamps, classic 'British' EQ, external machine control and advanced mute automation.

So get closer to your music. Get close to a Ghost.

www.soundcraft.com

Ghost

Soundcraft +44 (0)1707 665000
Soundcraft US 1-615-360-0471

Soundcraft

A Harman International Company

The standard Audio Toolbox measures 5-1/2" by 9-1/2" by 2-1/2" and weighs 2 lbs. The unit features a built-in microphone, speaker, balanced XLR, 1/4-inch, and RCA inputs and outputs, and MIDI in and out. A deluxe model (the Audio Toolbox Plus) with a 40 percent larger display, all-metal anodized case, built-in rechargeable battery, and external microphone is expected shortly. TerraSonde now sells a rackmount version that fits in two rack spaces and weighs 6 lbs. In this rack unit, all I/O is on the front panel along with a mic connector for using an external microphone.

All units feature either AC or battery power. Although the Toolbox does so many things (far more than what can be discussed here), I find that I consistently use it for three operations. Not only do I use the Real-Time Analyzer for monitor calibration, but constantly during a mix for a visual cue to spot any frequency anomalies or confirm that something is balanced frequency-wise. The SPL meter I really love, primarily because it has a resolution of 0.1 dB; I use it for quick speaker calibration. Finally, the Time-code tools are invaluable. Many times I get a project that must be mixed to picture where the video is only marked "drop-frame," leaving us to scratch our heads as to whether that means 30 or 29.97 drop. The Toolbox was able to sort out the exact frequency and flavor of the code, thereby eliminating the usual guessing game.

Honestly, I haven't been this excited about an audio product in 10 years. The Audio Toolbox does so much more than I've outlined here; you really have to play with it for a bit to understand the breadth of its abilities. At a price of \$999 for the basic unit, \$1,699 for the Plus, and \$1,785 for the rackmount, the TerraSonde Audio Toolbox is something that no studio or audio professional should be without. Every day, I find another use for this thing and I'm sure that you will, too.

EQ



CIRCLE 40 ON FREE INFO CARD

The John Lennon

SONGWRITING CONTEST



Categories

- Rock Country
- Jazz Electronic Pop
- Gospel/Inspirational
- Rhythm & Blues
- Hip-Hop Latin World
- Folk Children's

Awards and Prizes

- Grand Prize Winners in Each Category
- \$20,000 for "Song of the Year" courtesy of Maxell
- \$60,000 in EMI Music Publishing Contracts
- \$60,000 in Yamaha Project Studio Equipment
- Over \$200,000 in Cash Awards and Prizes
- A Total of 120 Winners!

Sponsored by:



to enter your original song(s) fill out this application and... just imagine

NAME _____

ADDRESS _____

CITY _____ STATE _____ APT _____ ZIP _____

PHONE (____) _____ AGE _____

EMAIL _____

SONG TITLE _____

CHECK ONE: LYRICS INCLUDED INSTRUMENTAL COMPOSITION

CIRCLE ONE (IF PAYING BY CREDIT CARD): VISA MASTERCARD

CARD # _____

EXP _____ SIGNATURE _____

Mail your entry to: **John Lennon Songwriting Contest**
620 Frelinghuysen Avenue, Suite 131
Newark, NJ 07114

- each entry must consist of:**
- Completed and signed entry form (or photocopy). All signatures must be original.
 - CD(s) or audio cassette(s) containing ONE song only, five (5) minutes or less in length.
 - Lyric sheet typed or printed legibly (please include English translation if applicable). Sheets not required for instrumental compositions.
 - Check or money order for \$30.00 per song (U.S. currency only) payable to John Lennon Songwriting Contest. If paying by credit card, \$30.00 per song will be charged to your account.
- Entries must be postmarked no later than August 31, 2000

2. Prizes: Twelve (12) Grand Prize Winners will receive \$2,000 in cash, \$5,000 in Yamaha project studio equipment, and a \$5,000 advance from EMI Music Publishing. One (1) Grand Prize Winner will receive \$20,000 for the "Song of the Year" courtesy of Maxell. Thirty-six (36) Finalists will receive \$1,000. Seventy-two (72) Runners-up will receive \$100 gift certificates from Guitar Center Stores.
3. Contest is open to amateur and professional songwriters. Employees of JLSC, their families, subsidiaries, and affiliates are not eligible.
4. Winners will be chosen by a select panel of judges comprised of noted songwriters, producers and music industry professionals. Songs will be judged based upon melody, composition and lyrics (when applicable). The quality of performance and production will not be considered. Prizes will be awarded jointly to all authors of any song division of prizes is responsibility of winners. Void where prohibited. All federal, state, and local laws and regulations apply.
5. Winners will be notified by mail and must sign and return an affidavit of eligibility/recording rights/publicity release within 14 days of notification date. The affidavit will state that winner's song is original work and he/she holds all rights to song. Failure to sign and return such affidavit within 14 days or provision of false/inaccurate information therein will result in immediate disqualification and an alternate winner will be selected. Affidavits of winners under 18 years of age at time of award must be countersigned by parent or legal guardian. Affidavits subject to verification by JLSC and its agents. Entry constitutes permission to use winners names, likenesses, and voices for future advertising and publicity purposes without additional compensation.
6. Winners will be determined by January 15, 2001, after which each entrant will receive a list of winners in the mail. CDs, cassettes and lyrics will not be returned.

Please read all rules carefully, and then sign your name in the space provided. If entrant is under 18 years old, the signature of a parent or guardian is required.

1. Each song submitted must be contestant's original work. Songs may not exceed five (5) minutes in length. No song previously recorded and released through national distribution in any country will be eligible. Songs may have multiple co-writers, but please designate one name only on the application. Contestant may submit as many songs in as many categories as he/she wishes, but each entry requires a separate cassette or CD, entry form, lyric sheet, and entrance fee. One check or money order for multiple entries/categories is permitted. (Entrance fee is non-refundable. JLSC is not responsible for late, lost, damaged, misdirected, postage due, stolen, or misappropriated entries.)

Make your check or money order for \$30.00 per song payable to:
John Lennon Songwriting Contest

check one category only

- rock world gospel/inspirational children's
- electronic pop folk r&b
- jazz country latin hip-hop

www.jlsc.com

SIGNATURE _____ DATE _____



Access Virus Modeled Synthesizer Plug-In

More than just a model, the Virus plug-in is a true software version of the hardware synth

BY MITCH GALLAGHER

I have to admit, I'm getting a kick out of manufacturers creating plug-in models of modeling devices — the Bomb Factory plug-in version of the Sans-Amp PSA-1 I reviewed back in the May issue, for instance. The irony of this cracks me up. (Yes, I'm easily amused.) Now Access has created a plug-in version of their popular analog-modeled synth, the Virus. In truth, the Virus plug-in goes beyond modeling, literally re-creating the device running on Pro Tools DSP. The re-creation is so close, that patches can be transferred between the plug-in and a hardware Virus. This is the first instance I can think of where you're able to work with a true software version of a hardware synth, as opposed to an approximation of the "real thing." In fact, the software version carries some bonuses over the hardware version, such as increased polyphony (given available DSP power), a nice user interface, and the ability to serve as a processor on audio tracks.

OVERVIEW

As mentioned above, the Virus plug-in duplicates the hardware Virus synth. The unit features modeled analog synthesis with FM capabilities and waveshaping. Each voice features two audio oscillators, plus there's a sub oscillator that runs an octave below oscillator 1. There are two resonant filters per voice, plus two envelope generators. Three LFOs are provided, which can be used to modulate a number of parameters. Four effects are available: a chorus, delay, vocoder, and an arpeggiator. You can stack voices in unison mode for a fatter sound, plus apply analog boost (essentially single-band EQ) and "saturation," which adds distortion-generated harmonics in several flavors.

The Virus' controls are arranged into six pages in the plug-in window. The first collects the oscillator controls, the second, the filter/envelope controls, and so on. This makes the Virus very easy to navigate — whatever you need is at most one click away.

When you instantiate the Virus, you're calling up the "master" plug-in,

which takes over an entire DSP chip. This "master" provides up to 16 notes of polyphony, and is subdivided into eight "virtual" Viruses. It's easiest to think of these as multitimbral divisions of the "master" plug-in. Each can be on its own MIDI channel and can have its own patch and other settings. You can load a maximum of eight "master" Viruses for a total of 128-voice polyphony on up to 64 multitimbral parts.

The Virus can be played from a MIDI keyboard, from a Pro Tools MIDI track, or using the mouse on its small "built-in" keyboard.

MIDI AND AUTOMATION

The Virus plug-in offers comprehensive automation features as well as thorough MIDI support, although there are some limitations that have been inherited from the hardware versions of the Virus: Some of the parameters are accessed using polyphonic aftertouch messages. This works okay, but the current version of Pro Tools can't display or edit poly aftertouch data — you'll need a controller that can generate the appropriate messages and the chops to





LAB REPORT

MANUFACTURER: Digidesign, 3401-A Hillview Ave., Palo Alto, CA 94304.1348. Tel: 800-333-2137. Web: www.digidesign.com.

SUMMARY: The real thing running as a TDM plug-in. If you like the Virus keyboard or module, you'll like this.

STRENGTHS: Sounds like the real thing. Easy-to-navigate user interface. Can be used as an audio processor. Vocoding. 16-voice polyphonic/8-part multitimbral per DSP chip. Comprehensive MIDI control and automation features. Smooth response to MIDI controllers.

WEAKNESSES: Some MIDI and effects limitations inherited from the Virus hardware versions.

REQUIREMENTS: Mac or Windows NT Pro Tools 24 Mix system with version 5.0 or higher software.

PRICE: \$795

EQ FREE LIT. #: 110

"play" in the data you want. You also can't reassign the MIDI controllers targeting each parameter.

The way that Pro Tools deals with plug-in presets doesn't let the Virus recognize MIDI program change messages. If you need to change patches in the course of a song, you'll have to load another instance of the plug-in and set it up with the patch you want. Alternatively, you can manually switch the plug-in from one patch to another while the song plays. The synth doesn't glitch when you do so, which is cool.

On the plus side, the Virus responds well to controllers and automation. I had no problems with "stair-stepping" — even when using the faders on my Yamaha 01V mixer to control a number of parameters simultaneously.

EFFECTS, VOCODING, AND AUDIO PROCESSING

As good as the Virus plug-in is as a synth, it's just as cool as an audio processor. By inserting the plug-in on a track that contains audio, you can use the Virus as an effect by applying filtering, saturation, chorus, delay, or modulation. Using a MIDI controller or track, you can trigger the ADSR adding an envelope to the input signal.

The delay and chorus effects in the Virus are functional, if not overly exciting. The delay must be shared across all the multitimbral parts in a particular master Virus, which is the same way the hardware Viruses work. But this is TDM — you can always turn the delay off for a multitimbral part and use a separate delay plug-in.

The Virus is almost worth the price just to get access (no pun intended) to a TDM-based vocoder. The Virus

vocoder can have from one to 32 bands; the more bands you use, the more intelligible the output becomes (assuming you're processing vocal sounds). The trade-off is that more bands reduce the amount of polyphony available. Using the vocoder also disables the Virus' filters, although you can always insert another Virus as a filter on the vocoder track. A sidechain input is provided for keying the vocoder from an external signal or another track.

The arpeggiator is fun. Six modes are provided (up, down, random, etc.), and the arpeggiator can be synced to Pro Tools' MIDI clock in rhythmic divisions ranging from whole notes to sixty-fourth notes.

NO VACCINE

At its list price of \$795, the Virus plug-in offers a great value versus the keyboard Virus at \$2,295, and the module at \$1,795 — assuming you've already got a Pro Tools Mix system. More than just a synth, it's also a powerful audio processor. The plug-in is tightly integrated into Pro Tools and functions transparently. Programming its graphic user interface is a piece of cake compared to staring at a LCD or paging through menus. I had a couple of minor complaints, mostly based on inherited limitations found in the hardware Viruses, but nothing big enough to get excited over.

Having a powerful, great-sounding synth available in TDM is outstanding — I can only hope that many more will follow. (Hey Digi, I'd love to replace my Yamaha TX816 rack with a plug-in!) In the meantime, I'll be enjoying the Virus plug-in. Now my biggest challenge is figuring out how to afford an expansion chassis and more Mix Farms.... **EQ**

In the Studio?



FREE Guide Saves You Time & Money!

No matter where you record your project, you need this FREE 36-page booklet before leaving the studio.

Contact Us Today:
1-800-468-9353
www.discmakers.com
info@discmakers.com



CIRCLE 13 ON FREE INFO CARD

Learn Audio Recording Like nowhere else.

All students train, hands-on, in cutting edge 48-track Analog/Digital Recording studios that feature:

- SSL • Otari • Amek
- Neotek • Studer • Neumann

PLUS...

- Mac G3/TASCAM Digital Lab
- StudioMaster Mix Down Lab
- Individual Pro Tools WorkStations

Every student is trained on Pro Tools & completes an internship in the industry for graduation.

Only recording school authorized by Avid Digidesign to teach Pro Tools Courses 135 & 235.

Award winning professionals teach no more than 12 students per class.

1-800-562-6383
2300 E. Broadway Rd., Tempe, AZ 85282

PRO TOOLS **CONSERVATORY OF Recording Arts & Sciences**

CIRCLE 11 ON FREE INFO CARD

Jensen Iso-Max Kit Isolation Transformers

Solve ground-loop
problems quickly
and easily

BY ROB MCGAUGHEY

The Jensen Iso-Max Kit is a bundle containing three isolation devices and a few adapters in a nice, padded, briefcase-style carrying case. The three isolation devices are the CI-2RR dual-audio ground isolator, VB-1BB video isolation transformer, and the VR-1FF cable television ground isolator. Also included are two female-RCA-to-female-BNC connectors and two TA-R1 female-RCA-to-male-RCA test connectors that can be used to isolate the source of noise within a system.

The beauty of the Jensen Iso-Max Kit is its simplicity and effectiveness. I opened the box and immediately started reading the enclosed Troubleshooting Guide. This document is well written and does an excellent job of explaining topics such as ground loops, impedance matching, unbalanced line interfacing, and ground lifting. The guide also includes step-by-step instructions on how to use the TA-R1 test adapters to isolate and remove the source of noise within a system. At that point, the rest is plug-and-play; just sit back and enjoy the results.

I started my testing with the VR-1FF cable television ground isolator. I inserted it just prior to my television tuner input in my home theater. I immediately noticed a significant improvement in the signal-to-noise ratio of the entire system.

I knew that when watching movies on cable at a good theater level there was noise that wasn't there when watching video tapes or DVDs, but I thought this was due to my crappy cable service and didn't realize the problem could be eliminated so easily. I didn't notice any real difference in the video quality on my home theater, but when I plugged the VR-1FF into an older television set, I noticed

similar improvements in the signal-to-noise ratio and also a subtle improvement in video quality. The VB-1BB is a single-channel video isolator with 75-ohm BNC connectors in and out. Also

included are two BNC-to-RCA adapters that I used between my VCR and video monitor.

When following the instructions in the Troubleshooting Guide to isolate noise, I discovered that I have a rela-



tively common noise problem associated with my powered subwoofer and the 20-foot unbalanced cable connecting it to my A/V receiver. I was able to significantly reduce this noise level using one channel of the CI-2RR dual-audio ground isolator inserted just before the subwoofer, as instructed in the documentation.

The bottom line is this: If you have problems with noise, ground loops, hum, or buzz in your audio or video systems, then the Iso-Max is likely a wise purchase. I knew I had some minor noise in my system, but I was unaware of how bad it truly was until it went away. I was instantly convinced of the difference a little noise can make, and of how effective the Iso-Max was.

Rob McGaughey is the owner/operator of Sound Sauna studios in Pittsboro, Indiana.



LAB REPORT

MANUFACTURER: Jensen Transformers, 7135 Hayvenhurst Ave., Van Nuys, CA 91406-3807. Tel: 818-374-5857.
Web: www.jensen-transformers.com

SUMMARY: The Iso-Max is geared toward solving audio and video problems related to ground loops, noise, hum, or buzz in the home theater, but has studio applications as well.

STRENGTHS: It works. Easy to use. Transparent sonically. Excellent "Troubleshooting Guide" simplifies complex topics such as noise and ground loops, and gives step-by-step instructions on identifying the source of noise and then eliminating it.

WEAKNESSES: It either solves the problem or it doesn't.

PRICE: \$299 (Optional VS-1SS "S-video" isolator adds \$135.95 to kit price)

EQ FREE LIT. #: 109

AD INDEX *For fast and easy information use the reader response card in this issue*

PAGE	BRAND	INFO#	PHONE#	PAGE	BRAND	INFO#	PHONE#
123	AES—New York	XX	800-541-7299	145	Markertek Video Supply	60	800-522-2025
95	AKG/Harman Pro	2	615-360-0499	93	Marshall Electronics Inc.	20	800-800-6608
47	Alesis Corporation	3	800-5-ALESIS	44, 94	Martinsound	22	626-281-3555
85	Amek	6	888-286-9358	15	MediaFORM	24	800-220-1215
101	Antares Systems	4	888-332-2636	86	Microboards Technology, Inc.	25	800-646-8881
7	Apogee Electronics	5	310-915-1000	16-17	MIDIMAN	26	800-969-6434
14	ATI Group (API)	7	805-375-1425	80-81	MusicPlayers.com	XX	212-378-0400
69	Audio-Technica	XX	330-686-2600	109, 125	Musician's Friend	27	800-776-5173
146-149	B&H Photo	80	800-947-5518	46	Neumann/True Audio Systems	30	860-434-5220
157	BBE	68	714-897-6766	31	Panasonic	XX	800-528-8601
119	beyerdynamic	8	800-293-4463	40-41	Peavey	32	601-483-5365
144	Busco Loudspeaker Company	55	219-936-1242	144	Plant Recording Studios	62	415-332-6100
50	CAE Inc./Littelite	9	888-548-8548	87	Rane Corporation	33	425-355-6000
8-9	Cakewalk Music Software	10	617-441-7870	97	Rocket Network	48	www.rocketnetwork.com
129	Conservatory of Recording Arts	11	800-562-6383	32-33	Roland Corporation	34	323-890-3700
55	Countryman Associates	85	650-364-9988	71	Rolls Corporation	35	801-263-9053
145	Cranesong	56	715-398-3627	73	Royer Labs	38	818-760-8472
144	D.W. Fearn Company	58	610-793-2526	27, 103	Samson Technologies	84, 86	516-364-2244
127	Das Ventures Ltd., JLSC	XX	212-873-9300	137	SEK'D	88	707-578-2023
60	Digibid	12	www.digibid.com	163	Sennheiser	79	860-434-9190
24-25	Digidesign	67, 69	650-842-7851	91	Serato Audio Research, Ltd.	51	649-302-2284
129	Disc Makers	13	800-468-9353	75	Shreve Systems Audio	39	800-214-9222
144	Discount Distributors	59	800-346-4638	19	Sonic Foundry	70	800-577-6642
54	Earthworks	14	603-654-6427	35	Sony Professional Products	XX	800-472-SONY
43	Emtec/BASF	72	888-295-5551	126	Soundcraft USA	40	888-251-8352
121	Event Electronics	76	805-566-7777	111	Spirit by Soundcraft	41	800-255-4363
112	FMR	87	512-280-9106	144	Stedman Corp.	63	888-629-5960
49	Focusrite	71	800-333-2137 code 567	3	Steinberg North America	42	818-678-5100
139	Full Compass	21	800-356-5844	141	Surround 2001	XX	212-378-0400
116	Furman Sound, Inc.	15	707-763-1010	13, 113, 158-159	Sweetwater	43, 44, 57	800-222-4700
115	Gemini Sound Inc.	23	732-969-9000	160-161	Sweetwater	57	800-222-4700
61	Grace Design	74	303-443-7454	62-63	Switchcraft	45, 46	773-792-2700
117	Grandma's Music & Sound	16	800-444-5252	135	Syntrillium	47	888-941-7100
117	Great River Electronics, Inc.	64	612-455-1846	118, 140	Tannoy North America	49, 50	519-745-1158
59	IVL Technologies Ltd.	17	250-544-4091	53, 107	TASCAM/TEAC America, Inc.	52, 61	323-726-0303
79	JBL	75	818-894-8850	45	TC Electronic	73	805-373-1828
39	JOEMEER	28	877-563-6335	29	Telex Communications	78	800-667-3968
133	King Biscuit	82	212-758-4636	109	TerraSonde	81	888-433-2821
2	Korg	31	516-393-8530	112	The Recording Workshop	53	800-848-9900
67	Lexicon	77	781-280-0300	51	Yamaha Corporation of America	54	714-522-9000
87	Lynx Studio Technology, Inc.	18	949-515-8265	21	Zsounds Music	66	708-442-3620
11, 56-57	Mackie Designs	19, 29	800-258-6883				
5	Manley Laboratories, Inc.	36	909-627-4256				
164	Mark of the Unicorn	37	617-576-2760				

Project Mastering in the Digital Age

Digital tools provide the means for mastering in your project studio



BY CRAIG ANDERTON

On a recent seminar tour, one of the topics I covered was project mastering. To drive the point home about why mastering is necessary, I set up a hypothetical worst-case scenario where a radio station was about to produce a CD of the 20 winners from a "battle of the bands" promotion. I'd pick someone from the audience and say that in front of them were ten DATs, one MiniDisc, eight CD-Rs, and two cassettes, recorded by 20 different engineers, in 20 different studios, using 20 different sets of monitors, while under 20 different states of consciousness. Their job, as a mastering engineer, was to turn all those tracks into a cohesive listening experience.

Little did I know that, shortly after the tour was over, I'd be mastering the debut CD from Rei\$\$dorf Force (EMI Germany), which — while not quite as much of a problem child as the situation presented above — nonetheless was spread over three CD-Rs with mixes recorded over a couple years' time span, in several different studios, and even had a live cut thrown in. "Your mission, should you choose to accept it...."

Well, I did accept it. The group, for whom I have the utmost respect, was taking a risk; I'm not a "real" mastering engineer, and due to a strict deadline, if I gave them something they didn't want, there was no time to get someone else. But they had heard cuts I'd mastered of my own music, as well as a remastered version I did of one of their older tunes to convince them I could do the job, and they liked the results. So, after taking our respective leaps of faith, I booted up the PC and got to work.

SETTING OBJECTIVES

Given the disparity of the various cuts, the first task was to decide upon an overall "sound." This was easy: From time to time I do guest appearances with the group, and I always felt that how they came across live smoked everything I'd heard them record. So, the objective became to give the CD the same qualities as their live performance, but I also had to make it work equally well on the airwaves as on the dance floor.

The key to emulating their live sound was, I felt, a throbbing/insistent low end and a heavily compressed

sound. Now, don't lecture me about compression and mastering — if I was mastering an acoustic jazz trio, I'd take a very different tack. But they play really loud, in clubs, while pushing amps and speakers to the limit. So the sound is naturally highly compressed, even though they don't use traditional compressors live.

THE TOOLS

Steinberg's WaveLab digital audio editor got the nod because I wanted more than 16-bit internal resolution (I knew I'd be making lots of little DSP tweaks), and it fits like a glove with the Steinberg Mastering Edition plug-ins. I also used Sound Forge for some functions.

The plug-in chain usually consisted of Sonic Foundry's Graphic Dynamics, one stage of Wavelab EQ-1 and/or Sonic Foundry Paragrophic EQ, and Steinberg Loudness Maximizer. Sometimes I used multiple stages of EQ-1's, and, for most tunes with vocals, Steinberg's Multiband Compressor made an appearance (see fig. 1).

BASS IS THE PLACE

Rei\$\$dorf Force uses a lot of 45–60 Hz



FIGURE 1: This setup was the starting point for most of the tunes with vocals. The multiband compressor brought up the vocal intelligibility somewhat while leaving the rest of the track unaffected.

**KING BISCUIT
FLOWER HOUR**



**TIMING BISCUIT FLOWER HOUR,
EQ MAGAZINE & KEYBOARD MAGAZINE
"HOME RECORDING STUDIO" SWEEPSTAKES
in association with Tower Records**

ENTER TO WIN!!

Enter to win!
www.KingBiscuitRadio.com

King Biscuit titles on sale now!
At all Tower locations

**Grand Prize:
\$8,000 in Top Name Brand Equipment!!**

**10 Runner-Up Winners:
King Biscuit CD 10-pak and T-shirt**

Home Studio Equipment includes:

- TASCAM DA-302 Dual DAT Recorder
- Audio-Technica Studio Mic
- Millennia HV-3B Mic Pre-Amp
- Line 6 POD Guitar Multi Effects Box
- Sonic Foundry Software Bundle
- Mackie 1402-VLZ Pro Mixing Board
- Apogee Rosetta A-D Converter
- Alesis Digital 8 Track ADAT Recorder
- Audio-Technica Headphones
- Event PS6 Bi-amplified Direct Field Monitor System

audio-technica

**Millennia
Music & Media Systems**

TASCAM

**Apogee
ELECTRONICS**
www.apogeedigital.com

KEYBOARD
www.keyboardonline.com

EQ
www.eqmag.com

**IDN
INNOVATIVE**
MUSIC VIDEO & MUSIC

**TOWER
RECORDS**
MUSIC VIDEO & MUSIC



Robin Trower



Iggy Pop



Pat Benatar



Mountain



April Wine



Best of the Best

Sweepstakes Rules: NO PURCHASE NECESSARY TO ENTER OR WIN. 2.42187 LIMITATIONS: Employees of The King Biscuit Entertainment Group, or Miller Magazine, or Tower Records, MTS, Inc., or EQ Magazine, or Keyboard Magazine, or Miller Freeman PSN, Inc., a United Music and Media company, or any of their parent entities, subsidiaries, affiliates or agents, or members of their immediate families, or persons living in the same household of each, are not eligible to enter or win. Entrants must be legal residents of the United States. Offer valid in Florida, New York and where published by federal, state, or local law. 3. 8:00PM TO 8:00PM EST. Not valid on any other date and conditions of all Sweepstakes Official Rules apply. 4. Odds of winning are determined by the number of entries received. Only one prize will be awarded per household. Sweepstakes reserve the right to substitute prizes of equal or greater value. Prizes are non-transferable, may not be redeemed for cash and may be substituted. ©2000 King Biscuit Entertainment Group, Inc.



Enter to win one of three ways:

- Enter to Win at www.KingBiscuitRadio.com
- Enter to Win at your local Tower Record Stores
- Fill in an entry blank in Pulse, EQ Magazine or Keyboard Magazine

Fill out contest entry and mail to: King Biscuit Home Studio Sweepstakes,
PO Box 6700, Dept. EQ, FDR Station, New York, N.Y. 10150

Name: _____ Phone: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Email Address: _____ Date of Birth (m/d/yr): _____

Would you like to receive EQ Magazine subscription information? Y N

Would you like to receive Keyboard Magazine subscription information? Y N

CIRCLE 82 ON FREE INFO CARD

subbass, which sounds great live with a subwoofer, but can disappear in home systems. The solution turned out to be simple: pulling back a bit at 50 Hz and boosting a bit around 100 Hz let the bass "speak" through just about anything. Choosing the precise boost frequency involved determining the bass part's "key note" (usually the note that is played most often). Boost at that frequency, and you have a nice hit of bass most of the time, but when the music goes off that note into other melodic territory, the bass automatically pulls back just a bit to create space for the other instruments.

Another way to increase apparent bass without totally hogging the spectrum is to use expansion in the bass range. I set the threshold under the bass peaks, and rolled off dynamics fairly rapidly from there.

THE MATCH GAME

Matching levels is one thing; matching *attitude* is another. After mastering a tune, I would save all the plug-in settings, including their order. Then, if I needed to make a tweak later to bring it

When mastering, it's important to make very small changes because an increase or decrease in one range has repercussions elsewhere.

more into line with other tunes, it was easy to call up the original file, apply the plug-ins, and start over.

I also matched levels a lot visually. If you look at a two-track waveform at a moderate zoom level, you see a thicker area centered around the zero crossing, and spikier parts of higher-level peaks shooting up and down from the thicker area. Matching the relative levels of the thick areas seemed to produce the best level-matching. If a tune had a significantly lower level, the quickest fix was to set the Loudness Maximizer for 0.0 dB of maximization, but click the Boost switch. This provides 1 dB of additional loudness maximization, which is often enough to make up the difference.

Speaking of 1 dB changes, when mastering, it's important to make very small changes because an increase or decrease in one range has repercussions elsewhere. For example, if you boost the treble, the bass becomes less prominent. Many of the tunes had a sort of "flat" sound, and adding a 1/2 dB boost over a 1.5 or so octave bandwidth at 2-3.5 kHz (adjust to taste) was just the ticket. It's amazing how even a 1/2-dB change can make a noticeable difference. As I was learning a tune prior to mastering it,

for more info contact:

john hurley

tel: 212.378.0460

email: hurley@psn.com

EXTREME
GROOVE
COM
...COMING SOON!

I'd often change the EQ to what sounded right, then automatically cut the difference in half (in other words, if a 2 dB cut sounded right, I'd change it to 1 dB). This gives your ear a chance to get acclimated to the change in sound. After a few minutes, you can then decide whether you want something more drastic.

DID SOMEBODY SAY "DYNAMICS"?

The purpose of the Sonic Foundry Graphic Dynamics plug-in at the front end is to clamp rogue spikes and add a few more dB of level without really impacting the dynamic range. I like dynamics, but dance music needs to cut through the crowd and explode out of the speakers. Steinberg's Loudness Maximizer provides a nice compromise; if you set only 1 or 2 dB of maximization instead of the maximum available amount (around 3-6 dB in many of the tunes I was mastering), then process the file a second time using another 1 or 2 dB, you get a lot of level on the CD, but, thanks to some mysterious DSP voodoo, it still sounds pretty dynamic.

THE REALITY CHECK

I was monitoring on Event 20/20bas speakers, which, in theory, aren't really mastering speakers. But I know them like the back of my hand, and it seems mixes I do on these speakers translate well in other environments. In this case, though, the large amount of sub-bass was pushing the low-frequency response limits of the speakers and my room. Fortunately, my wife's car has a stereo system with an extended bass range. I'd cut CDs, listen in the car, then come back and tweak.

As a matter of fact, the car became an indispensable part of the mastering process. In a recent *Keyboard* column, I explained why I like to mix with noise in the background, because it tends to mask weaker elements in a mix, which alerts me to situations where something might get lost in the ambient noise of a normal listening environment. I also find it very easy to hear level differences between cuts while driving.

I ended up burning about five or six test CDs over a period of about two weeks. I'd play one in the car, and take notes — "Cut 1 needs to come down about 1 dB," "Cut 5's bass is stronger than any of the others," and so on. Then I'd create a new CD, live with it for a while, and go through the process again.
















Only when I didn't want to make any changes was the process complete.

Now, great mastering engineers probably don't have to go through these machinations; they could just listen to the first test, make any compensations needed, and hit things right on the money. And maybe someday, I'll be able to do that, too. But the beauty of digital is that many times, you can compensate for a lack of experience through sheer persistence — if the sound isn't right, you can keep tweaking, re-doing, and

listening until it is. And, interestingly enough, this also compresses the learning experience. As you keep trying different options, you learn more and more about what does and does not work. And isn't that what being good at anything is all about?


In addition to writing books, doing gigs, and conducting seminars, Craig Anderton is creative director of Music Player.com — stop by at his Expert Forum sometime and say hi.

Stick out with more than forty effects in *Cool Edit Pro*.*

 Compressor	 Expander	 Noise Reduction	 Hiss Reduction	 Distortion
 Echo	 Chorus	 Normalize	 Reverb	 Pitch Bender
 Envelope Follower	 Parametric EQ	 Graphic EQ	 Convolution	 Vocoder

You'll find all these guys in every box of *Cool Edit Pro* along with all the rest of their friends:

3D Echo Chamber ✂ Amplify/Reduce ✂ Brainwave Synchronizer ✂ Channel Mixer ✂ Click and Pop Eliminator ✂ Clip Restoration ✂ Limiter ✂ Delay ✂ Dynamics Processing ✂ DTMF Tone Filter ✂ Envelope ✂ FFT Filter ✂ Flanger ✂ Full Reverb ✂ Invert/Reverse/Silence ✂ Multitap Delay ✂ Notch Filter ✂ Pan/Expand ✂ Pitch Shift ✂ Quick Filter ✂ Resampler ✂ Set Sample to Music ✂ Scientific Filter ✂ Stretch/Compress Tempo ✂ Sweeping Phaser




Cool Edit Pro:
The complete multitrack recording studio for Windows™

Download a demonstration version from www.cooledit.com, or just give us a call and we'll send you a free demo/tutorial CD.

P.O. Box 62255 Phoenix, AZ 85082 USA
cepro@syntrillium.com
1-888-941-7100 (toll-free sales, USA and Canada)
tel: +1-480-941-4327 fax: +1-480-941-8170

...good sound stuff!



Syntrillium
SOFTWARE CORPORATION

*No stick-figures were hurt in the making of this advertisement.

CIRCLE 47 ON FREE INFO CARD

Victory for Vinyl Victims



PHOTO BY JIM HERRINGTON

You may have thousands of dollars hidden amidst your record collections

BY AL KOOPER

When I moved from Nashville to Boston in 1997, I had an invitation-only garage sale to try and relieve the groaning of the truck that was moving all my possessions north-eastward.

I went through my formidable 10,000-plus LP collection and put on display all the stuff I didn't listen to anymore and many things that I never even played. I also displayed unused guitars, signal processors, ill-fitting stage clothes, and the usual knick-knack fare. The sale was well attended, and, midway through the afternoon, I noticed a guy leaving with an armful of LPs.

"What did you buy?" I inquired, "I'm curious...."

He showed me his haul (most were priced at \$7) and I saw this album by The Blue Things, one of the ones I never had played. I asked him if he liked them and mentioned that I had never heard of

them. He kinda shrugged me off and quickly exited.

Cut to April 2000. I am researching a column on selling one's old records and I sadly note in a price guide under "Blue Things, The" that the album I sold that kid for \$7 is worth \$150! *Well, how would any logical, intelligent human being know something like that?* Answer: They wouldn't.

This is what keeps this a viable marketplace for collectors and their ilk. I am assuming that most of you older readers have a stash of vinyl of some sort. Some of you might have kept turntables to spin your LPs every now and then, but chances are, unless you're DJ-ing, they're in a box in the attic, basement, or garage, getting warped, dusty, and mildewed. Not a good idea, because you may already be a millionaire (well, a thousand-aire maybe) without having to do anything except understand how to use eBay.

What I've learned is that there's no logical reason why one record album is worth \$2,000 and another is worth \$0.20. One needs research tools and a good memory to play this game. If a record is pressed up and sells millions, it will go to a second, third, and hopefully fourth pressing. If the engineer's name was spelled wrong on the first pressing and then corrected on the second one, then the first pressing becomes more valuable. Nothing to do with how old the record is, how popular it was, or what the music is like. That's just one example of what makes a record valuable that you couldn't figure out without research tools. I have some records from the '40s that are worth hardly anything, while one album from the late '60s is worth \$2,000.

Okay — is your appetite whetted? Is greed spinning out of control on the right side of your brain? Let's talk about tools.

There are basically three writers who are sick enough to have become the experts at pricing in this field. I talked to two of these lads at length, Tim Neely and Neil Umphred. These boys have been around the block myriad times and they are the voices the industry follows. Tim works for *Goldmine Magazine*, a fanzine for record collectors. They publish his various bibles and collectors are torn right down the middle as to their authenticity. Most say his quotes are high, some say they are low, no one ever says they are

accurate. I think that's a no-no in the collector community.

Be that as it may, Neely's book, *The Goldmine Standard Catalog of American Records 1950-1975* (Krause Publications), works for me. I didn't start out with Neely's book. I found a book by the third man, Jerry Osborne, *Official Price Guide to Records 2000* (House of Collectibles, distributed by Random House), in the mall by the movie theater. I bought it out of curiosity and that's how my journey began. Osborne's book is a wider survey than Neely's, but Neely's lists each LP individually, while Osborne prefers to say, Tim Hardin: all Verve product is valued at \$10-20, while he lists a few individual Columbia albums at prices varying from \$15-30. In Neely's book, each album that's valuable is mentioned along with three tiers of prices based on the condition of said album. It's more anal-retentive, but not as many albums are covered as in Osborne's. So, run your collection through Neely, and whatever he doesn't include, double check in Osborne or Umphred. Umphred is just now publishing a guide to R&B and Blues 45s of the '50s (Monaural Press). This will fill a huge hole in record research. Of all three, Umphred's prices are the least laughed at.

In the name of research for *EQ* magazine, I went through every single LP and 45 in my house. That's about 14,000 titles. I ran 'em through Osborne, Neely, and Umphred. I finally got a feel for what these things are worth. Just 'cause I think this will motivate you to do the same, I'm gonna list my favorite ten of the "treasures" that were unearthed through research and insomnia — you could actually have one of these in your house, garage, attic, basement, etc. To get these prices, the LPs have got to be the original pressings and they have to be spotless.

10. David Bowie, *Man of Words, Man of Music* (Mercury) — \$115
9. Lonnie Mack, *The Wham of that Memphis Man* (Fraternity) — \$120
8. Muddy Waters, *At Newport 1960* (Chess) — \$120
7. Stevie Wonder, *A Tribute To Uncle Ray* (Tamla) — \$150
6. Captain Beefheart, *Trout Mask Replica* (Straight) — \$250

continued on page 141

"Speed and accuracy are what I love about Samplitude 24/96. I can feed it with the highest quality digital sources and know that level changes and cross-fades will not incur any loss of depth or definition. SEK'D has done the math.

The context sensitive mouse cursor and non-destructive object oriented editor have enabled me to impress clients with how quickly complex multi-channel edits can be accomplished. Samplitude is high-end in both sound and features."

Alan Silverman - Arf! Digital, NYC

RECENT MASTERING CREDITS INCLUDE:

Grammy Award Winner - Best Pop Vocal 1999
Patti Page - Live At Carnegie Hall

Grammy Nominee

Eartha Kitt - Back In Business

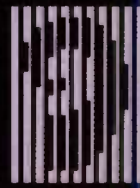
Gerry Mulligan - La Menace

THE ELITE SERIES

Professional Digital Audio Editing, Mixing, DSP, High End Soundcards, Precision A/D and D/A Convertors for the discerning engineer and musician . . .

Visit us at: www.sekd.com for a free 14 day trial of our award winning Mastering, Mixing, Editing and DSP software tools.

For more information and to locate an authorized dealer near you call: 1-800-330-7753



SEK'D

Studio für elektronische Klangerzeugung der Universität Dresden

PRECISION GERMAN TECHNOLOGY

CIRCLE 88 ON FREE INFO CARD

More Personality! New! Brighter Box!



PHOTO BY STEVE JENNINGS

New versions of RealNetworks and Windows Media Player aren't all they promise to be

BY JON LUINI AND ALLEN WHITMAN

Tempers flare in the hot debate surrounding the immense popularity of Napster, the MP3 file sharing software. It took ten years for AOL to acquire the purported ten million users Napster says it has registered in less than a year. Jealousy and panic are setting in. Lawsuits seem to be self-generating, spitting out of an artificial intelligence program that lives in a concrete bunker underground in the woods of Eastern Maryland. A somewhat misguided soul sprayed the Washington, DC Metro rapid-transit Web site with curses and threats, replacing train schedule tables. Said person had a beef with major label artists (Dr. Dre and Metallica among them) who've filed suits to stop Napster's use.

Lars Ulrich, Metallica's ever-ready drummer, expounded on his views in *Newsweek*. It'd be interesting to learn how much of it was written by Lars and how much was written by Howard King, their lawyer. The same issue's cover photograph shows an ostensibly college-age man wearing, among other things, a portable MP3 player and headphones, with his fist raised in the air. Isn't that the standard pose for rap and heavy metal bands (the two types of bands Mr. King has helped file lawsuits against Napster)?

Major labels continue to fire legal salvos at anybody and everybody. "We will sue a university student if we have to," says Frank Creighton, the RIAA's senior vice president. "We think that does have a deterrent effect." Of course, it's not at all clear that college students are the only ones. Conspiracy Theorists take note: The right wing think tank and philanthropic organization Pew Charitable Trusts sponsored a study that determined approximately 42 percent of Napster users are between 30 and 49 years old.

The ongoing lawsuit against Napster by Metallica has had its first popular reply. Some 30,000 of the 350,000 users blocked from Napster because of the suit claim they didn't share any of the band's music. Mr. King responds: "They're lying."

Panic comes from being incapable of accepting change. All the lawsuits in the world will not stop the use of file sharing programs like Napster and Gnutella. At stake is nothing less than the total restructuring of the business of music sales and distribution. That's got to piss a lot of people off. Clue for the Clueless: You can't beat this hurtling tidal wave. Instead, why not help create a new model that takes advantage of the obvious?

"Please get out of the way if you can't lend a hand!" — Bob Dylan

Taking a page from Frank Zappa's playbook, Pearl Jam has announced they will release live two-CD sets from every show on their current tour. Two fan-run Web sites (www.tenclub.net and www.pearljam.com) will make the albums available starting in August for "discount prices." Why trade or purchase a boot if you can get a high-quality board

mix? Will Eddie Vedder's inchoate cursing and mumbling between songs be edited out? Who cares! It's a picture-perfect example of "if ya can't beat 'em, join 'em." Good work, gang.

KEEPING UP WITH THE REALJONES

Back on the Sinformation Uberhighway, the content delivery racers are neck and neck. It's all about the numbers as RealNetworks speedily releases a Version 8, now that Microsoft's Windows Media number 7 is available.

Consistent with Real's previous release (who could forget Version 7?), both Mac and Windows are supported. The new release now includes software for CD burning, connects to various Internet radio stations, and, best of all, allows users to "add spectacular visual effects synchronized to your music." We're not making this up! Just try to tell us these people don't smoke a *lot* of pot.

All we really care is that video quality is improved. Why RealNetworks is trying to be the end-all, be-all of content, instead of focusing on being a great technology company, is anybody's guess (okay, maybe it's power and money). The visuals are groovy, but, please, RealLife is weird enough.

When we installed the Mac flavor of Real's Version 8, it didn't do a very good job of preserving our preferences, but we were finally able to view in full-screen video mode. Unfortunately, when we return from full-screen we discover Real had rearranged our desktop as if we prefer our monitor screen to be configured for 640x480 pixels, which, most assuredly dear FezFriends, we do not.

And if RealNetworks' Version 8 weren't enough, the Real folks have now upped the ante on dumbed-down interfaces with the release of their new "Real Entertainment Center Plus" (RECP). Still in beta, this Windows-only offering appears to be a combination of the existing RealPlayer, RealJukebox, a new "Real Download," and some content kidnapped from their Web site. A \$49.99 ("save \$40!") purchase price and a "risk free" 30-day money-back guarantee make the RECP a desktop-cluttering, memory-and-processor-eating must-have! Okay, there's some relevance here: a collection of very simple tools gets into more people's homes (www.real.com/entertainmentcenterplus).



FULL COMPASS

has a website
& really smart people
who sell & deliver
& service your every need
& really nice people who
answer the phones
& has over 600 lines of the
best equipment in a
really big warehouse
& a really great catalog.

Check out what's on
SALE right now by calling
800-356-5844

Need it after hours?

COMPASSXPRESS

Pro Audio, Video, Lights

800.476.9886

M-F 8am-10pm, Saturday 10am-6pm(CST)

www.compassxpress.com

sells Mics &

Mixers & Wireless & Tape &

Stands & Recorders &

Signal Processors & Parts &

Keyboards & Software & Cable &

CD Players & Test Equipment &

Amplifiers & Speakers & Headphones &

Intercoms & Lights &

Gel & Cases & Cabinets & Screens &

Carts & Projectors & Video Cameras &

DVDs & Televisions & Monitors & Tripods &

Gaffers Tape & Connectors & Tele Conferencing &

Lots Of Other Things

FULL COMPASS

AUDIO • VIDEO • LIGHTS

Call 800.356.5844

www.fullcompass.com

If recording quality is the issue - our **new** microphone is the solution

Nothing comes close to the exceptional quality provided by the all-new large diaphragm Type 3541- the microphone that sets new standards in recording technology. Combining outstanding build quality with unrivalled specifications, the Type 3541 ensures that, from today, your soloist recordings need never be compromised.

Contact us to request your DPA catalogue or for your opportunity to audition the new 3541.

3541@tgina.com

Or, check out our website for all the latest info on this and many other quality DPA products.

www.dpamicrophones.com

Only Type 3541 delivers:

- The highest output available
- Extremely low self noise
- High SPL handling characteristics
- Choice of solid state or tube preamp technology
- All accessories included in sturdy carrying case

DPA
MICROPHONES

TGI North America Inc.

300 Gage Ave., Suite #1 Kitchener, ON Canada N2M 2C8
Tel: (519) 745-1158 Fax: (519) 745-2364
Toll Free Dealer Faxline: (800) 525-7081

CIRCLE 49 ON FREE INFO CARD

The downside is that Real continues to hide the existence of their free player, leading people to believe they must pay to be able to listen to and view RealMedia content. It's not true. The free player is right here: www.real.com/player/ (click on: "RealPlayer 8 Basic beta"). Though there has been some improvement, Real still litters the desktop environment, browser bookmarks, startup menu, and file-type associations (making their software be the default player for every media type they can play: WAV, MP3, etc.) upon installation. Software designers, take note: the FezGuys believe there's a real need for a freeware tool that lets you manage your filetype associations. But maybe all the RealJunk strewn around your computer's innards is worth the hassle because (with purchase) you get free access to the Sports Illustrated Swimsuit Video (in RealVideo, of course) for 30 breathless days.

THIS IS THE FEZGUYS BEING EXCITED!

A new Windows Media Player beta 7 has been released. Go to: www.microsoft.com/windowsmedia/. It pretty much does exactly what RealNetworks tools do, but boasts "more personality." Once again, we're not making this up. The new Media Player promises new "eye-catching visualization support" (groovy, wavy lines and designs scrolling across your monitor screen) guaranteed to "set the mood" or to be "great for parties." As if that weren't enough, content providers can now decorate players with corporate or product logos and images offering a "whole new way to connect with their audience." You bet. A whole new way.

It's all about version number bloating. Mirroring OS and Web browser competitive numbers over the years, Real released Version 7, so MS came out with 7, but wait, now Real offers Version 8...it must be better! The two companies are competing frantically to be the player of choice for millions of Internet users. It's plausible to imagine a new release every month, with thousands more features we'll never use. Designers employed by these companies will keel over and die right at their workstations desperately trying to think of some newer, better, more "immersive" experience.

The sudden pus-filled eruption of crass marketing in the streaming media tools industry is disgusting. Granted, it's to be expected as millions of dollars are up for grabs. But whether it's Microsoft claiming their "new look and design" is the most amazing new innovation or RealNetworks pushing their product with bathing beauties, it doesn't mean we have to like it. It feels like we're in a supermarket aisle, staring blankly at high walls of brightly colored boxes of detergent howling in 124-point day-glo fonts: "New! Brighter Box!"

BITS AND SNIPPETS

• The Internet Underground Music Archive (IUMA), launched the interesting "IUMA A&R Files" (www.iuma.com/industry), a monthly promotional info-pack highlighting a handful of IUMA artists. The info will be sent directly to managers, publishers, radio stations, and labels based on the IUMA A&R team matching the artist's IUMA chart status with labels' music styles. Your ever-humble FezGuys think this is pretty cool, but it remains to be proven whether this will directly result in something real between IUMA bands and labels. Label execs have been trolling online independent sites for years, but with hundreds of thousands of bands out there now, most industry types

continued on page 141

BRUCE SWEDIEN

continued from page 75

I play them whenever I get ready to work in a new studio. Every room I work in sounds different, and these mixes help me to know what compensations I have to make in the mix. I've mentioned that I carry my mics and even my own wire around with me when I work. Now you know that I also carry my little box of DATs. I guess I'd better confess that I also ship my ASC Tube Traps around when I have the chance. I think they've been back and forth across the country about five or six times with me.

THE BITTY NITTY GRITTY

I record my mixes at 30 ips on my half-inch Ampex ATR-102. I hit the ATR pretty hard, and the machine likes that; +2's, +3's are not a problem. The machine is aligned at +6 over 185 for BASF 900 tape. When mixing, I monitor the stereo mix path of the console through the ATR and then also through the converters for my DAT machine (I use Apogee converters). By monitoring my mix through the DAT machine, I get a good idea of how the digital recording medium is going to affect my mix, especially the low-level dynamics of the mix. I don't record the DAT while I'm recording the half-inch master. I've heard that some people run the analog machine and record the DAT off the repro head at the same time that the mix is going down. My experience is that the sound is different when you make the recording on half-inch, rewind it, and then play it back to the DAT. To me, the sound warms up just a bit. I usually elevate the level going to the DAT by a dB or a dB-and-a-half, and I almost always use the "soft limit" function on my Apogees. I want every bit of resolution available to me on the DAT to enhance the character of my mix — especially if it's complex music (with a big orchestra, for instance) where, if you lose even a small amount of resolution, the audio quality suffers drastically.

You have to be very careful with levels on digital. If the ending is a fade out, you can crank up the volume at the end of the fade out and hear all kinds of doo-doo as the level gets lower. The only way to help that is by maximizing resolution during the mix. That's part of the reason I like half-inch tape as an archive format. At the present time, CDs have a severe bit-limitation. So why bother with a mix medium that is any better than present-day CD resolution? Well, that resolution is 16-bit, 44.1 kHz. If I were to finalize my mixes at that rate of resolution, all those bits that are missing in the current CD release format

are forever gone. My much-loved music would be doomed to sound like that for eternity! No way! I think of analog tape as a mix medium with an infinite sampling rate. I look forward to the future — when we will have digital systems with finer resolution. When that happens, all of the fine detail of my mixes will be present on the half-inch tape, waiting to be transferred to the new medium. To me, that's exciting!

I've always felt that "Music Is Life's Only True Magic!" Treat it with all the respect that it deserves! **EQ**

AL KOOPER

continued from page 136

5. The Remains, *The Remains* (Epic) — \$300
4. Little Walter, *The Best Of* (Chess) — \$500
3. Howlin' Wolf, *Moanin' In The Moonlight* (Chess) — \$500
2. Brute Force, *Extemporeous* (BT Puppy) — \$2,000
1. Dale Hawkins, *Oh! Suzy-Q* (Chess) — \$2,000

Just buying the books alone isn't enough. One has to learn how to grade the condition of the product. Umphred says most people don't really know how to grade their records.

Here's how the grading works: Assuming that a scratched-up record where the writing on the label is undecipherable and the cover spines are split through is worthless, the next level is VG-, which is a tasty step up from the latter. From there you have VG, slight label-wear, a nick or five, but the record tracks well, maybe a slight ring on the cover. Next is VG+, which is maybe one little nick, and a clean label and cover. At the top you have Near Mint, a step above VG+, and Mint, which might as well be sealed.

Okay, I think I've armed you well. Now go out there and *kill!* **EQ**

FEZGUYS

continued from page 140

have given up. Either the music was generally of poor quality (which is true) or the three-mineral-water-expense-account lunch was beckoning (which is a lot more important). By culling the data, IUMA could assist the frantic junior VP at Sony in making the right choice. This is IUMA's first entry into offering opinions on bands (albeit still based on public chart positions). It should be interesting to see

what floats to the top of their list. The basic problem remains: Why sign to a major when they want your master rights, half of all your licensing revenue, and your domain name and Web site content, just for starters?

• Popular download Web site Riffage purchased the century-old Great American Music Hall, in San Francisco. Would an online music company restrict options for bands wishing to play (or Webcast) if they aren't allied with the company? Or could it open up more avenues for musicians? We'll be watching this one.

• While noisily inflating statistics about music piracy (more lawsuits filed by lovely lackeys at the RIAA), major labels have quietly settled out of court an accusation by the Federal Trade Commission claiming the music companies were "colluding to inflate the prices Americans pay for their favorite compact discs." Like you, faithful FezReader, the FezGuys are shocked, stunned, stupefied, and agog. Artificially inflate retail CD prices? They wouldn't do that to us! Industry watchers forecast that consumers can expect lower CD prices in a few months. We'll be watching this one, too.

• Once proud Internet revolutionary MP3.com has caved in (following a court ruling) to the majors. The courts agreed MP3.com's My.MP3.com service was liable for copyright infringement because they reproduced large catalogs of music without the owners' permission (*i.e.*, the label). MP3.com removed access to all major label artist materials from their My.MP3.com service and downplayed the effect it had on the usefulness of the service. Meanwhile, they announced their first settlements with BMG and Warner Music. Of course, MP3.com won't be able to re-launch their service until reaching similar agreements with each individual music publisher and songwriter. A circulating rumor hints of an estimated \$20 million in damages and licensing fees to Warner alone. How much of that do you think the songwriters will get? If Michael Robertson wants to walk the walk of Internet revolutionary, he should stipulate the required percentage of those monies go to the musicians involved and require proof. The re-launch of My.MP3.com with major label content is likely to be a subscription service. Suddenly we're back in the land of CompuServe accounts!

The FezGuys wring their hands with care until they can't take it anymore and then the laughter starts. Visit www.fezguys.com.

When your project *business*

The pro audio business is changing. The project studio revolution has changed the definition of commercial recording. And regardless of where the work is being done, as long as it's professional, it's being covered in **PRO SOUND NEWS** — both in print and online.

PRO SOUND NEWS is the industry's only business news source. And for professionals, industry news, technology updates, and market trend reports are much more relevant and vital than any other form of editorial coverage.

Every day of the year, **PRO SOUND NEWS** provides exclusive market intelligence that helps professionals plan, expand, and operate their businesses.

...it's

When your project studio becomes your business, it's time to move up to **PRO SOUND NEWS.**

studio becomes your



time to read Pro Sound News

Market intelligence for today's new audio professional

Qualify to subscribe online at www.prosoundnews.com

The Case Specialists



Flight cases for guitars, pedalboards, mixers, drums, rackmount equipment, keyboards, DJ equipment, etc.

Call for quotes and FREE catalog

Discount Distributors
800 346-4638
In New York: 631 563-8326
www.discount-distributors.com

CIRCLE 59 ON INFO CARD

industrial-strength smooth.

busco

www.buscospakers.com

CIRCLE 55 ON INFO CARD

ELIMINATE POPPING P's

The first truly professional popscreen without high frequency loss!

The Stedman PS101 all metal popscreen is washable, includes gooseneck, clamp and lifetime warranty.

Made in U.S.A.



STEDMAN CORPORATION

1-888-629-5960

Website: www.stedmancorp.com

CIRCLE 63 ON INFO CARD

Anyone who has heard it knows ...



VT-2 Dual-Channel Vacuum Tube Microphone Preamplifier

(VT-1 Single-Channel also available)

D.W. FEARN

HAND-CRAFTED PROFESSIONAL RECORDING EQUIPMENT

610-793-2526
(Fax 610-793-1479)

PO Box 57 • Pocopson, PA • 19366 • U.S.A.

www.dwfearn.com

CIRCLE 58 ON INFO CARD

THE *Plant* MASTERING



DON'T TRY THIS AT HOME!

Equalization
Compression
Digital Editing
Level Adjustment
Master PMCD Proofing

Your Last Steps May Be Your Biggest

For rates and bookings call
(415) 332-6100 fax (415) 332-5738

www.plantstudios.com

CIRCLE 62 ON INFO CARD

YOUR AD CAN BE HERE...

CALL
CHRISTINE VELA AT 631.547.1180

TASCAM FIRST LOOK

continued from page 28

in the unit's "master section") for adjustment of channel parameters. Three dedicated rotary controls are provided for gain, frequency, and bandwidth adjustment of the EQ. Pushbuttons are provided to switch the EQ between low, low-mid, high-mid, and high EQ bands (of course, the validity of these controls is dependent upon the software you're using). In addition to indicating their respective status, the select LED and record LED double up as indicators of fader null-point position. For projects where you are using more than eight channels, the US-428 provides bank switches for navigating up and down between unlimited banks of eight.

Along with track-arming capability, the US-428 includes transport control with controls for stop, play, fast-forward, rewind, and record. A "Set Locate" button drops a locate point on-the-fly when pressed, while "Forward" and "Reverse" locate buttons allow access to the various locate points that you have set. Four aux buttons and

assign switches help implement MIDI message control over the software. As an example, let's say that you have a reverb plug-in running in your recording software, and you'd like to control reverb send level from the US-428. By assigning the Aux 1 switch to the reverb plug-in and pressing a channel's select switch, you can now use the unit's data wheel to adjust reverb level for that particular channel. **EQ**

AUDIO-TECHNICA

continued from page 30

5.5 kHz response with a 6 dB per octave rolloff. A third position for the filter switch provides flat response.

Several jacks are provided on the AT895 control pack for power and audio connections. A seven-pin XLR male jack accepts the detachable microphone cable. Audio output is on a standard three-pin XLR male connector. A four-pin XLR male connector allows the control pack to be powered via AC adapter; additionally, the control pack may be powered by an Anton/Bauer (or equivalent) battery source, or via three 9-volt

batteries in a clip-on cartridge. Battery life using alkaline cells is rated at about four hours. Lithium cells extend life to about 10 hours. An LCD is provided on the control pack for indication of battery status, and a headphone jack with level control allows the engineer to monitor the AT895's pickup.

When compared to shotgun or parabolic dish microphones, the AT895 provides several distinct advantages, most notably in the relationship between the size of the microphone and its rejection abilities. For example, low-frequency directionality of a shotgun mic is directly related to tube length: as tube length increases, so does low-frequency directionality. Unfortunately, increased tube length also produces "lobes," resulting in inconsistent high-frequency response. For a parabolic dish, good low-frequency rejection means a large dish — which can be heavy or difficult to hold under windy conditions. According to Audio-Technica, the AT895 circumvents such problems, yielding performance benefits such as higher sensitivity, extended pickup distance, stronger off-axis rejection, and increased gain-before-feedback as compared to currently available mics. **EQ**

EQ Shopper

Craftsmanship
David Hill, designer

SPIDER
8 Channel Mic Preamp - Mixer - A/D Converter

see us at AES
CRANE SONG LTD. www.crane-song.com Log On!
Info Call 888-345-9006 715-396-362

CIRCLE 56 ON INFO CARD

SALE! PLUS FREE ADHESIVE!

MARKERFOAM™ ACOUSTIC FOAM
GIANT 54" x 54"
Immediate Shipping
2" Reg. \$29.95 Now \$19.99 • 3" Reg. \$39.95 Now \$29.99. **KILL NOISE QUICK!**
High performance, super high density
Markerfoam. EZ mount. Blue or gray. Super-effective sound absorption proven in studios worldwide. Markerfoam offers superb value & looks professional. Request Foam Buyers Guide, specs & free samples today.

MARKERTEK JUMBO
SOUND ABSORB BLANKETS
Heavy-duty 72"x80" padded blankets absorb sound wherever they're hung or draped. Fabulous for stage, studio and field use. Top professional quality at a super saver price! Weight: 6 lbs. Black. \$19.99

MARKERTEK BLADE TILES™
HIGH PERFORMANCE - LOW, LOW COST!!!
America's best acoustic tile value only from Markertek!
\$3.49 per tile, 16"x16"x2", charcoal or blue
\$4.49 per tile, 16"x16"x3", charcoal or blue
\$5.49 per tile, 16"x16"x4", charcoal.

MARKERSTIK™ FOAM ADHESIVE
FREE with any foam purchase in this ad!
Limited offer. A \$4.00 per tube value.

SONEX
All the colors, styles and sizes plus great prices!

FREE America's most unique catalog featuring 328 pages of over 16,000 exclusive and hard-to-find supplies for Pro Audio, Broadcast Video, Audio Visual & Multimedia production.

MARKERTEK®
VIDEO SUPPLY
4 High St., Box 397, Saugerties, NY (USA) 12477
800-522-2025 • Fax: 914-246-1757 • www.markertek.com

CIRCLE 60 ON INFO CARD

SOUND AFFAIR™
MASTERING

Over 20 Years
Of Audio Excellence.

714 / 540-0063

e-mail: sndafair@aol.com
www.soundaffairmastering.com
2727 Croddy Way, Suite G, Santa Ana, CA 92704

CIRCLE 70 ON INFO CARD



420 Ninth Ave.

*Between 33rd & 34th Streets,
New York, N.Y. 10001*

*Store and Mail Order Hours:
Sun. 10-5, Mon. thru Thurs. 9-7
Fri. 9-1, Sat. Closed*

For Orders Call:

800-947-5518
212-444-6688

or FAX (24 Hours):

800-947-9003
212-444-5001

On the Web:

www.bhphotovideo.com
We Ship Worldwide



**OUR NEW
EXPANDED
LOCATION**



FOR ORDERS CALL: **800-947-5518** 212-444-6688
 OR FAX (24 HOURS): **800-947-9003** 212-444-5001
420 Ninth Ave. (Bet. 33rd & 34th St.) New York, N.Y. 10001

MOST ORDERS SHIPPED WITHIN 24 HOURS
OVERNIGHT SERVICE AVAILABLE

www.bhphotovideo.com

HARD DISK RECORDING



DIGI001 Digital Audio Workstation For Mac And PC

A completely integrated digital recording, mixing and editing environment for the Mac and PC, the DIGI-001 offers a 24-bit multi I/O breakout interface along with Pro Tools LE software—based on Digidesign's world renowned ProTools software. The DIGI-001 interface features 18 simultaneous I/Os made up of 8 analog inputs and outputs—two of the inputs are full featured mic preamps with phantom power, and digital I/O including standard S/PDIF as well as an ADAT optical interface that can also be used as a S/PDIF I/O. ProTools LE supports 24 tracks of 16 or 24-bit audio and 128 MIDI tracks and also features RealTime AudioSuite (RTAS) effects plug-ins. For ease of use, MIDI and audio are editable within the same environment and all mixing parameters including effects processing can be fully automated.



FEATURES—

- 18 simultaneous, 24-bit ins and outs with support for 44.1 and 48 kHz sample rates
- 20Hz - 22kHz freq. response ± 0.5 dB
- 2 channel XLR mic/1/4" line inputs with -26 dB pad, 48v phantom power, gain knob, and HP Filter at 60Hz
- 6 ch. line inputs (1/4") TRS balanced/unbalanced w/ software controlled gain
- +4dB balanced 1/4-inch Main outputs
- Balanced 1/4" monitor outs with front panel gain knob
- 1/4-inch unbalanced line outputs channels 3-8
- Headphone output with independent gain control knob
- 2 channel S/PDIF coaxial digital I/O
- 8 channel ADAT optical I/O can also be used as 2 channel optical S/PDIF

Pro Tools LE

- Supports 24 tracks of 16 or 24-bit audio and 128 sequenced MIDI tracks
- Sample-accurate simultaneous editing of audio & MIDI
- Real-time digital mixing capabilities include recall of all mixing parameters, support for edit and mix groups and complete automation of all volume, panning, mutes and plug-ins.
- Route and mix outboard gear in realtime
- MP3 and RealAudio G2 file support (Mac)

- Two plug-in platforms offer multiple options for effects processing—Real-Time AudioSuite (RTAS) is a host-based architecture that allows an effect to change and be dynamically automated in realtime as the audio plays back. —AudioSuite is a file-based format, that renders a new file with the processed sound.
- Bundled RTAS plug-ins include, 1 and 4-band EQ, Dynamics II-compressor, Limiter, gate and expander/gate, Mod Delay - short, slap, medium and long delays with modulation capabilities for chorus or flange effects and dither. AudioSuite plug-ins include Time Compression/Expansion, Pitch Shift, Normalize, Reverse

MIDI Functions

- MIDI functions include graphic controller editing, piano roll display, up to 128 MIDI tracks and editing options like quantization, transpose, split notes, change velocity and change duration on.
- MIDI data can be edited in the fly



MOTU AUDIO Hard Disk Recording Systems

The MOTU Audio System is a PCI based hard recording solution for the Mac and PC platforms. At the heart of the system is the PCI-324 PCI card that can connect up to three audio interfaces and allows up to 72 channels of simultaneous I/O. Audio interfaces are available with a wide range of I/O configurations including multiple analog I/O with the latest 24-bit A/D/A converters and/or multi channel digital I/O such as ADAT optical and TDIF I/O as well as standard S/PDIF and AES/EBU I/O. Each interface can be purchased separately or with a PCI-324 card allowing you to build a system to suit your needs. Includes drivers for all of today's hottest audio software and AudioDesk, multitrack recording and editing software for the Mac.

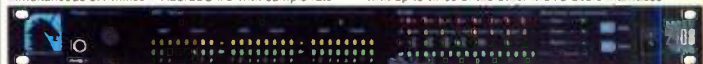
THEY ALL FEATURE—

- Mac OS and Windows compatible • Includes software drivers for compatibility with all of today's popular audio software plus AudioDesk, MOTU's sample-accurate audio workstation software for Mac OS • Host computer determines the number of tracks that the software can record and play simultaneously, as well as the amount of real-time effects processing it can support • Front panels display metering for all inputs and outputs
- AudioDesk Audio Workstation Software for Mac OS features 24-bit recording, multi-channel waveform editing, automated virtual mixing, graphic editing of ramp automation, real-time effects plug-ins with 32-bit floating point processing, crossfades, support for third-party audio plug-ins (in the MOTU Audio System and Adobe Premiere formats), background processing of file-based operations, sample-accurate editing and placement of audio, and more



1296 24-bit/96kHz Interface Features—

- 24-bit, enhanced multi-bit 128x oversampling 96kHz converters • A-weighted signal-to-noise ratio of 117 dB
- 12 Balanced XLR inputs and outputs can support two simultaneous 5.1 mixes • AES/EBU I/O with sample rate conversion both in and out • Compatible with existing PCI-324 cards (requires new PCI-324 driver) • Connect up to 3 1296 interfaces to one PCI-324 card for a total of 36 inputs and outputs or mix and match the 1296 interface with up to three of the other MOTU audio interfaces



2408 mkII FEATURES—

- 7 banks of 8 channel I/O: 1 bank of analog, 3 banks of ADAT optical, 3 banks of Tascam TDIF, plus stereo S/PDIF
- Custom VLSI chip for amazing I/O capabilities • Format conversion between ADAT and DA-88
- 8x 24-bit 1/4" balanced analog I/Os • 24-bit internal data bus for full 24-bit recording via digital inputs • Standard S/PDIF I/O for digital plus an additional S/PDIF I/O for the main mix • Sample-accurate synchronization with ADATs and DA88s via an ADAT SYNC in and RS422



1224 FEATURES—

- 24-bit analog audio interface • State-of-the-art 24-bit A/D/A • Simultaneously record and play back 8 channels of balanced (TRS) +4 dB audio • 24-bit balanced 4 XLR main outputs • Stereo AES/EBU digital I/O • Word clock input • Dynamic range of 116 dB (A-weighted) • Front panel displays six-segment metering for all inputs and outputs • Headphone jack with volume knob

CD RECORDING/MASTERING

ALESIS Masterlink ML-9600 High-Resolution Master Disk Recorder

The Alesis MasterLink ML-9600 is a 2-track 24-bit recorder that combines hard disk recording, CD burning, digital signal processing, and mastering functions to create compact discs in the standard "Red Book" 16-bit/44.1kHz format, or high resolution CDs that utilize Alesis' revolutionary CD24 AIFF-compatible technology. MasterLink is capable of recording and playing up to 24-bit/96kHz resolution CDs using the inexpensive, readily available CD-R media. The amazing sonic quality, powerful built-in tools and CD24 technology offers a uniquely versatile and affordable solution for everyone from large commercial audio facilities to project studios and recording musicians.



FEATURES—

- 24-bit 128x oversampling analog to digital and digital to analog converters
- Supports 44.1, 48, 88.2, 96 kHz sample rates and word lengths of 16-, 20- and 24-bit
- 20Hz-20kHz frequency response at 44.1/48 kHz sample rates
- 20Hz-40kHz, frequency response at 88.2/96 kHz sample rates
- 113dB signal-to-noise ratio (A-weighted)
- Matsushita ATAPI CD-ROM drive allows up to 4x CD burning using standard CD-R discs
- Built-in sample rate conversion & noise shaping to change sample rates & bit resolution as needed
- Reads and Writes 16-bit 44.1kHz Red Book Audio CDs
- Alesis' exclusive CD24 is a high-

- resolution mastering format that reads/writes files up to 24-bit 96kHz in the ISO 9660 disc format. AIFF compatible file format: that can be read by MacOS, Windows and Unix computer platforms.
- Built-in 3.2GB IDE hard drive
- Hard disk max recording times 95 min @ 24-bit/96kHz 310 min @ 16-bit/44.1kHz
- Create and store up to 16 playlists containing as many as 99 tracks

Analog Inputs and Outputs

- Balanced XLR connectors (+4dBu input and +19dBu max. output)
- Unbalanced phono (RCA) connectors (-10dBV input and +5dBV max. output)
- 1/4-inch TRS headphone output with level control

Digital Inputs and Outputs

- AES/EBU balanced XLR inputs and outputs
- S/PDIF unbalanced phono (RCA) inputs and outputs

Editing

- Gain control
- Crapping allows adjusting start and end points
- Join and Split features allow combining and separating song sections.

DSP Finishing Tools

- Equalization, Compression, Normalizing and Peak Limiting

Includes

- Infra red remote control and rackmount brackets

marantz CDR-631 Professional CD Recorder

The CDR631 offer all the features and functions of the CDR630, its popular predecessor, but adds many features and functions that were previously unavailable. Its full complement of digital and analog connections lets you record your own CDs from audio sources such as CDs, LPs, cassettes, DAT, or even a computer.



Features—

- Pro and consumer CD-R and CD-RW compatible
- Track titles can be saved and edited in CD-TEXT format that can be read on CD-TEXT compatible CD players
- Memory buffer that prevents the beginning of tracks from getting cut off
- Menu selectable SCMS copy protection
- Digital and analog record level and balance control
- XLR-Balanced and RCA unbalanced analog inputs
- AES/EBU (XLR), Coaxial, and Optical digital inputs
- Unbalanced (RCA) analog and Coaxial digital outputs including Coaxial loop out for unprocessed connection to other digital equipment
- IR remote control included

MICROBOARDS

StartREC Digital Audio Editing/ CD Duplication System

The Microboards StartREC is the first digital audio editing system combined with a multitrack CD recordable duplication system for professionals. Audio is recorded to the internal 6.2 GB IDE hard drive using analog or digital inputs. Sample rate conversion is automatic. Tracks can be edited and sequenced using the StartREC's user friendly interface and up to 4 CDs can be recorded simultaneously. StartREC is the ideal solution for studio recording, mastering, post production or any pro audio environment requiring digital audio editing and short run CD-R duplication.



Features—

- 2X, 4X, or 8X recording speeds
- 6.2GB IDE hard drive
- Editing functions include move, divide, combine or delete audio tracks, add or drop any index or sub index, and create track fade in or fade out
- Coaxial S/PDIF or AES/EBU digital input plus optical S/PDIF I/O
- XLR balanced and RCA Line inputs and outputs
- Automatic sample rate conversion from 32 and 48kHz
- Automatic CD Format Detection feature and user friendly interface provide one touch button operation
- Front panel trim pot and LCD display provide accurate input signal and time lapse metering
- SCMS (Serial Copy Management System) is supported, regardless of the source disc copy protection status
- StartREC Models Include: ST2000 (2) 8x writers, ST3000 (3) 8x writers and ST4000 (4) 8x writers

FOR ORDERS CALL:

800-947-5518

212-444-6688

OR FAX (24 HOURS):

800-947-9003

212-444-5001

**MOST ORDERS SHIPPED
WITHIN 24 HOURS**

OVERNIGHT SERVICE AVAILABLE

On the Web: <http://www.bhphotovideo.com>

DIGITAL MULTI-TRACK RECORDERS

TASCAM

MX-2424 24-Bit 24-Track Hard Disk Recorder

Co-designed by TASCAM and TimeLine Inc., the MX-2424 is an affordable 24-bit, 24-track hard disk recorder that also has the editing power of a digital audio workstation. A 9GB internal hard drive comes standard as well as a SCSI Wide port that supports external LVD (Low Voltage Drives) hard drives from up to 40 feet away. An optional analog and several digital I/O cards are available so the MX-2424 can be configured to suit your work environment. SMPTE synchronization, Word Clock, MIDI Time Code and MIDI Machine Control are all built in for seamless integration into any studio.



- Records 24 tracks of 24-bit audio at 44.1 or 48 kHz, or 12 tracks at 88.2 or 96 kHz. Up to 24 tracks can be recorded simultaneously using any combination of digital and analog I/O.
- Supplied 9GB internal drive allows 45 minutes of audio across all 24 tracks
- Wide SCSI port on the back panel allows you to add multiple drives. A front 5-1/2" bay available for installing an additional drive, or an approved DVD-RAM drive for back-up
- ViewNet MX, a Java-based software suite for Mac and PC offers DAW style editing of audio regions, dedicated system set-up screens that make set-up quicker and easier and track load screens that make virtual track management a snap. Connects to a computer via a standard Ethernet line.
- Can record to Mac (SDII) or PC (.WAV) formatted drives, allowing later export to the computer. The Open TL format allows compatible software to recognize virtual tracks without have to load, reposition and trim each digital file

Transport Controls-

- Jog/scrub wheel
- MIDI In, Out, and Thru ports are built-in for MIDI Machine Control.

Editing-

- Built-in editing capabilities include cut, copy, paste, split and ripple or overwrite
- 100 levels of undo
- Supports destructive loop recording and non-destructive loop recording which continuously records new takes without erasing the previous version

Build-In Synchronization-

- TBUS protocol can sample accurately lock 32 machines together for 384 tracks at 56kHz, or 768 tracks at 48kHz
- Can generate or chase SMPTE timecode or MIDI Time Code
- Word Clock In, Out, and Thru ports

I/O Options-

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

Software Updates-

- System updates are made available through a front panel Smart Card slot or via computer directly from the TASCAM web site.

DA-78HR Modular Digital Multitrack

The DA-78HR is the first true 24-bit tape-based 8-track modular digital multitrack recorder. Based on the DTRS (Digital Tape Recording System) it provides up to 108 minutes of pristine 24-bit or 16-bit digital audio on a single 120 Hi-8 video tape. Designed for project and commercial recording studios as well as video post and field production, the DA-78HR offers a host of standard features including built-in SMPTE Time Code Reader/Generator, MIDI Time Code synchronization and a digital mixer with pan and level controls. A coaxial S/PDIF digital I/O allows pre-mixed digital bouncing within a single unit, or externally to another recorder or even a DAT or CD recorder. Up to 16 DTRS machines can be synchronized together for simultaneous, sample accurate control of 128 tracks of digital audio.



Features-

- Selectable 16 bit or 24 bit High Resolution audio
- 24 bit A/D and D/A converters
- >104dB Dynamic range
- 20Hz - 20kHz frequency response ± 5 dB
- 1 hr. 48 min. recording time on a single 120 tape
- On-board SMPTE synchronizer - chase or generate timecode
- On-board support for MIDI Machine Control
- Internal digital mixer with level and pan for internal bouncing, or for quick mixes
- Track slip from -200 to +7200 samples
- Expandable up to 128 tracks (16 machines)
- Word Sync In/Out/Thru
- Analog output on DB25 balanced or RCA unbalanced
- Digital output on TDI/F or 2 channels of S/PDIF

A TO D CONVERTERS

APOGEE Rosetta 24-bit A to D Converter

The high-end quality analog to digital solution for the project studio. With support for both professional and consumer digital formats you can now record your audio at a higher resolution and with greater detail than standard converters found on MDM's, DAT's and DAW's. Ideal for mastering or tracking.



FEATURES--

- 24-bit, 44.1-48, 88.2-96 kHz Sample Rate ($\pm 10\%$)
 - 116dB dynamic range (unweighted)
 - Improved UV22HR for 16 and 20-bit A/D conversion
- FRONT PANEL:**
- Power switch • Sample Rate (44.1, 48, 88.2, 96kHz) selector • 16-bit (UV22), 20-bit (UV22) and

- 24-bit resolution selector • S/PDIF-ADAT optical selector • Soft Limit or or Off • 12-segment metering w/ over indicator & Meter Clear switch • Level trim
- REAR PANEL:**
- XLR balanced inputs • 2 x AES/EBU for 88.2/96kHz 2 channel path, Coaxial S/PDIF switchable S/PDIF or ADAT optical outputs • Wordclock out

LUCID AD 9624 24-bit A to D Converter

Transparent analog to digital conversion designed to bring your music to the next level. XLR balanced inputs feed true 24-bit converters for revealing all the detail of the analog source. 16-bit masters can take advantage of the AD9624's noise shaping function which enhances clarity of low level signals.



FEATURES--

- 24-bit precision A/D conversion • Support for 32, 44.1, 48, 88.2 & 96kHz sample rates • Wordclock sync input • Selectable 16-bit noise shaping •

- Simultaneous AES/EBU, coaxial and optical S/PDIF outputs • 20-segment LED meters w/ peak hold & clip indicators • ALSO AVAILABLE: DA9624 24-bit D/A converter

DIGITAL MIXERS

Roland

VM Basic 72 Digital Mixing System

The all digital Roland V-Mixing System, when fully expanded, is capable of mixing up to 96 channels with 16 Stereo (32 mono) onboard multi-effects including COSM Speaker Modeling. Utilizing a separate-component design, comprised of the VM-C7200 console and VM-7200 rackmount processor, allows the V-Mixing System to be configured to suit your needs. Navigation is made easy via a friendly user interface. FlexBus and EZ routing capabilities as well as a large informative LCD and ultra fast short cut keys.



- 64 channels of digital automated mixing (fully expanded)
- Up to 48 channels of ADAT/Tascam T-DIF digital audio I/O with optional expansion boards and interfaces
- Separate console/processor design
- Quiet motorized faders, transport controls, total recall of all parameters including input gain, onboard mixer dynamic automation and scene memory
- 24 fader groups, dual-channel delays, 4-band parametric channel EQ + channel HPF
- FlexBus and "virtual patchbay" for unparalleled routing flexibility

- VSB-2 Effects Expansion Board** -- Provides 2 stereo effects processors including COSM Speaker Modeling. Up to 3 additional boards can be user-installed into the VM-7200 processor, for 8 stereo or 16 mono effects per processor.

- VM-24E I/O Expansion Board** -- Offers 3 R-Bus I/Os on a single board. Each R-Bus I/O provides 8-in/8-out 24-bit digital I/O, totaling 24 I/O per expansion board.

- Up to 16 stereo (or 32 mono) multi-effects processors using optional VSB-2 Effects Expansion Boards (2 stereo effects processors standard)
- COSM Speaker Modeling and Mic Simulation technology
- 5.1 Surround mixing capabilities
- EZ Routing allows mixer settings to be saved as templates
- Realtime Spectrum Analyzer checks room acoustics in conjunction with noise generator and oscillator
- Digital cables between processor and mixer can be up to 100 meters long, ideal for live sound reinforcement.

- DIF-AT Interface Box for ADAT/Tascam** -- Converts signals between R-Bus (VM-24E expansion board required) and ADAT/Tascam T-DIF. Handles 8 in/8-out digital audio, 1/3 rackmount size.

- VM-24C Cascade Kit** -- Connects two VM-Series processor units. Using two VM-7200 processors cascaded and fully expanded with R-Bus I/O, 14 channels of audio processing are available.

EFFECTS & PROCESSING

Lexicon

MPX-500 24-Bit Dual Channel Effects Processor



The MPX 500 is a true stereo 24-bit dual-channel processor and like the MPX10H is powered by Lexicon's proprietary Lexichip and offers dual-channel processing. However, the MPX 500 offers even greater control over effects parameters, has digital inputs and outputs as well as a large graphics display.

- 240 presets with classic, true stereo reverb programs as well as Tremolo, Rotary, Chorus, Flange, Pitch, Detune, 5.5 second Delay and Echo
- Balanced analog and S/PDIF digital I/O

- 4 dedicated front panel knobs allow adjustment of effect parameters. Easy Learn mode allows MIDI patching of front panel controls.
- Tempo-controlled delays lock to Tap or MIDI clock

t.c. electronic

M-One Dual Effects Processor



The M-One allows two reverbs or other effects to be run simultaneously, without compromising sound quality. The intuitive yet sophisticated interface gives you instant control of all vital parameters and allows you to create awesome effects programs quickly and easily.

- 20 incredible TC effects including Reverb, Chorus, Tremolo, Pitch, Delay and Dynamics
- Analog-style user interface
- 140 Factory/100 User presets

- Dual-Engine design
- 24 bit A/D-D/A converters
- S/PDIF digital I/O, 44.1-48kHz
- Balanced 1/4" Jacks - Dual I/O
- 24 bit internal processing

D-Two Multitap Rhythm Delay



Based on the Classic TC2290 Delay, the D-Two is the first unit that allows rhythm patterns to be tapped in directly or quantized to a specific tempo and subdivision.

- Multitap Rhythm Delay
- Absolute Repeat Control
- Up to 10 seconds of Delay
- 50 Factory/100 User presets

- 24 bit A/D-D/A converters
- S/PDIF digital I/O, 44.1-48kHz
- Balanced 1/4" Jacks - Dual I/O
- 24 bit internal processing



TO INQUIRE ABOUT YOUR ORDER:
 800 221-5743 • 212 239-7765
 OR FAX 24 HOURS:
 800 947-2215 • 212 239-7549

420 Ninth Ave.
 (Bet. 33rd & 34th St.)
 New York, N.Y. 10001

MICROPHONES



C414 TLII "Vintage TL"

Combines the best of old and new: legendary C12 acoustics and the latest generation of C414 transformerless FET electronics. Although similar in design and shape to the C414BULS, the TLII features a capsule that is a faithful sonic recreation of the one used in the classic C12 tube mic combined with computer-aided manufacturing techniques that assure greater uniformity in response from microphone to microphone.

FEATURES-

- Cardioid, hypercardioid, omnidirectional and figure 8 polar patterns
- Warm, smooth microphone that is suitable for high-quality digital recording.
- Frequency response 10Hz to 20kHz



RØDE NT-2 Condenser Mic

The RØDE NT2 is a large diaphragm true condenser studio mic that features both cardioid and omnidirectional polar patterns. The NT-2 offers superb sonic detail with a vintage flavor for vocal and instrument miking. Like all RØDE mics the NT-2 is hand-assembled in Australia and is available at a breakthrough price.

FEATURES-

- Dual pressure gradient transducer
- 1" capsule with gold-sputtered membranes
- Low noise, transformerless circuitry
- Omni and cardioid polar patterns
- 135dB Max SPL
- High pass filter switch and -10dB pad switch
- Gold plated output connector and internal head pins
- Shockmount, Flight Case, and Pop Filter included
- 20Hz-20kHz frequency response



audio-technica AT4047 Cardioid Condenser

The AT4047 is the latest 40 Series large diaphragm condenser mic from Audio Technica. It has the low self noise, wide dynamic range and high sound pressure level capacity demanded by recording studios and sound reinforcement professionals.

FEATURES-

- Side address cardioid condenser microphone for professional recording and critical applications in broadcast and live sound
- Low self noise, wide dynamic range and high SPL
- Switchable 80Hz Hi Pass Filter and 10dB pad
- Includes AT849/SV shockmount



POWERED STUDIO MONITORS

VERGENCE A-20 Studio Reference Monitor System



Incorporating a pair of 2-way, acoustic suspension monitors and external, system-specific 250 watt per side control amplifier, the A-20 provides a precise, neutral studio reference monitoring system for project, commercial and post production studios. The A-20's control amplifier adapts to any production environment by offering control over monitoring depth (from near to far field), wall proximity and even input sensitivity while the speakers magnetic shielding allows seamless integration into today's computer based studios.



- Type Modular, self-powered near/mid/far-field monitor.
- 48Hz - 20kHz frequency response @ 1M
- Peak Acoustic Output 117dB SPL (100ms pink noise at 1M)
- XLR outputs from power amp to speakers
- Matched impedance output cables included

- -6dB LF Cutoff 40Hz
- 5 position wall proximity control
- 5 position listening proximity control between near, mid and far-field monitoring
- Power, Overload; SPL Output, Line VAC and Output device temperature display.

Amplifier

- Amplifier Power 250W (continuous rms/ch), 400W (100ms peak)
- XLR, TRS input connectors
- Headphone output
- 5-position input sensitivity switch with settings

Speakers

- 2-way acoustic suspension with a 6.5-inch treated paper woofer and a 1-inch aluminum dome tweeter
- Fully magnetically shielded with an 18-inch recommended working distance

PS-5 Bi-Amplified Project Studio Monitors



The PS-5s are small format, full-range, non-fatiguing project studio monitors that give you the same precise, accurate sound as the highly acclaimed 20/20 series studio monitors. The use of custom driver components, complimentary crossover and bi-amplified power design provides a wide dynamic range with excellent transient response and low intermodulation distortion.

FEATURES-

- 5-1/4-inch magnetically shielded mineral-filled polypropylene cone with 1-inch diameter high-temperature voice coil and damped rubber surround LF Driver
- Magnetically shielded 25mm diameter ferrofluid-cooled natural silk dome neodymium HF Driver
- 70 watt continuous LF and 30 watt continuous HF amplification per side
- XLR-balanced and 1/4-inch (balanced or unbalanced) inputs

- 52Hz-19kHz frequency response ± 3 dB
- 2.6kHz, active second order crossover
- Built-in RF interference, output current limiting, over temperature, turn-on transient, subsonic filter, internal fuse protection
- Combination Power On/Clip LED indicator
- 5/8" vinyl-laminated MDF cabinet



MICROPHONE PREAMPS

AVALON DESIGN

VT-737SP Mono Class A, Vacuum Tube-Discrete Preamp-Opto-Compressor-Equalizer



The VT-737SP is a vacuum tube, Class A processor that combines a mic preamp, instrument DI, compressor and sweepable 4-band equalizer in a 2U rack space. Like all Avalon Design products the VT-737SP utilizes a minimum signal path design with 100% discrete, high-bias pure Class A audio amplifiers and the best active and passive components available. Used by renowned artists and studios world wide and the winner of the Electronic Musician 1999 Editors' Choice Award for Product Of The Year.

FEATURES-

- Combination of TUBE preamplifiers, opto-compressor, sweep equalizer, output level and VU metering in a 2U space
- Four dual triode vacuum tubes, high-voltage discrete Class A with a 10 Hz to 120kHz frequency response ± 0.5 dB
- The Preamp has three input selections- The first is a high performance XLR balanced mic input transformer with +48v phantom power, the second is a high impedance instrument DI with a 1/4" jack located on the front panel and the third is a discrete high-level Class A balanced line input.
- High gain switch boosts overall preamp gain and a passive- variable high pass filter, hardwire relay bypass and phase reverse relay is available for all three inputs
- The Opto-Compressor uses a minimum signal path design and features twin Class A vacuum tube triodes for gain matching. A passive optical attenuator serves as a simple level controller. Variable threshold, compression ratio and attack and release offer dynamics control from soft compression to hard-knee limiting.
- The dual sweep mid-EQ can be side chained to the compressor allowing a broad range of spectral

- control including de-essing. The EQ can be assigned pre and post compressor from the front panel to add even greater sonic possibilities.
- Two VT-737 SPs can be linked together via a rear-panel link cable for stereo tracking
- The Equalizer utilizes 100% discrete, Class A-high-voltage transistors for optimum sonic performance.
- The low frequency passive shelving EQ is selectable between 15, 30 60 and 150Hz with a boost and cut of ± 24 dB
- The high frequency passive shelving EQ is selectable between 10, 15, 20 and 32 kHz with a boost and cut of ± 20 dB
- The low-mid frequency is variable between 35 to 450 Hz while the high-mid frequency is variable from 220Hz to 2.8 kHz. Both mid-band frequencies offer a boost and cut of ± 16 dB and a hi-Q/lo-Q switch
- When the EQ to side chain is used, the low and high EQ is still available for tonal adjustment
- The Output level is continuously variable and utilizes another dual triode vacuum tube driving a 100% Class A, high-current balanced and DC coupled low noise output amplifier.
- Sealed silver relay bypass switches are used for the most direct signal path

Hafler

TRM-6 Bi-Amplified Studio Monitors

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

FEATURES-

- 33 Watt HF & 50 Watt LF amplification
- 1-inch soft dome tweeter and 6.5-inch polypropylene woofer
- 55Hz - 21kHz Response
- Magnetically Shielded
- Electronically and Acoustically Matched

Also Available- TRM-8

- 1-inch soft dome tweeter and 8-inch polypropylene woofer
- 45Hz - 21kHz frequency response ± 2 dB
- 75 Watt HF, 150 Watt LF amplification



TRM-10s And TRM-12s Active Subwoofers

Combining Hafler's legendary amplifier technology with a proprietary woofer design, the TRM10s and TRM12s active subwoofers provide superb bass definition required in today's studio and surround sound environments.

TRM-10s

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

TRM-12s

- 12-inch cellulose fibre cone down firing woofer
- 200 watt low frequency amplifier
- 25Hz to 110Hz frequency response ± 2 dB
- 24dB/octave Linkwitz-Riley crossover variable (40Hz to 110Hz)



CAREER MARKETPLACE

PRO AUDIO TECHNICIAN

Experienced Technician needed to fill immediate opening in Boca Raton, Florida. Technician must have experience with Lutron, Crestron, Audio Access & Home Theater Applications. Understanding of recording studio technology. Macintosh & PC Computers a plus. Full Benefits package and a competitive salary.
Please contact Noemi de Verona at (305) 945-1230 or Fax (305) 945-3383

THE SOUND OF YOUR FUTURE.

Peavey Electronics, world famous maker of professional music and sound products is seeking motivated, self-starting **Product Development Managers** to join its dynamic Sound Reinforcement product team. Several exciting growth opportunities are available for qualified candidates possessing strong background experience in any one or more of the following product categories: **Powered and Non-Powered Audio Mixers, Power Amplification, Effects Processing and DJ.**

Requirements

Candidates must have a Bachelors degree in a related field and a minimum of 5 years experience, including acting as liaison between Engineering and Design personnel, the implementation of market research/competitive analysis, product definition, forecasting and budgeting.

Compensation is competitive and commensurate with experience. Full company benefits package available. Must be willing to relocate and travel.

Please e-mail (text only), fax or mail your resume and salary requirements to:

Sheila Nettles, Human Resources Administrator
P.O. Box 2898, Meridian, MS 39302-2898

E-mail: snettles@peavey.com Fax: 601-486-1198

www.peavey.com
EOE M/F/D/V

**LOOKING FOR A GREAT CAREER?
LOOK NO FURTHER!**

- MUSIC SALES PRINT & WEB DESIGN
- CONTRACTING INSTALL TECH
- TECHNICAL SUPPORT

800-222-4700

Or call (219) 432-8176. FAX (219) 432-1758
Ask For Kristine Haas or the Career Center!

Sweetwater careers@sweetwater.com
www.sweetwater.com
music technology direct

DJ SERVICES

where
**REAL
DJs**
come to surf

www.djrusseight.com

www.nyc-entertainment.com

**YOUR HOTSPOT
GUIDE FOR NYC**

**music
player.com**™
THE MUSIC PLAYER NETWORK

The ultimate online resource for music players, is looking for energetic, talented professionals in the following areas:

Internet Sales (Account Service) Managers: Ability to sell creative marketing opportunities to our valued advertising/prospect customer base and help grow their business. Requires understanding of internet marketing and advertising concepts as well as proven track record of new business development. Media sales experience, internet advertising sales, and/or knowledge of the MI/Pro Audio industries a plus. Travel required. Excellent compensation.

Strategic Business Development Manager: Ability to identify, negotiate and close key partnerships inside and outside the MI/Pro Audio Industries. Prior Internet business development experience and MBA are preferred.

Internet Marketing Manager: Ability to design and implement internet marketing plan to drive marketing objectives. Requires thorough understanding of internet marketing. Knowledge of MI/Pro Audio Industries a plus.

Marketing Specialist, MI/Pro Audio: Ability to design and implement marketing plan within the relevant market segments of MI and Pro Audio to drive internet marketing objectives. Includes trade shows, PR, industry events, etc. Requires strong knowledge of, and 2+ years of marketing experience in MI/Pro Audio Industries.

Marketing Specialist, MI/Pro Audio: Ability to design and implement marketing plan within the relevant market segments of MI and Pro Audio to drive internet marketing objectives. Includes trade shows, PR, industry events, etc. Requires strong knowledge of, and 2+ years of marketing experience in MI/Pro Audio Industries.

Managing Editor: Organized editor with print/web information experience, and extensive knowledge/interest in music/MI/recording editorial. Individual will be responsible for coordinating extensive archives of existing content and facilitating fresh content with online content editor.

News Editor: Experienced music/MI industry news editor with extensive contacts and at least three years news coverage experience for trade/consumer or daily news publication. Must be able to meet daily deadlines, covering the vast array of business, technology, product, artist coverage necessary to provide a worldwide audience with the most compelling daily news reports.

Database Editor: Management position to coordinate the most extensive database development project in the history of the MI industry. Individual must be able to coordinate research, solicitation, and compilation of extensive database information on products, contacts, documents, etc.



Miller Freeman PSN, Inc. is an equal opportunity employer, offers a competitive compensation and benefits package. If you would like to join our progressive team please fax resume and cover letter to AB 212.378.2160.

USE THE



**CAREER MARKETPLACE
TO HIRE YOUR**

**FUTURE DYNAMOS
FOR
YOUR
BUSINESS!!!**

Call Christine at
631-547-1180

SONGWRITER PRODUCTS

New Studio? New Act? Need Help?
 Stop running your "buns" off!
 Let SPIN do the "legwork" for you!



- COPYRIGHTS
- CONTRACTS
- LEGAL BOOKS
- SOFTWARE
- RADIO GUIDES
- DISTRIBUTORS
- CDR's & SUPPLIES
- CDR BIZ CARDS
- CD DESIGN FILM
- 8X10 & POSTERS

Songwriter Products
Ideas & Necessities
(800)487-SPIN (407)834-8555
www.songwriterproducts.com

COVERS/CASES & RACKS

OMNIRAX
 STUDIO FURNITURE
 MixStation/Q2R

Also available for
 Mackie
 8•Bus mixers



Custom Design
 and
 Modifications Available

800.332.3393

FAX 415.332.2607
 Outside U.S. 415.332.3392
www.OMNIRAX.COM

P.O. Box 1792 Sausalito, CA 94966

VOCALS

SINGERS! REMOVE VOCALS

Unlimited, Low Cost, Instantly Available
 Background Music from Original Standard
 Recordings! Does Everything Karaoke
 does... **Better** and gives you the
 Thompson Vocal Eliminator™
 Free Brochure & Demo Tape
 LT Sound Dept. EQ-1
 7980 LT Parkway, Lithonia, GA 30058
 Internet: <http://ltsound.com>
 24 Hour Demo/Info Request Line (770)482-2485-Ext. 28
When You Want Something Better Than Karaoke!



**For Advertising
 Rates,
 E-mail Christine
 at vela@psn.com**

ACOUSTICAL PRODUCTS



WhisperRoom INC.

SOUND ISOLATION ENCLOSURES

Celebrating 10 years of reducing sound to a Whisper!

For
 Recording Vocals, Broadcasting, Practicing, Etc.

Immediate Shipping!
3 Year Warranty
Various Sizes & Configurations
www.whisperroom.com
 PH: 423-585-5827 FX: 423-585-5831





Studio *in a* BOX

MSRP STARTS AT \$499⁹⁹

Installation is quick and easy, with enough material to properly treat project studios up to 14' x 10' x 8'. Available in white, white flec, and gray flec Class A Melaflex™ as well as charcoal gray, blue, and purple Class B/C Polyflex™. *Now with free drop shipping.*

SILVER PACKAGE

10 ProFoam™ Panels for reflection control

32 ProFoam™ Tiles for enhanced envelopment

4 ProCorners™ for extended low frequency control

RPG

RPG DIFFUSOR SYSTEMS, INC.
 301 249 0044
info@rpgdiffusors.com
www.rpgdiffusors.com

BIG STUDIO SOUND: \$299*



With the new Roominators™ Alpha1™ Acoustical Control Kit, it's easy to make your place sound great!

Big-name artists, networks, motion picture companies & studios know it: good gear in a bad room sounds no better than bad gear, so they tame their acoustics with goodies from Auralex. Now we've shrunk that big-studio sound down into the handy "take home" sized Alpha1!

It's never been this **easy & affordable** to make your room sound better!

- In this one kit you get **everything you need** to improve the sound of your small studio, iso booth or control room: bass traps, absorbers...even adhesive & installation tips! If your needs dictate, simply add more Alpha1 kits.
- You'll **immediately** notice improved imaging, tighter bass & less "room" sound.
- Your monitors, mics, & other gear will sound better than you ever thought they could and your recordings will be much more accurate. **Everything** you record or listen to will sound clearer!
- Gone will be the dastardly room reflections and bass buildup that have been keeping you from hearing the "true" sound you desire (and thought you were paying for when you bought your gear)!

Don't put up with bad sound any longer! Get to your favorite dealer and check out the full line of affordable Roominators Kits & other industry-leading Auralex products today. You'll be surprised at how easy & affordable great sound can be.

If you need help, remember we've always given free initial consultations. And if you're building a studio, check out our acclaimed booklet **Acoustics-101™**. It's a free download from our website!

www.auralex.com

Sound Control For The Rest Of Us™

800.95.WEDGE



SILENT

58 Nonotuck St., Northampton, MA 01062
 ORDER (800) 583-7174
info@silentsource.com • www.silentsource.com

Acousticore Fabric Panels • Sound Barrier Isolation Hangers • A.S.C. Tube Traps Silence Wallcovering • WhisperWedge Melaflex • S.D.G. Systems • TecniFoam R.P.G. Diffusors • Sonex • Sound Quilt

INFO (413) 584-7944
 FAX (413) 584-2377



AcousticsFirst™

Toll-Free **888-765-2900**

Full product line for sound control and noise elimination.
 Web: <http://www.acousticsfirst.com>

EQUIPMENT FOR SALE

Music Production
CONSOLES

Film Mix
Consoles

D&R Cinemix

- ✓ 88 Automated inputs
 - ✓ Moving Faders
 - ✓ Dynamics
 - ✓ High Resolution Meters
 - ✓ 5.1 Surround Sound Mixing
 - ✓ Balanced Patchbay
- New \$38,950.00

D&R Vision

SR / MP / AV Mixer

- ✓ 16 Mono inputs
 - ✓ 2 Stereo inputs
 - ✓ 8 Aux Sends
 - ✓ 8 Subgroups
 - ✓ 4 Band Sweepable EQ
 - ✓ Rack Mount
- New! \$2,500.00

Limited supply of D&R Dayner, Avalon, Marilon, Triton & Stylyx Modules.

Call: 903.485.2535

The above prices are at distributor cost or below. Only serious inquiries!

MUSICAL GEAR

Every major brand of everything.
Millions of dollars of musical gear in stock.

ALTO MUSIC

Guitars, recording, keyboards, amplifiers, drums, pro sound, new & used. One of the largest selections in the country.

We ship everywhere.

(914) 692-6922 • Fax: (914) 692-5551
altomusic.com

680 Route 211 East, Middletown, NY 10940
Ask for Uncle Freddy - He loves Ya!

Don't Get Beat

When you need equipment call

8TH STREET MUSIC
(800) 878-8882

Philadelphia's Largest Musical
Instrument Dealer!!!

www.8thstreet.com

8th Street Music, 1023 Arch St.
Philadelphia, PA 19107

"THE BEST DEALS ON EARTH"

digibid.com

click here

Your One-Stop Shop for the *Best Gear Deals!* Open 24/7

The internet auction marketplace at www.digibid.com

EQUIPMENT DEALERS

Studio furnishings

[free catalog]



Consoles,
Mastering Desks,
Digital Workstations,
Keyboard Workstations,
Rack enclosures, Spkr. Stands

argosyconsole.com

100% 70 console
for Panasonic 287
(shown) \$149.95

ARGOSY 800.427.5698
573.346.8549

**CARUSO
MUSIC**

SAVE THOUSANDS OF DOLLARS
BUYING YOUR NEW & USED
EQUIPMENT FROM US

94 STATE STREET • NEW LONDON, CT 06320

800.264.6614 • 860.442.9600

carusomusi@aol.com • <http://www.caruso.net>

**Sound
thinking**

INCORPORATED

Turn-key systems
under \$5K!

digidesign

...and more

541-386-2682
www.soundthinking.com

FOR SALE

**NEED GEAR?
FOR LIVE OR STUDIO?**

RECORDING • GUITARS •
AMPLIFIERS • PRO AUDIO •
KEYBOARDS

We have everything you
need for studio and stage!

800-222-4700

5335 Bass Road, Fort Wayne, IN 46808
(219) 432-8176 • FAX (219) 432-1758
www.sweetwater.com
sales@sweetwater.com

Sweetwater

music technology direct

AUDIO UPGRADES

LA-2A LA-3A OWNERS

Before you by a new T4B optical
attenuator, have it rebuilt at a fraction
of the cost. Also stock OPTO's.

ANTHONY DEMARIA LABS

914-256-0032

TRAINING/TUTORIALS

BE A RECORDING ENGINEER

★ TRAIN AT HOME

Easy Home-Study practical training in
Multi-track Recording. Join our successful
working graduates or build your own studio.

FREE INFORMATION:

Audio Institute of America
114 46th Ave. Suite AM, San Francisco, CA 94121
Or visit us at www.audi-institute.com

with **ATA**
Career guidance
Diploma
Licensed

Reserve Ad Space

ONLINE

vela@psn.com

INFORMATION GUIDE



In the Studio?

FREE Guide
Saves You Time and Money!
 Contact us today: 1-800-468-9353
 www.discmakers.com/eq info@discmakers.com

DISC MAKERS

EDUCATION

TRAINING CD-ROMS
COOL SCHOOL INTERACTUS™

- vol. 1 ■ PRO TOOLS® BASICS
- vol. 2 ■ PRO TOOLS® & PLUG-INS
- vol. 3 ■ DESKTOP AUDIO
- vol. 4 ■ LOGIC AUDIO® 4

800-729-6919 www.coolbreezesys.com

INTERCONNECT



The World's finest direct boxes!
 Radial of course!

1-800-939-1001

www.radialeng.com

VOICE TALENTS

voice-talents.com

- Great male and female talents
- Online samples & free estimates
- Delivery via email, ftp, CD, etc.

Email: info@voice-talents.com

Toll Free: 877-352-7478

TAPE RECORDERS

Reamp®

TAPE RECORDER TO GUITAR AMP INTERFACE

Feed instrument amps or stomp boxes from pre-recorded tracks with the correct impedance & level match easily. Used by professionals everywhere! **NOW ONLY \$199.00**

find out why at www.reamp.com

LIVE MUSIC

Global Groove

Live drums/percussion anytime, anywhere over ISDN lines

- various kits set up and ready to go
- custom loops/parts played live, instantly!

Mark Ambrosino
 (212) 255-5080

www.globalgroove.org

CABLE ACCESSORIES



CORD-LOX

Reusable Velcro® cable wraps for every type of cable. Call 800-CORD-LOX for more info.
www.cord-lox.com

BAND IN A BOX

Band-in-a-Box the award winning music accompaniment and arrangement software for Windows (r) and Macintosh (r) is so easy to use! Just type in the chords for any song using standard chord symbols (like FM7 or C13b9), choose the style you'd like, and Band-in-a-Box does the rest—automatically generating a complete professional quality five instrument arrangement of piano, bass, drums, guitar and strings in a wide variety of popular styles. Band-In-A-Box Pro \$88 MegaPAK \$249.

PG Music Inc.
 1-800-268-6272
 1-250-475-2874
www.pgmusic.com



The Classifieds Have Moved!
 Call Christine at 631-547-1180

INSTANT ORDER FORM

CLASSIFIED: EQUIPMENT FOR SALE DUPE/REPLICATION SERVICES
 DEALERS MISCELLANEOUS
 \$125 per column – 1 inch minimum. 7 lines to the inch.

ALL ADS MUST BE PREPAID

CLASSIFIEDS/SERVICES

PAYMENT:

AMOUNT \$ _____

CHECK (ENCLOSED)

AMERICAN EXPRESS

VISA

MASTERCARD

CARD NUMBER _____

EXPIRATION DATE _____

SIGNATURE _____

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

PHONE _____

Please supply camera ready art or ad copy on a separate sheet.
 Enclose copy, payment and this Instant Order Form and mail to:



460 Park Avenue South, Ninth Floor, New York, NY 10016.
 Attn: Christine Vela, Speciality Sales Manager

TEL (631) 547-1180 • FAX (631) 547-1181

DUPLICATION/REPLICATION SERVICES

MASTERING

TALK WITH A HUMAN BEING ABOUT CD REPLICATION

OASIS® DUPLICATION OFFERS:

- Innovative Packaging, including the revolutionary Oasis Jewel-Free™ Box
- Free Radio Promotion on our OASISSAMPLER™ CD compilations
- NEW!** National Distribution of your CD to Major Retail & Internet Chains
- The industry's best reputation for quality, for 12 years running

OASIS®
CD & CASSETTE
DUPLICATION

*We do what a label does.
For you.*

(888) BY-OASIS (888/296-2747)
info@oasisCD.com
www.oasisCD.com

Audio Cassette Duplicator Co
12 CD's \$3.49 each
100 CD's \$2.75 each
(818) 762-ACDC (2232)
www.acdc-cdr.com
12426 1/2 Ventura Blvd.
Studio City, CA 91604

500 CD's WITH WINDOW SLEEVES \$595
THESE ARE NOT CDR'S 2-COLOR SILKSCREEN ON DISC
500 CD'S RETAIL READY STARTING AT \$850
THIS INCLUDES PRINT, MANUFACTURING, JEWELBOX, SHRINK WRAP
500 CD'S COMPLETE RETAIL PACKAGE \$1199
16 HOURS DESIGN, LAYOUT, SCANS, FILM PRINT, PACKAGING, MASTERING, SHRINK WRAP AND CD MANUFACTURING. READY TO SELL!
Luminous Flux 1-800-726-2611
www.fluxnet.com *Call for our FREE Brochure!*
MAKING INDEPENDENT MUSIC SINCE 1989

Compact Disc Replication

100 CDs \$195 Prices include jewel box and printing direct on disc
50 CDs \$115
25 CDs \$60
10 CDs \$30 We also do design and printing of full color and b&w covers -

Allen Lowe 207-741-2846

IT'S YOUR BABY AND WE DELIVER.



500 \$750.00 **1000 \$1,050.00** **3000 \$2,700.00**
CD Packages include: glass master, 2 color label, jewel box, packaging, polywrap
Other Services include: • Mastering • Design • Film • Printing
800-DIGIDOC
www.digidocpro.com

CD'S IN 2 DAYS! Guaranteed!!

SMALL AD BIG SAVINGS
CD's fast turn around from 1-10,000
Accurate Audio Labs, Inc.
1-800-801-SONG (7664)

CD PACKAGES www.bmmi.com
300 - 585.00
500 - 625.00
1000 - 999.00
CALL RIGHT NOW FOR A BOTTOM LINE QUOTATION!
BASE Multimedia Inc.
800-579-7010

Need Fat Major-label sound on your CD? Call the Analog Specialist!
DRTmastering.com 800-884-2576

ROSSAROUND DIGITAL MASTERING

Get the personal professional touch your product deserves.
At a price you can afford.
Guaranteed results. Demo available.
www.rossaround.com
805-660-0776

RECORDING SUPPLIES

IF IT'S RECORDABLE WE HAVE IT!
1-800-221-6578
SONY **CD-R'S**
100 Cds.....@ .75
500 Cds.....@ .70
1000 Cds.....@ .60
CALL FOR VOLUME DISCOUNTS
www.andol.com

LENGTH	TOK SA PRO	MAXELL	MAXELL	MAXELL
C-10	22	21	26	26
C-20	28	26	28	33
C-32	33	31	36	43
C-62	47	45	51	64
C-74	47	50	61	74
C-92	61	58	73	82

HEY LOOK! WE'RE ON THE WEB!

Toll Free 800-538-2336 **NRS** All Formats! Best Prices!
National Recording Supplies Inc.

www.tapes.com


ada artist development associates inc.
CD DUPLICATION
DEMO CD SPECIALS RETAIL READY CD'S
500/\$589 1000/\$699 500/\$1,049 1000/\$1,399
no tricks, no gimmicks, just bring us your CDRI!
(888) RUBBER-8
www.artistdevelopment.com

AUGUST ISSUE CLOSING ON JULY 12TH DON'T MISS IT!



Email your ad to:
vela@psn.com today!

DUPLICATION SERVICES



GUARANTEED NATIONAL DISTRIBUTION!
and FREE barcode

\$1395
2 Panel 4/k book,
4/0 tray

includes:
national distribution, printed inserts, FREE barcode, topspines, all films, jewel cases, assembly & wrap
2 color CD's, 1000 units

\$1595
4 Panel 4/k book,
4/0 tray

includes:
national distribution, printed inserts, FREE barcode, topspines, all films, jewel cases, assembly & wrap
2 color CD's, 1000 units

Media Services
4030 S. 108th Street
Omaha, NE 68137
1.888.891.9091
www.mediaomaha.com
mediaomaha@aol.com

BULK CD'S STARTING AT 62¢

Call with questions or inquires on other services

Call about our broker discounts

1.888.891.9091



MEDIAWORKS
INTERNATIONAL, INC.
1029 Elm Hill Pike
Nashville TN 37210

compact discs cd rom dvd
cd +/cd enhanced video vinyl
digital bin cassette duplication

short-run discs and cd one-offs now available

call toll free for quotes, special packages and large quantities

- competitive pricing
- friendly service
- professional results

1-800-211-4689
www.mediaworks.com

500 CDs for \$1450
OR
1000 CDs for \$1625


both include graphics, film, print, duplication, packaging

PROFESSIONAL • RELIABLE • AFFORDABLE

Mastering
1000 Bulk CDs \$699
3 color on disc from your film & master

VISA 410-515-4844 MasterCard
WWW.CYBERELLASTUDIOS.COM

Don't go crazy, Go direct!



MMSdirect
Music Manufacturing Services

\$899.00
500 CDs with
4 page CD folder &
tray card (4+1)

or \$1399.00 for 1000 CDs
(from master and film supplied)

Call **1.800.MMS.4CDS**
for your free catalog
www.mms-direct.com

CD ▶ CD-ROM ▶ DVD ▶ Vinyl ▶ Cassette
Design ▶ Mastering ▶ All Related Packaging

EARTH DISC
www.earthdisc.com

500 FREE CDS !!!

ONE WINNER WILL BE PICKED EACH MONTH
GO TO OUR WEBSITE FOR CONTEST RULES RESTRICTIONS MAY APPLY

\$1385.00 1000 CDs
package includes:
film separations
full color 2 page/4-panel insert
3 color on cd printing/class master,
jewel box, shrink wrap

\$986.00 500 CDs
package includes:
full color 2 page/4-panel insert
3 color on cd printing/class master,
jewel box, shrink wrap

\$1299.00 500
package includes:
full color 2 page/4-panel insert
3 color on cd printing/class master,
jewel box, shrink wrap

Free Barcode
Fast, reliable and friendly service

1.800.876.5950

www.yourmusiconcd.com

SNS 10 cdrs - \$50, 25 cdrs - \$75, 50 cdrs - \$125 SNS

100 CDRS - \$199.00
Includes cdr, on cd print, & jewel case
OR **100 FULL COLOR CDR PACKAGE FOR ONLY \$375.00**

Atlanta 678-442-0933 Toll Free 877-442-0933

DDAI 816 Fifth Avenue
Pittsburgh, PA 15219

DIGITAL DYNAMICS AUDIO INC

- CD Mastering and Replication
- Cass. Mastering & Replication
- Digital Audio Post Production
- CEDAR Sonic Restoration

Full Service Digital House
http://www.4ddai.com 1-800-444-DDAI

odyssey
p r o s o u n d

New, Used and Vintage Recording Equipment
Buy • Sell • Trade

API, Neve, Fairchild, Manley, Quested, Urei
Pultec, Neumann, Lang, Studer, and More!

www.odysseyprosound.com
Tel: (978) 744-2001 Fax (978) 744-7224

DIGITAL FORCE

Feel the Power of Excellence

TOTAL CD, CD-ROM, & DVD PRODUCTION



toll free: **1-877-DISC-USA**
(212) 252-9300 In NYC
149 MADISON AVENUE NY, NY 10016

www.digitalforce.com

Musicraft

MULTI-MEDIA
THE BEST CD AND CASSETTE PACKAGES IN THE WORLD
CD MANUFACTURING, CASSETTE DUPLICATION,
GRAPHICS, PRINTING & MORE

Portland • 1-800-637-9493 • Los Angeles
A Division of SarShan Marketing, Inc. • E-mail: jzobrist@hq.tctarms.com

LonelyRecords.com

60¢-CDs

- CD, DVD, TAPE, VINYL
- Digital Mastering
- Graphic Design
- Printing

1 800-409-8513

1-800-TAPE WORLD or 1-800-245-6000
We'll beat any price! 6.95 SHIPPING • FREE CAT.

SONY	MAXELL	TDK	FUJI
DAT-120 4.99	XLII-90 1.39	CDR-74 TWIN 2.99	SVHS-T120 5.49
DAT-124PRO 6.99	XLII-S 90 1.99	SA-90 1.19	HR-120 4.99
T-120V 1.49	T-120 HGX 1.99	SAX-90 1.99	DR-H60 5.99
L-750BT 3.99	T-160 GX 1.99	SAX-100 2.09	T-120 SHG 1.99
HR-120 4.99	T-120 BR 1.19	T-120 EHG 1.99	JVC ST 120 3.99
MCW-74 2.49	CDR-74 MU 2.89	DAT-120 6.49	JVC T120 1.39
MF-90 5.99	UR-90 6.99	JVC DVC-60 8.99	AUDIO CDR 1.99

TAPEWORLD.COM, BUTLER, PA 16003 • FAX 800-322-8273
OVER 500 DIFFERENT SCHOOLS ON P.O. M-F 8-5

Factory-Direct Pricing.

CD SOURCE
CD • CD-ROM • CASSETTE

1.877.CD PRESS (toll free) www.cdsource.net

DUPLICATION/REPLICATION SERVICES

One-Stop Manufacturing

- CD Replication
- Vinyl Records (colors available!)
- Cassettes
- Graphics Design
- Super-Hot Mastering Studio

NEW - On-Demand Color Printing

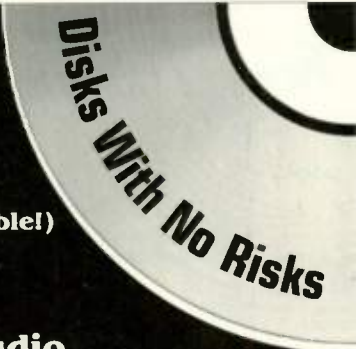
We make everything in-house!
Best Price ... Best Service ... period.

EUROPADISK, LTD.

Major credit cards accepted

(800) 455-8555

<http://www.europadisk.com>



THE DIGITAL SUNSPOT INC

Affordable Professional

CD MASTERING

1-888-985-3333

www.digitalsunspot.com

CRYSTAL CLEAR SOUND

CD, CD-ROM, & cassette manufacturing

art design & printing
mastering & editing
30 years experience

guaranteed national distribution
Amazon.com, CDNow, Tower Records, etc.
call or visit our website for details!

1-800-880-0073

www.crystalclearsound.com/cdtape

300 CD PACKAGE: \$975

INCLUDES:

- ORIGINATION • 1-COLOR 1-PAGE BOOKLET AND TRAY CARD • 1-COLOR CD LABEL • JEWEL BOX & SHRINK WRAP • QUICK TURNAROUND

from your print-ready film (in Rainbo's specs)

IN-HOUSE CD, VINYL & CASSETTE REPLICATING & PACKAGING

1000 CD PACKAGE: \$1499

reorder: \$1349

INCLUDES:

- ORIGINATION • 4-PAGE BOOKLET with 4-COLOR COVER, 1-COLOR BACK and 4-COLOR TRAY CARD • CD LABEL FILM & 2-COLOR LABEL IMPRINTING • JEWEL BOX & SHRINK WRAP • QUICK TURNAROUND

from your print-ready film (in Rainbo's specs)

ASK FOR OUR FREE BROCHURE!

500 CDs and Jewel Boxes for \$650⁰⁰



800-859-8401

Great prices on complete packages with printing, graphic design & mastering
www.go-QCA.com



Rainbo Records and Cassettes

1738 Berkeley St. • Santa Monica, CA 90404 • (310) 829-3476 • Fax: (310) 828-8765 • www.rainborecords.com • info@rainborecords.com



Pure Sound by Quested

visit our website: www.quested.com



46 PRODUCTIONS

25 CDRs - \$100 / 50 CDRs - \$175
100 CDRs - \$250 / 200 CDRs - \$425

From CD or CDR master. Includes CDR in jewel box with text printing on CD label. Add \$19 for other digital master, \$33 for analog master. Orders must be prepaid. Shipping not included.

42W557 Hawk Circle, St. Charles, IL 60175

Phone: (800) 850 5423 • E-mail: info@46p.com

Visit Our Web Page at: <http://www.46p.com>

Free CDRs with every order!

IF YOU ARE IN THE DUPLICATION OR REPLICATION BUSINESS YOUR AD SHOULD BE HERE!



Call Christine Vela At
631-547-1180

ACROSS THE BOARD

continued from page 162

digital audio, as if it mattered to the video guys. (Okay, I know there are a few who care, but to most of them audio is a thorn in their side.)

STEELY DAN PBS SPECIAL

In February 2000, Steely Dan videotaped a PBS special that aired in May. The audio mixes were to be used for the PBS show and the DVD that was released June 14. For the DVD, we wanted to use all of the bits for the best performance, so the levels were CD levels. The mix was as hot as possible without going over, just like we mix records. We printed the digital audio mixes to the digital audio tracks of the DigiBeta videotape. We gave the same tape to the PBS guys and the DVD guys. We thought (mistakenly) that the audio level would be brought down for the PBS broadcast to match their reference levels. We actually thought that someone would look at the meters on the machine and see that they were peaking at zero as we stated on the video tape box. I guess not.

When the show aired, it sounded the same as if you ran your favorite CD through a compressor with the compression set to infinite and the threshold set to -20 dB. It was just one giant sucking sound. It would have sounded great if they had turned it down. I thought I was going to have to leave the state on a fast train.

A QUICK FLASHBACK

The first digital album I recorded was Donald Fagen's *Nightfly*, which was completed in 1982. Donald was to do *Rock Line*, a syndicated radio show and play some of the new album. I had transferred the digital mixes to a Sony PCM-F1 machine and took it to the studio in L.A. where *Rock Line* originated. Because of the zero limit of the digital recording which guaranteed no over-modulation, I first sent a full digital level tone over the satellite link to all of the affiliate FM stations that were to carry the broadcast. They all set their levels to that reference tone. During the show, Donald was interviewed and cuts from the album were played from the F1. Just before the playing of each piece of music, every radio station bypassed all of their processors that protect them from

over-modulating. The digital audio was broadcast with no satellite or radio station compression or limiting. Thousands of *Rock Line* listeners called their stations to say that it was the best-sounding music show that they had ever heard. After recent checking, none of the stations have ever turned off their processors since.

THE MORAL

The moral of this story is never trust anybody to do anything they are supposed to do. You can't count on the guy at PBS to match the levels, you can't count on the FedEx guy to get your master tapes to the record company, the car wash not to scratch your car, the travel agent to get your airline tickets right, the weatherman to tell you if it is going to rain, the accountant to keep you from being audited by the IRS, the drive-thru to give you the correct food order, or your mistress not to call your house and hang up when your wife answers.

I guess you just have to move to a desert island where you have to do everything yourself.

Roger Nichols *Digital Mastering, No Static Atoll, South Pacific.* **EQ**

"All The Sound You've Never Heard"



Now with
4th Generation
Processing Engine

BBE®

"The BBE can be a real life saver when dealing with poor quality source material, whether it be in film/video or broadcast production, mastering or tape duplication chains."

George Petersen
MIX MAGAZINE



Tel: 714. 897. 6766 Fax: 714. 896. 0736 Web: www.bbesound.com
In Canada Please Contact Sounds Distribution Tel: 416. 299. 0665

CIRCLE 68 ON FREE INFO CARD



MOTU AUDIO SYSTEM

AMP SIMULATION

Co-developed with Tech 21, the SansAmp PSA-1 captures every sonic subtlety of the original. The SansAmp PSA-1 provides the widest range of amplifier, harmonic generation, cabinet simulation and equalization tone shaping options available.



It appears on literally thousands of recordings, used on everything from

guitar and bass to drums and harmonica! All 49 original SansAmp presets — featuring Marshall®, Mesa Boogie®, Hiwatt®, Fender® Lead, Rhythm and Bass; and Ampeg SVT® sounds — faithfully and authentically recreated. Explore dozens of new presets contributed by well-known artists and producers, then create your own unique tone!

Names of sample settings are intended for descriptive purposes only and should not be construed as an endorsement or affiliation with any companies, products, song titles, or artists named.

SansAmp™ PSA-1



AUTHENTIC MOOG

Authentic analog designs from electronic music legend Bob Moog, built with bombfactory™ digital technology! Moogerfoogers combine the best features of audio effects and vintage synth modules, opening new frontiers for sonic exploration. The



Lowpass Filter features a 2-pole/4-pole variable resonance filter with envelope follower. Use it

to achieve classic '60s and '70s sounds on bass and electric guitar, or dial in warm, fat analog resonance on any instrument. The Ring Modulator provides a wide-range carrier oscillator and dual sine/square waveform LFO. Add motion to rhythm tracks and achieve radical lo-fidelity textures — you set the limits!

moogerfooger™ Lowpass Filter & Ring Modulator



CLASSIC COMPRESSION

bombfactory™ Classic Compressors look, sound, and work just like the real thing. Whether you're just learning to use compression or a seasoned pro polishing a final mix, you'll love these time proven designs. Meticulously crafted digital



versions of the LA-2A and 1176, the most popular vintage compressors used in top pro studios.

Proprietary modeling technology (patents pending) captures every tube, transformer and transistor of the originals! Plus sidechain support and perfect stereo tracking, two features not available in the "vintage" domain.

bombfactory™ Classic Compressors



VINTAGE VOCE FX

From Voce, classic effects that sound great on any instrument. Voce Spin provides the most accurate simulation of the well-loved rotating speaker. It's a favorite of producers, guitarists, and, of course, organ players. Fifteen classic recording setups feature different speaker cabinets, varying microphone placement



— even the "Memphis" sound with the lower drum's slow motor unplugged! Voce Chorus/Vibrato recreates the B-3 Organ's mechanical scanner vibrato. Three settings of Chorus and three settings of Vibrato on one cool knob. Fun and easy to use, it's a classic effect used for over sixty years. Talk about vintage!

Voce™ Spin & Chorus / Vibrato



Digital Done Right

Sweetwater

music technology direct

www.sweetwater.com

Voice: (219) 432-8176 • Fax: (219) 432-1758 • Email: sales@sweetwater.com

5335 Bass Road • Fort Wayne, IN 46808



THE DESKTOP STUDIO

Digital Performer is the one to own. It's a complete desktop studio environment that gives you: unsurpassed timing accuracy and precision, an entire line of MOTU audio & MIDI interfaces to support it, a wide range of third-party plug-ins and hardware peripherals designed especially for Digital Performer, and the most

complete set of advanced features currently available to track, edit, mix, process and master your MIDI and audio recordings. Track your mixes through our new 2408mkII audio interface — now with balanced quarter-inch, 24-bit analog I/O (8 in / 8 out), with inputs that are switchable between +4 μ -10, plus a volume knob for the main outs. Same price. Same incredible product. Just more value.



STEREO REVERB

On the heels of their ground-breaking RealVerb 5.1™ surround reverb plug-in, Kind of Loud Technologies presents RealVerb™, a new stereo reverb plug-in for MAS. RealVerb uses complex spatial and spectral reverberation technology to accurately model an acoustic space. The bottom line? Great sounding reverb with the ability to

customize a virtual room and pan within the stereo spectrum. RealVerb even lets you blend room shape, material, and size according to the demands of your mix. And RealVerb was designed from the ground up for automation: adjust controls in real-time without distortion, pops, clicks or zipper noise. You can even morph between presets — in real-time. Don't rely on your old standby — let RealVerb bring new quality and space to your recordings.



ESSENTIAL PROCESSING

It's everything you need, with essential daily tools, sweetening and mastering processors, and sound design mindbenders. From the original Q10 and L1, to the Renaissance series, to Enigma and MondoMod. Don't skimp. Go for the Waves Gold,

Waves Gold Native contains all the contents of these Waves Bundles:

- Native Power Pack
- Native Power Pack II
- Pro-FX Plus

...a total of 15 Waves processors... and you save a bundle when you go for the gold!



on the way to your gold record.

Waves Gold Native Bundle™



24-BIT SAMPLING

Unity DS-1 is software that turns your computer into a full-featured, professional digital sampler. With Unity DS-1, you can recreate the sounds of acoustic instruments or any other audio source with stunning realism and control. Unity DS-1 was designed for musicians by musicians. We built a real stereo sampler with the ability to load huge samples in seconds instead of minutes. We also made

sure it had lightning fast note-on response time. Unity DS-1 can re-create the sounds of acoustic instruments or any other audio source with an extensive MIDI implementation for real-time control of all parameters and the best integration with Digital Performer in the industry. So whether you need a multi-timbral sound module at home, or a live performance 24-bit sampler for the road, Unity DS-1 brings it all together.



Unity DS-1™



CIRCLE 57 ON FREE INFO CARD

Sweetwater is an authorized Apple VAR and MOTU specialist. From your Mac, to your MOTU audio system, to free lifetime tech support, we make it easy for you.

800-222-4700



MOTU AUDIO SYSTEM

CONSOLE PROCESSING

ChannelStrip

The Ultimate Integrated Bundle

The word is out...

"I am happy to report that ChannelStrip is working very smoothly with Digital Performer 2.7. The first thing I noticed was how clear and exacting the EQ sounds, nothing else adds the "air" this plug has. Add to this the side-chainable gate and compressor and you'll find that nothing else offers so much efficiency from a single insert slot. The CS plug is also very MAS friendly, exhibiting consistent and reliable performance. Now that we have plug-in automation, I will be exploring dynamic EQ moves as opposed to multing the audio to multiple channels on my console. I often add some highs to my lead vocals when I hit a chorus so they will cut through better, now all it takes is an automation move, pretty cool. There are many applications for this plug, I will share some in the future and encourage others to do so as it will only strengthen our collective experience with DP." —**Steve Meyer**

"I LOVE the MIXES I am getting with da ChannelStrip. It really makes mixing a pleasure. Hey – I got a \$250,000 Euphonix just sitting there looking pretty; NOW WHAT !?!?!?" —**Giorgio Bertuccelli**

"Wow, it really sounds great! Finally, real EQ in software. I love this thing!" —**Jim Watson, FAT GROOVE Productions**

"Sonically, I'm knocked out with ChannelStrip — I am really really critical of a lot of the plug-in stuff and work with some very demanding artists at some of the finest studios around, plus my own room which is about as good as it gets for overdubs and mixing. I would not think twice about using ChannelStrip on anything in front of anyone — in my limited time with it, I think it's that good. You're onto a gold mine with this. I've loaded up a few tracks only so far and used the automation to do a few things I normally have to do in real time. Unreal... Once again, it's the sound of ChannelStrip that I can't get over. The controls, layout, etc. are very cool, too." —**Jack Hale**

"The whole plug-in gives the impression you looked at an SSL pretty close. I've always been an SSL-man, but not any longer! Still can't believe my luck.... Nice work!" —**Steve Rhodes, RME**

ChannelStrip is available NOW for Digital Performer, MOTU 2408 and all MAS 2.1 compatible DAW's.

Don't delay! Get one of the hottest plug-ins for MAS today.



©2000 Metric Halo Labs. ChannelStrip is a trademark of Metric Halo Labs. All other trademarks are the property of their respective holders.

Sweetwater
music technology direct

www.sweetwater.com

Voice: (219) 432-8176 • Fax: (219) 432-1758 • Email: sales@sweetwater.com

5335 Bass Road • Fort Wayne, IN 46808



SCALABLE REVERB

EverPack Bundle with Z•Room Reverb™

From tube warmth to stereo enhancement, there's no other way to get the smooth sound produced by these classic MAS plug-ins from DUY. And now DUY has added an entirely new piece to the EverPack bundle: Z•Room. This plug-in gives you an entirely new approach to stereo reverb, with 64-bit processing that produces high-quality density and

diffusion for unparalleled sound quality, total control over parameters never before available, 'deluxe mode' for maximum sound quality, 'economy mode' for maximum efficiency, 'earlies' mode for enhancing the effect of early reflections, and the exclusive 'Rehearsal Mode', which lets you to set parameters while listening to the real impulse response of the reverb—an unprecedented tool for evaluating reverb. For more info: www.duy.com.



SESSION BACKUP

Mezzo™

You've got a Digital Performer system that produces gigabytes of crystal-clear, digital audio and sequence data. You know that regularly backing it all up is important, but how can you get it organized and archived without wasting studio time? That's what Mezzo is all about – automated, grey matter response inc.

project-based backup of your data. A DP project can contain hundreds of separate audio files – generic backup programs can't track these files on a per-project basis, but Mezzo can. And with full background operation you can backup or restore while you compose! With its intuitive, drag & drop interface and practically hands-free operation, Mezzo makes the job of managing the daily flow of data a simple and painless task.



HI-PERFORMANCE DRIVES

T-Project™ external hard drives

Why should you choose Glyph external drives? Because you get enhanced performance and higher track counts. Glyph drives are optimized with custom mode page settings designed for A/V use. Glyph drives are cooler (than internals), producing greater longevity & smoother operation.

than ATA/IDE drives, making them a better investment over time. Most importantly, there's Glyph's Herculean service & crushing technical support — from people that live and breathe digital audio. If your T-Project™ needs warranty service, our typical turnaround time is less than 48 hours. You even get Overnight Advance Replacement for your T-project in the first year of its warranty. What discount HD vendor does that?



And because they're SCSI, they last longer



HANDS-ON MIXING

HUI™ (Human User Interface)

The Human User Interface (HUI) from Mackie is unmatched for advanced, yet affordable control surface technology for audio workstations. HUI is so tightly integrated with Digital Performer, it's like placing your hands on Digital Performer itself. Sculpt your mix with HUI's silky smooth motorized faders. Tweak effects parameters with firm, yet responsive V-Pot rotary encoders. You can even

call up plug-ins on-screen directly from HUI. Keypad and transport controls let you locate Digital Performer's main counter instantly, just like the familiar keypad on your computer keyboard. HUI is a complete hardware workstation console, with the user-friendly ergonomics that Mackie mixers are known for. For serious professionals who work day in and day out with Digital Performer, HUI can significantly boost productivity through direct hands-on control.

MACKIE.

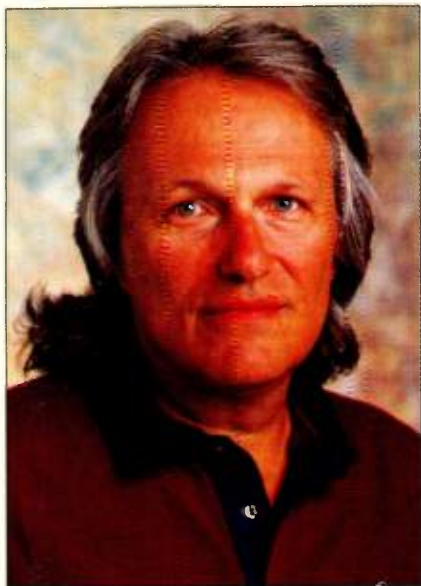


CIRCLE 57 ON FREE INFO CARD

Sweetwater is an authorized Apple VAR and MOTU specialist.
From your Mac, to your MOTU audio system,
to free lifetime tech support, we make it easy for you.

800-222-4700

On The Level



Playing the Level Game with analog, digital, radio, and video

BY ROGER NICHOLS

The topic for this month is digital audio levels for video. This topic was inspired by a question on the EQ Board (www.eqmag.com) and my recent experience with the Steely Dan PBS special.

BACKGROUND

I will assume that all of you are familiar with the analog VU meters used in analog consoles and analog tape machines. VU meters measure the average level of the audio signal. There are analog meters that measure peak levels, but they are only a close approximation of the actual peak levels in the music they are measuring. Analog meters gave us a reference for recording and playback levels. If you recorded too far below the reference level, you got extra tape hiss and console noise mixed in with your music. If you recorded too far above the reference level, you increased

the distortion by overdriving the tape and console. The zero reference on the meter could be set to accommodate various recording tape and console requirements. Since there could be different zero references on different tapes, tones were recorded on the tape to tell the next engineer where to set the playback and record levels to match the levels of the music on the tape.

Digital recording came along and a new absolute reference point was established. The reference was called zero, and was set at the absolute maximum level that could be represented by a digital signal. It was also established that all digital bit depths would maintain this reference. A full-level 16-bit recording is the same level as a full-level 24-bit recording or a full-level 8-bit recording. The extra bits give a lower noise floor and a higher resolution to the digital signal.

Let's jump back to analog for a second and talk about headroom. Headroom is the difference in level between the reference point and signal clipping. Most analog consoles specify the headroom as +18 dB, +24 dB, or some other amount above zero VU, depending on the design of the console. If you recorded everything at zero, the headroom would be where the peaks go. Remember that the VU meters are showing the average levels. If there was no headroom built into the system, everything above zero would clip and distort. This is exactly what happens in digital recording. If you record at zero on a digital reference meter, anything over zero will clip and distort, *always!*

To keep this from happening, a level was chosen as the reference point for recording. The most common reference point is -20 dB. If you record music so that everything reads around -20 on the digital meter, then you have 20 dB of headroom before the signal reaches digital zero and starts clipping. If you were calibrating a digital recorder to be used with an analog console, a zero tone on the console would read -20 dB on the meters of the digital tape machine. Some engineers use a reference level of -18 dB, and others use a reference level of -22 dB. The reason is the same. Some engineers who were using -18 found themselves with levels that crept

up during the mix and had to trim the master fader down to keep from clipping the peaks. After a while they decided to just start at a lower reference to avoid the master fader trim.

DIGITAL LEVELS AND CLIPPING

Because the digital zero is the same on all digital machines, there is really no need for a reference tone on the tape to calibrate one digital machine to another. Reference tones are useful for other reasons, but are not mandatory for being able to make a digital transfer. When you copy a tape that had a -18 reference, the copy will also have a -18 reference. In the CD world everyone wants his or her CD to be louder than everyone else's CD. Compressors, limiters, and magic boxes were all used to make CDs louder. If you played CDs at home, sometimes you had to get up and change the level control on your stereo because of level differences between CDs.

In the video world, the ultimate reference is the modulation of the carrier for the audio portion of the signal. The FCC has established rules that say that a transmitted signal (AM, FM, TV, CB, Ham, etc.) can't be over-modulated or the station will be fined, and, if there are too many occurrences, the station could lose their license. Audio compressors and limiters are in the circuit to make sure that a maximum limit is not exceeded. TV has contained analog audio since day one of television and established reference levels have become the law of the land. Because peaks above the reference level will over-modulate the signal, there is basically no such thing as dynamics as we know it in most television audio.

So, with a reference point of -20 dB in video production (some post houses use -18 dB or -23 dB), there is rarely ever any audio material in the area between -20 dB and the digital ceiling. What they should have done is used the zero digital level as the reference point and they would automatically never over-modulate because there is no such thing as a signal above zero in the digital domain. With an absolute ceiling of -20 dB, there are three bits that never get used. You basically have 13-bit

continued on page 157



evolution wireless ew-172



1092 Digital Wireless



evolution e609

sennheiser.
for guitar.



w w w . s e n n h e i s e r u s a . c o m

 **SENNHEISER**
S E N N H E I S E R E L E C T R O N I C C O R P O R A T I O N

One Enterprise Drive, Old Lyme, CT 06371 Tel: 860-434-9190 • Fax: 860-434-1759
Sennheiser Mexico: Tel: (525) 639-0956 Fax: (525) 639-9482 Sennheiser Canada: Tel: 514-426-3013. Fax: 514-426-3953
Manufacturing Plant: Am Labor 1, 30990 Wedemark, Germany

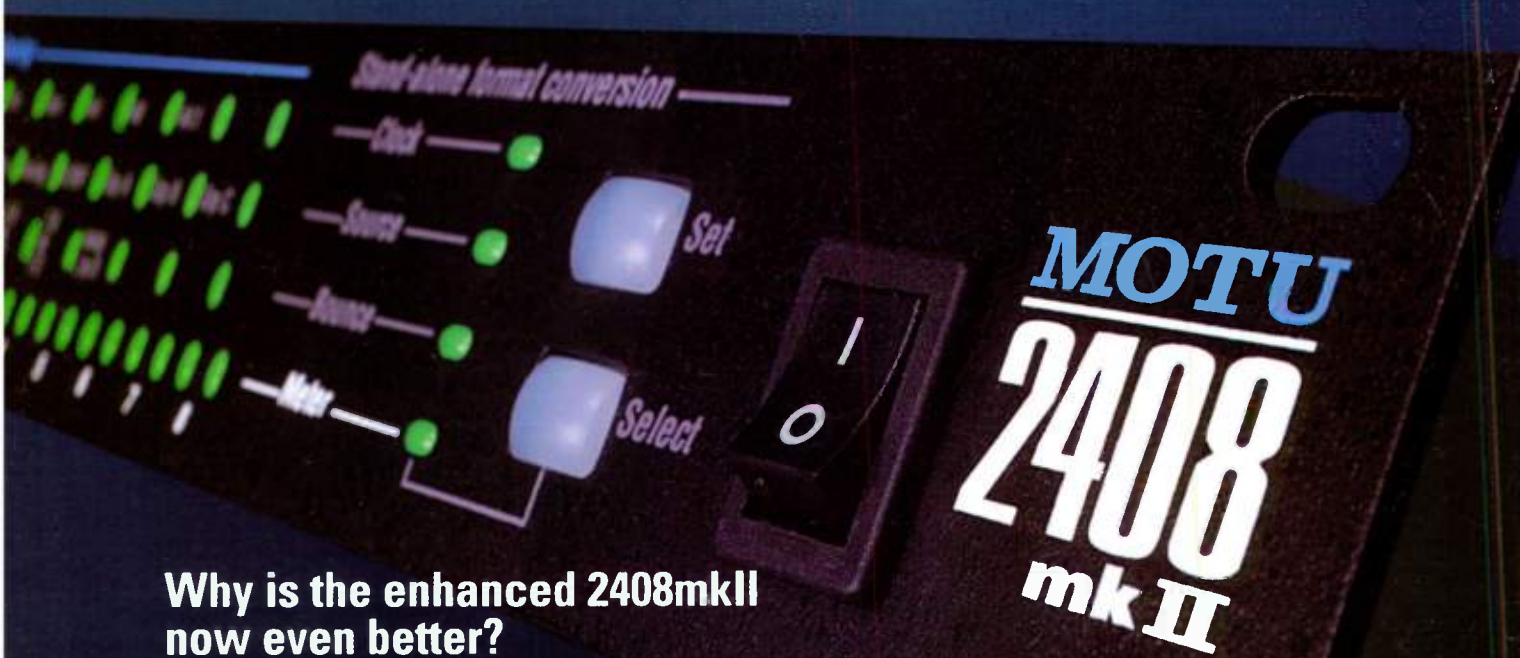
CIRCLE 79 ON FREE INFO CARD

PCI-324

72-channel, Cross-platform
PCI Audio Card



introducing the 2408 mk II



Why is the enhanced 2408mkII now even better?

- **Balanced/unbalanced 1/4-inch analog I/O.**

The 2408mkII has quarter-inch TRS analog jacks (8 in / 8 out), with +4 or -10dB level inputs, so you can easily connect everything in your studio directly to your computer: synths, samplers, effects units — you can even plug in your guitar without an amp and use dozens of included 32-bit software plug-ins for fuzz, chorus, echos, and hundreds of other real-time effects.

- **24-bit converters.**

The 2408mkII's new 24-bit converters deliver incredible audio quality: 105dB S/N (A-weighted). Your audio will definitely be ready for prime-time.

- **Front panel volume knob for the main outs.**

Connect your studio monitors directly to the 2408mkII main outputs, mix everything inside your computer — and there's still a volume knob for you to grab when the phone rings.

And the mkII has all the original 2408 features at the same great price, including:

- **24 simultaneous inputs/outputs expandable to 72.**

The 2408mkII has way more I/O than any other single-rack space system, and it's ready to expand as your needs grow with our entire line of affordable audio interfaces, including the new 24i with 24 analog inputs in 1 rack space.

- **Tons of 24-bit ADAT optical and Tascam TDIF digital I/O.**

If you have an ADAT, Tascam tape deck, or digital mixer, the 2408mkII is by far your best choice for digital I/O with your computer.

- **Sample-accurate sync.**

The 2408mkII has a wide range of professional synchronization features.

- **Broad compatibility will all major audio software.**

Use your favorite Mac or PC audio software with your favorite plug-ins, or use the included AudioDesk workstation software, a complete virtual studio.

 **MOTU**
Hard disk recording

CIRCLE 37 ON FREE INFO CARD



EQ PRESENTS:

Reach over
85,000
Recording
& Sound
Musicians,
Engineers,
Producers

Over **5,000**
New Products

Coming in
SEPTEMBER
1996!

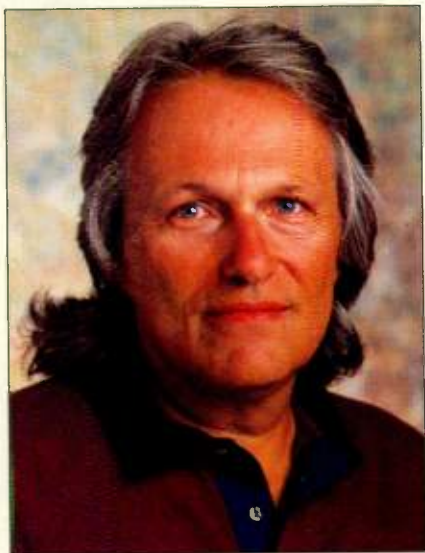
1ST ANNUAL RECORDING & SOUND BUYER'S GUIDE

REACH NEW BUYERS
AND NEW BUSINESS

Featuring:
THE MOST
Important
Reviews Of
The Year in
Review



Back Up! (Or I'll Run Over You)



Everybody must get
stones...

BY ROGER NICHOLS

I like trying to invent things. I like trying to improve on old processes by using the latest technology. That's why I just invented "Dead Sea Backup," a way to store your digital audio data so that it will be around in 2000 years when people can finally appreciate what you were trying to do.

I saw something on the Discovery Channel about some stone tablets that were dated back thousands of years. This happened just as I was reading about the shelf life of CD-R. It hit me like a ton of bricks. Why not carve the digital audio information onto stone tablets instead of CDs? There was no time to waste!

I borrowed a Roland "3D plotter" from a friend. It is basically a three-dimensional plotter with a little Dremmel tool instead of a pen. The X and Y axes work pretty much like any other plotter. You just connect it to your computer, insert a sharpened router bit, clamp in a piece of marble, and press return.

My first calculations showed that to cut the ones and zeros into 12-inch by 12-inch pieces of stone using a 12-point OCR font to store the 20-bit stereo data from the Steely Dan live album would take 1,543,500 stone tablets. I thought this might be a little much, so I decided that Level II storage technology for stone tablets would have to be used. The difference is that instead of ones and zeros, the plotter would carve hex digits instead. One character stands for four bits of data. This would bring the storage requirements down to a reasonable 385,875 tablets. If the tablets were 1/2-inch thick, which would make them stack rather nicely, then with FAA approval the stack would reach 16,078 feet altitude. The trade-off isn't too bad, storage requirements vs. longevity.

HARD (DISK) TO BEAT

There are a lot of new features coming soon to a hard-disk recorder near you. Digidesign is just about ready to launch its PCI-card version of Pro Tools (I smell PC versions of Pro Tools). It will do everything faster and better, and also support 20/24-bit audio. The software to support the higher resolution audio will be released later this year. Keep in mind that everybody and their brother is now producing TDM Plug-Ins for Pro Tools. I just received the new QSound TDM module that I will review soon, as well as the TC Tools plug-in from TC Electronic. Things are going to be fun in DSP land during the next six months.

In the high-end land of Sonic Solutions, new software releases due through July will support image files that will allow you to record to CD-R machines like the Yamaha 4x cutter. The new software will also let you playback and upload from DDP tapes

(8mm Exabyte tapes used for CD masters). Most big mastering facilities have two or three Sonic Solutions systems networked together. This allows different rooms to edit a project without having to copy the audio from one computer to another.

Don't forget SADiE. If you are looking for a lot of "Bang for the Buck," this is a pretty good choice. The latest 3.0 software release is pretty amazing. The thing I like best about SADiE is that all of the software upgrades are free, and the basic software includes everything you would ever want to do (there is one option, the CEDAR noise-reduction module): EQ, compression, pitch shift, time stretching, CD cutting with PQ code editing, DDP tape production, verification and playback, and the fastest and easiest user interface on the block.

WHAT'S EVERYONE DOING WITH THIS STUFF?

More and more projects are being recorded by artists at home on hard-disk systems. I just helped Edgar Meyer finish up some editing he did on his new album for Sony Classical with Yo-Yo Ma and Mark O'Connor. He did all of the mixing right to Sound Designer II through an Audiomedia board, and then took it home to do all of the editing. Besides the spacing between cuts, he wanted to perform some extensive editing between takes to improve the overall performance. Instead of spending long expensive hours in a mastering room, he saved enough money to pay for the editing system he used at home.

I know a guy who opened a little mastering room to master songwriting demos. Songwriters bring over a box of DATs and he makes them sound like finished records. The songwriters say that they get more interest in their songs from prospective artists because of the difference in the way the demos sound. Great idea, why didn't I think of that.

Multitrack systems are getting a lot of use, too. Bela Fleck recorded live performances on ADATs and then loaded them into Pro Tools. He is using

continued on page 144

Introducing...

...the first new Neumann
Tube microphone in
more than 30 years.

Neumann understands tube microphones. We've been making them since 1928. The U 47, M 49, U 67, and KM 53 are legendary – coveted by engineers and producers worldwide. When asked to reproduce a microphone with the 'classic' characteristics of our older jems, we decided to go one better. Enter the new M 149 Tube. Utilizing the K 49 capsule and headgrill from the classic M 49, coupled with the transformerless FET 100 circuitry from our TLM 50, the M 149 Tube is a modern microphone in the classic Neumann tradition.

The M 149 Tube features 9 polar patterns and a 9-position high-pass filter. With a self noise of 11 dB-A, the M 149 Tube is the quietest tube microphone in the world. The tube and associated circuitry for the M 149 Tube are mounted on modular 'circuit cards.' In the future, a variety of tube modules will be offered, allowing you to customize your M 149... different tubes for different recording situations.

Neumann has brought more than 50 years of design expertise to the M 149 Tube, and it shows in every detail of this truly outstanding microphone.

Neumann... the choice of those who can hear the difference.

The M 149 Tube

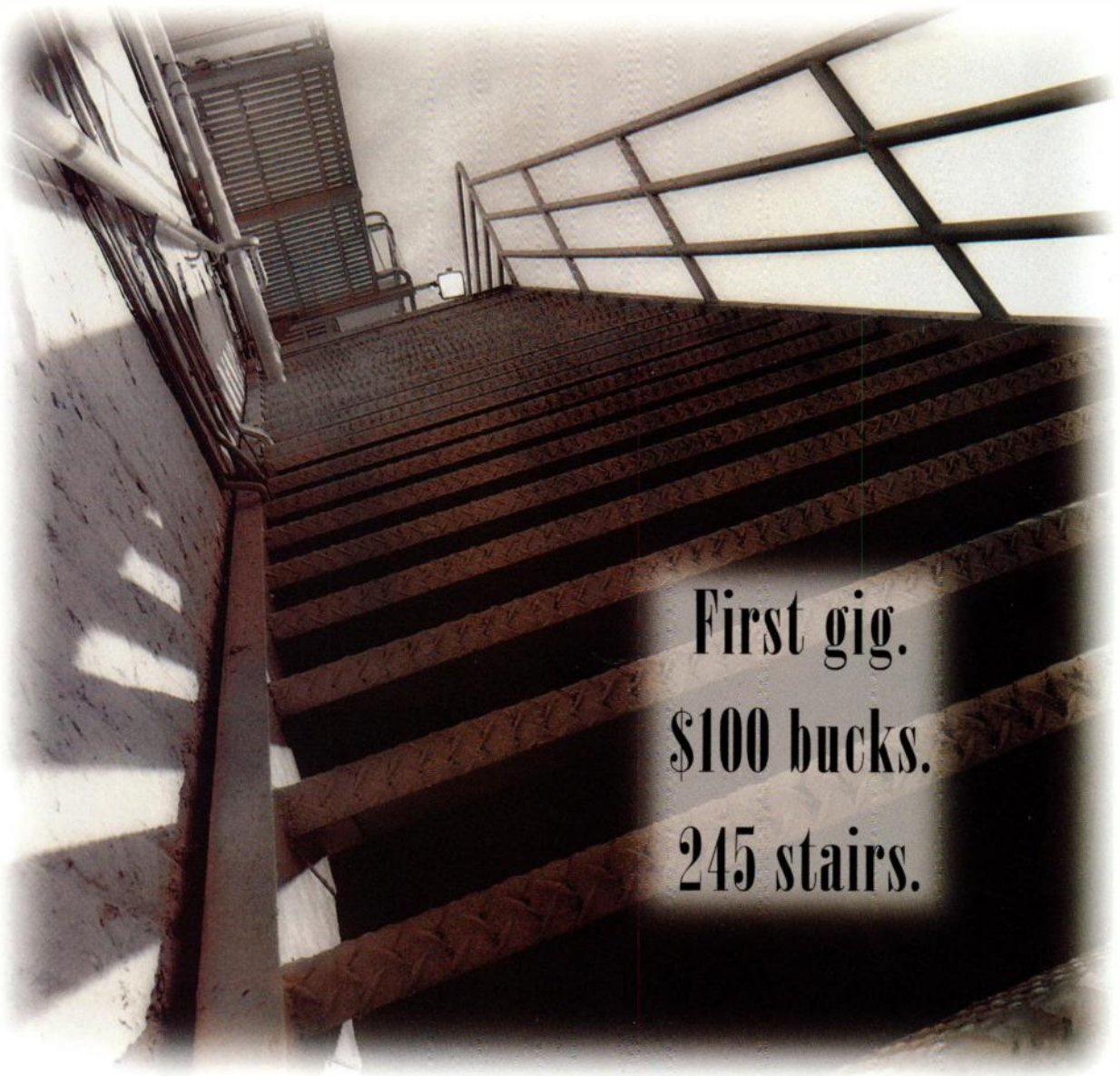


Neumann USA

6 Vista Drive • PO Box 987, Old Lyme, CT 06371 • Tel: 860.434.5220 • FAX: 860.434.3148
Neumann USA West Coast • Tel: 818.845.8815 • FAX: 818.845.7140
In Canada: 221 Labrosse Ave., Pointe-Claire, PQ H9R 1A3 • Tel: 514-426-3013 • FAX: 514-426-3953
World Wide Web: <http://www.neumann.com>

CIRCLE 68 ON FREE INFO CARD





First gig.
\$100 bucks.
245 stairs.



SOMETIMES THE DIFFERENCE between taking a gig and not taking it isn't the money. Or the exposure. But the schlep. Which is why we created the new EON Portable System. At about half the weight of any other system, it's made to be portable. Yet it gives you all the sound quality and reliability that JBL is known for. At a price that is noticeably lighter. In fact, it may be the perfect first step for any rising star who's just starting out. And plans to get to the top.



H A Harman International Company

S O U N D T H A T C A R R I E S