

# PC Recording Quarterly

# EQ

THE PROJECT  
RECORDING &  
SOUND  
MAGAZINE

In Review

Audio-Technica Mics  
ART Equalizer  
TASCAM Dual-DAT  
Peavey Comp/Lim

JUNE • 1998

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*Steve Albini  
Records  
Page & Plant*

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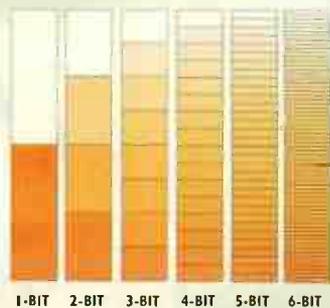
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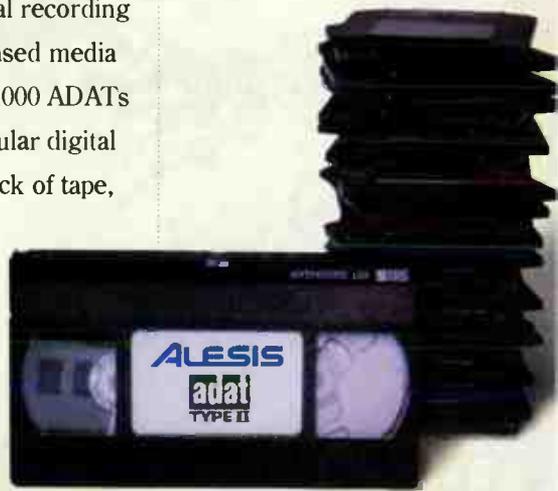
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*“This allows the HR824 to move a large volume of air with minimal low frequency distortion & power compression.”*  
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EM Magazine\*

*“The enclosures — dressed in a conventional yet classy black — are shielded.”*  
EM Magazine\*

Inside, two separate FR Series™ power amplifiers with a total of 250 watts rated power — the most of any active monitor in the HR824's class.

Actually this paragraph doesn't have anything to do with the HR824. Mackie is further expanding its R&D/Engineering department and is looking for more analog and digital engineers with experience in pro audio. Log onto our web page for particulars.

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# response was so flat that it to believe.” Electronic Musician Magazine\*

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Owning a set of HR824 near field studio monitors has the potential of seriously altering your perception of sound.

For the first time, you'll be able to hear precisely what's going on all the way through your signal chain — from microphones right through to your mix-down deck. You'll suddenly discern fine nuances of timbre, harmonics, equalization and stereo perspective that were sonically invisible before.

Some tracks you've recorded will amaze you; others may send you back for an immediate remix.

But either way, for the first time, you'll be hearing exactly what was recorded — not what a conventional loudspeaker may or may not have been capable of reproducing.

Admittedly, these are pretty brazen claims (which is why we're backing them up with comments from a credible, third party source).

But all you have to do to become a believer is to visit

your nearest Mackie dealer. When you

compare HR824s to the competition,

you're going to hear some dramatic differences.

First you'll notice far more openness and detail. Critical listeners tell us that it's as if a curtain has been lifted between

themselves and the sound source.

Next, you'll notice low frequency output so accurate that you might look around for the hidden subwoofer (some of the world's most experienced recording engineers have



Each HR824 ships with its

own signed Certificate of Calibration attesting to its ±1.5dB 39Hz-22kHz frequency response.

done this, so don't be embarrassed). The HR824 really IS capable of flat response to 39Hz. Moreover, it's capable of accurate, articulated response that low. Rather than a loudspeaker's "interpretation" of bass, you can finally hear through to the actual instrument's bass quality, texture and nuances.

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monitors cost more than less accurate transducers.

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how your creative product sounds, we know you'll find owing HR824s well worth it.

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**"The precise resolution is a major boon for finicky sound sculptors."**

**"The imaging and high frequency dispersion is brilliant. I was amazed at how far off-axis I could scoot my chair and still clearly hear what was going on in both channels."**

**"The low end was robust and present; the electric bass and kick drum thump-ed into my chest the way those huge UREI monitors did back in the old days."**

**"Overall, the response was so smooth that I wasn't even aware of a crossover point."**

**"Stereo imaging and depth were fabulous."**

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World Radio History



# EQ

PROJECT RECORDING  
& SOUND TECHNIQUES  
VOLUME 9, ISSUE 6  
JUNE 1998



## FEATURES

**RAISING ZEPPELIN** *By Alan di Perna* .....68  
*Steve Albini, the outspoken alternative rock engineer, discusses his latest high-profile project — Jimmy Page and Robert Plant's new album, Walking Into Clarksdale — and reveals how he captured the essence of the legendary rockers. Plus: Jimmy Page muses on his skills as a producer.*

**MIC PRE MANIA** *By Mike Sokol and Steve La Cerra* .....78  
*This special section offers the top ten times when you should use an outboard mic pre and reviews of mic preamps from Great River Electronics, Barbetta, Studio Technologies, and SPL. And if you are looking to buy, don't miss the mic pre manufacturer directory on page 88.*

**PC QUARTERLY** .....90  
*Our quarterly look at how to integrate a PC into your project studio. Stories include:*

- **THE COMING OF DIRECTX** *By David Miles Huber* .....92
- **DIRECTX PLUG-INS: ARE WE THERE YET?** *By Craig Anderton* .....96
- **DSP•FX: VIRTUAL PACK PLUG-INS** *By Craig Anderton* .....100
- **DRIVER'S ED: FREE SYSTEM TUNE-UP** *By Craig Anderton* .....102

## EQ LIVE

**TONE ALONE: STAGE ISOLATION** *By Mike Sokol* .....107

**ROAD GEAR** .....112

**ROAD TEST: PEAVEY VC/L-2 COMPRESSOR-LIMITER** *By Wade McGregor* .....114

## TECHNIQUES / WORKSHOPS

**WU-TANG CLAN'S RZA** *By Steve La Cerra* .....52

**MAINTENANCE CHECKLIST** *By Eddie Ciletti* .....58

**ACOUSTIC TREATMENTS FOR STUDIOS** *By John Storyk* .....64

## COLUMNS / DEPARTMENTS

**MI INSIDER: WHY DO FOOLS FALL IN LOVE** *By Craig Anderton* .....40

**KOOPER'S KOUCH: STRIKING A BLOW FOR THE ABUSED** *By Al Kooper* .....44

**BONZAI BEAT: DANNY SABER** *By Mr. Bonzai* .....46

**THE FEZGUYS: NETCASTING IN HIPBOOTS** *By Jon Luini & Allen Whitman* .....138

**MAINTENANCE: BUYING & SELLING A USED DA-88** *By Eddie Ciletti* .....144

**FAST FORWARD: A TRIP TO FOREIGN SHORES** *By Martin Polon* .....148

**ACROSS THE BOARD: THE GOOD, THE BAD, THE UGLY** *By Roger Nichols* .....162

**EDITORIAL** .....8

**LETTERS TO EQ** .....10

**EQ&A** .....12

**PRODUCT VIEWS** .....18

**STUDIOWARE** .....24

**ROOM WITH A VU: XTREME MEDIUM** .....30

**MICROPHILE: AMERICAN D9AT** .....32

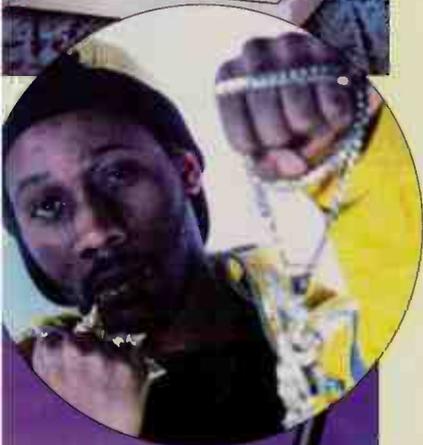
**FIRST LOOK: MUSIK MESSE HIGHLIGHTS** .....34

**IN REVIEW: TASCAM DA-302 DUAL-DAT RECORDER** .....124

**IN REVIEW: ART TUBE EQUALIZER** .....130

**EQ AUDITION: AUDIO-TECHNICA AT3525 MIC** .....134

**AD INDEX** .....131



### ON THE COVER:

Steve Albini sits in his Chicago-based project studio.  
Photo by Steve Kagan

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## Long Live The Voice

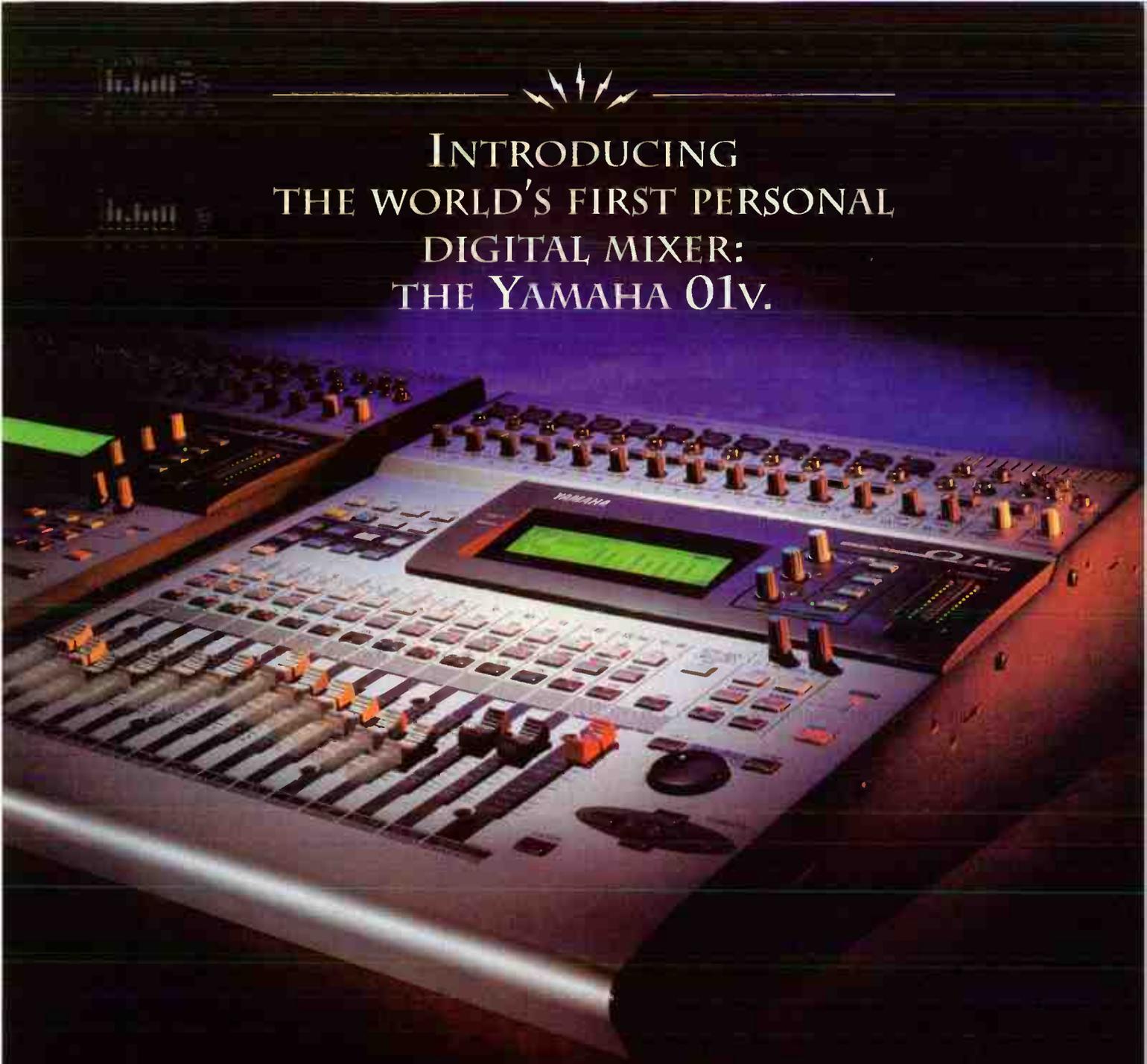
The Chairman Of The Board has left us, but he will certainly not be forgotten. The Voice that sang so many hits, that provided a soundtrack for the lives of a generation, will fortunately still be with us, thanks to the grace of something we call audio recording.

And for this we are lucky. We will have no questions in our minds as to what Frank Sinatra sounded like and how he changed the face of popular music. There will be no debate over what tempo he performed "I've Got You Under My Skin," simply because the reference is with us — unlike other earlier artists who either predated modern recording or left us with a very limited catalog of performances (Robert Johnson comes to mind). Although The Voice may now be silent, his recordings will be with us for years to come. Many of those recordings were made in the studio with names we now find familiar such as Phil Ramone and Al Schmitt. These producer/engineers will carry on a musical tradition of sessions performed live with orchestra, of arrangements carefully charted, of vocal tracks recorded in one take without punches and endless fixing.

There's a clear lesson to be learned in evaluating Sinatra's recordings, whether you care for the type of music or not. Technologically speaking, he spanned the globe (quite literally in some cases) and stretched the art of recording technique. Many of the earlier Sinatra recordings paint a picture of *reality* — of a man standing in front of a big band or orchestra singing, just as you'd expect to see and hear in a live show. *Sans* hype. At the other end of the spectrum were the sessions that resulted in the *Duets* CDs — where ISDN lines were used for live recording of guest vocalists who were actually thousands of miles away.

Whether your taste gravitates towards Frank Sinatra or Jimi Hendrix, it's worth looking back at the audio road traveled to the point where we are at today: there exists a wonderful way to preserve music, and we hold it in our hands. We are the generation that is now recording sounds by artists whose contributions may long be audible after flesh has turned to dust. As sure as newspapers and film document the world's historical events (World War II, Vietnam, the Challenger disaster), our responsibility is to record the audible history of music. Accept that responsibility with pride and carry the flame.

—Steve Woody La Cerra



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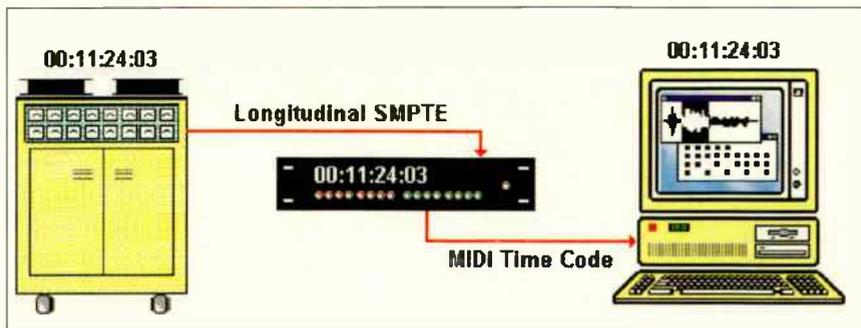
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CIRCLE 80 ON FREE INFO CARD



GETTING IN SYNC: The figure from David Miles Huber's Feb. '98 article in question.

## UPGRADE FOR NEOTEK

EQ reader Bob Beck recently wrote asking for advice on designing a microphone preamplifier as he was having problems with the mic preamps in his Neotek Elan console. [See *EQ & A* column, pg. 12, December 1997.] On older versions, the Elan's mic pre has a DC offset adjustment. It seems this adjustment was not being set correctly and, therefore, was the source of the "scratchiness" Bob mentioned. The latest version of the console has updated the circuit to use a precision DC servo that eliminates the need for this adjustment. This circuit is available as an upgrade for older Neotek boards and [from our conversation with him] that is what Bob has opted to do. "I'm a satisfied customer once again" was Bob's comment. Any interested parties should feel free to contact me at 626-281-3555 or at [chis@martinsound.com](mailto:chis@martinsound.com)

Chris Walsh  
Vice-President, Sales  
Martinsound

## THUMB FOUNDED

I just want to shed some light on the mysterious "thumbs-up" guy mentioned in the May '98 issue's story on Peter Frampton. It belongs to Emerald Sound Studio's own Allen Ditto. The picture was taken during a recent Eric Stuart tracking session at Emerald Sound Studios in Nashville, TN. For those who know Allen, the thumb is his trademark.

Andrew Kautz  
Vice President  
Emerald Sound Studios  
Nashville, TN

## GETTING IN SYNC

In David Miles Huber's article, "Sync'ing Your Software" (February 1998), Mr.

Huber failed to mention the most important elements in synchronizing any hard-disk audio, whether one has a PC or a Mac: a single master clock source and a way to resolve all digital and analog audio to that clock. Without this master reference, hard-disk audio will never properly lock and re-lock again and again to its original source.

Longitudinal TimeCode (LTC) from a tape machine alone is not a reliable reference for speed for digital hard disk audio — unless the tape machine is resolved by a synchronizer. And the synchronizer needs two references: the LTC from the tape machine and a clock source with which to resolve it. This clock can be the synchro's own internal crystal (okay if you're not controlling digital audio or video decks), a video signal generator (best if you have video tape involved), or a word clock generator (best for audio that will not be linked to video).

This is especially true for analog audio. The first problem is that an analog tape machine's capstan speed is only as stable as the electricity coming out of the wall (mains). This is by no means a stable source (fluctuations of  $\pm 4$  percent are not uncommon). The other problem is that the crystal that drives the capstan is different from the one that drives the A/D-D/As on a digital audio workstation. They interpret, or "gearbox," the frequency of the mains differently.

It would be by sheer luck that one would get a DAW to sync to its source audio in the manner Mr. Huber describes. His suggestion of just patching LTC into a MTC converter would not be a reliable reference, unless the MTC converter sends a resolved (to incoming LTC) word clock output to the digital I/O card or box. Even then, the sync would be dicey. It would be just like trying to sync two 24-track machines without synchronizers or manual varispeed control. They may sync at the top, but they will drift apart as time goes by.

LTC-to-MTC conversion will only stamp the top of an audio file; from there on, any other point of reference in that audio file is based on the clock rate of the I/O card. If the tape machine speed is not resolved to that clock rate, the location of, say, bar 100, will be different in the digital audio file than that of the tape machine. MIDI control does not care about timecode speed because it continuously relocks to the LTC numbers as they come in. Digital hard-disk audio does not.

Jeff Lorenzen  
Vidfilm Services, Inc.  
Glendale, CA

*Messrs. Huber and Ciletti respond:* Mr. Lorenzen's comments are well founded and I'm sure the readers welcome the additional input. My only crime in the article, though, would be not naming it "The Basics of Sync'ing Your Software the Bargain Basement Way." I detailed a method that works for me, at least. Thanks for keeping me on my toes.

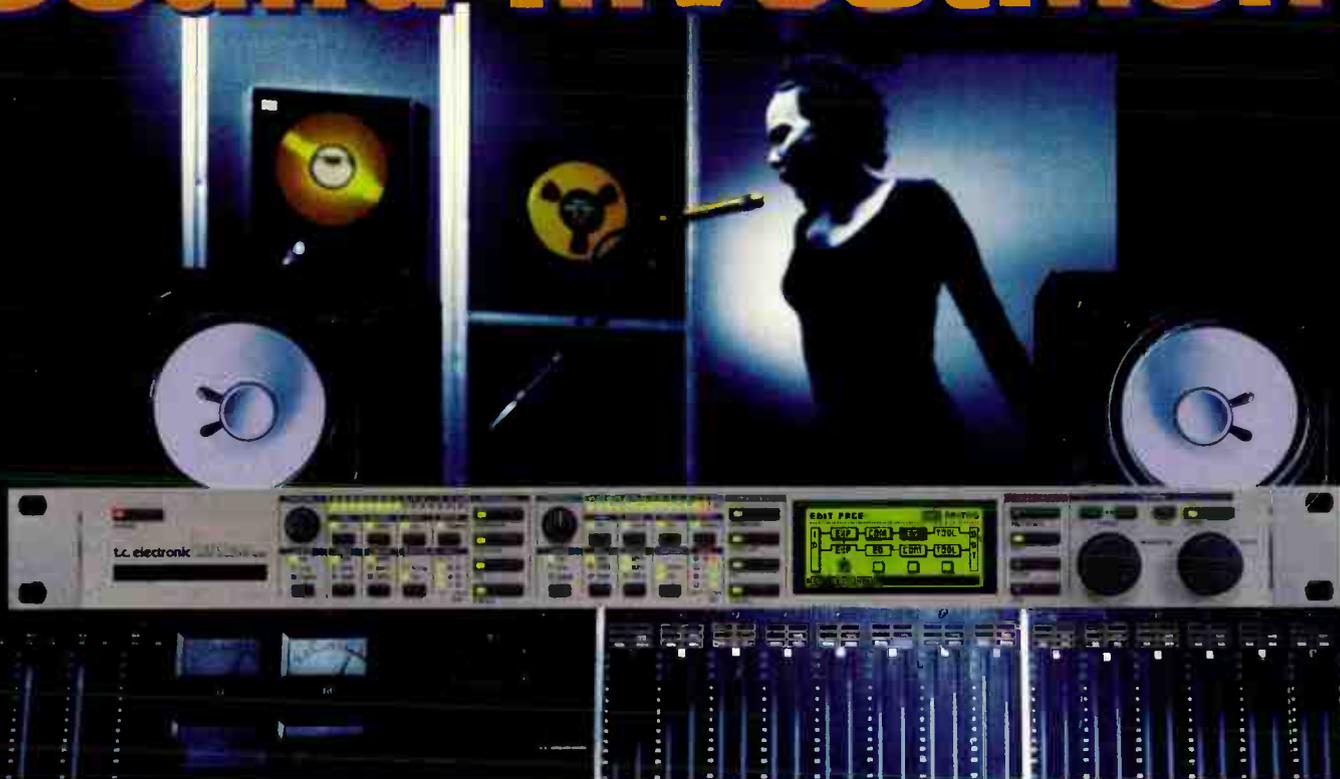
—David Miles Huber

You are indeed knowledgeable in your field. Thank you for sharing so much valuable information. You are absolutely correct concerning the need for a master clock. As systems become more complex (and hair loss becomes too obvious to hide), the smart user will "resolve" many digital idiosyncrasies by purchasing a master clock and driving all digital devices from a common reference. (Check out the Aardvark AardSync II, for example.)

A clarifying point: Dave Huber's article was intended for those synchronizing from the PC perspective. This implies an economy of scale that precludes some of the possibilities you suggested. David clearly stated that any uncertainty is reason to contact the originating production house.

While it has been a long time since line voltage and/or frequency affected a capstan motor's speed, in essence, analog tape speed is not consistent enough for digital. (No clocks that I know of are mains referenced.) As you stated, it might be possible to chase a tape machine whose pitch control was accidentally switched on, but obviously no DAW or sequencer will automatically re-pitch the slaved material. (Wouldn't that be nice?) The best option is to properly resolve the analog tape machine and make a digital transfer. Otherwise, if the analog source does not need to be resync'd, then a digital copy will suffice. —Eddie Ciletti

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CIRCLE 67 ON FREE INFO CARD

## CLEAN AND DEMAG

**Q** I enjoy Eddie Ciletti's Web site on DTRS cleaning. It seems, though, that the cleaning section for generic DAT explains only TASCAM DA-88 and DA-38 cleaning. Does this same information also apply to my DAT deck (rotating the head counter-clockwise, etc.)?

I read someone else's page on cleaning DAT decks, which said that you should wipe or swab the whole rotating section — would that include the two tiny heads, or is it totally wrong to touch the tiny heads while cleaning my DA-20 MKII DAT deck?

In the site's picture it looks like Eddie's holding the cleaning chamois right against the whole drum. Didn't it slightly wipe over the heads? How do you get dirt off them if you can't touch them?

I also have a TEAC V-6030S cassette deck and a handheld demagnetizer. I don't even know if the demagnetizer does anything because I've never heard any difference in sound quality after using it. Is it also useful for a DAT deck?

Bryce  
via Internet

**A** You ask all the right questions! As you noticed, I apply the lint-free cloth to the whole drum face. If your fingers are sensitive enough, you will actually feel the head "chips" through the cloth while rotating the head drum. Obviously you should be careful to not apply excessive pressure, but I have never damaged a head using this method. I never use chamois sticks.

Just as in analog heads, oxide and other tape-borne contaminants build up on the head surface, thus reducing high-frequency response and, in this case, valuable data. As for the preferred rotational direction when cleaning heads, counter-clockwise is

the safest method, though it mainly applies to DTRS (DA-38/-88/-98) heads because their shape is asymmetrical — the leading edge is aerodynamically smooth while the trailing edge is razor sharp.

Demagnetizers are not necessary for digital heads because all systems record at saturation, meaning there is no erase head required. It is, after all, only data, so this system works best. Digital tapes are of the metal variety and therefore very difficult to erase. You might try a demagger on an unimportant DAT tape only to find that it does nothing.

Here's a test to determine if your demagnetizer is worth its salt: First, if the demagnetizer has a switch — momentary or otherwise — it is very dangerous [to your machine and tapes], so either permanently wire it "On" or discard it. One "power cycle" [Off/On] directly in front of an analog head will more powerfully magnetize that head than whatever might have built up from normal use.

Second, find a nonmagnetized razor blade and screwdriver. (Proof is that neither is attracted to the other. Demag-

netize them, if necessary. If that is not possible, the demagger is useless.) Third, power cycle the demagger (On/Off) while touching a razor blade. You will now find the blade is magnetized and it will attach itself to other blades and screwdrivers.

Fourth, attempt to demagnetize the blade and the 'driver by moving them slowly towards and away from the demagger. Before powering down, be sure there is at least three feet of separation between the demagger and the "demaggees."

Fifth, prove that the blade and screwdriver are no longer attracted to one another. If the attraction remains, the demagger is not powerful enough and should be discarded. The best demagnetizer is the "Han-De-Mag" available from the R.B. Annis Company in Indianapolis, Indiana.

You may not notice the effects of demagnetization on a cassette deck. One test to check if the heads are magnetized would be to continuously play a recording of a high frequency (10 kHz, for example, recorded 20 dB below maximum), noting each time the level drops. (It may take many plays to observe this.)

Another test is to make a recording — also on a new tape — of nothing (input level at minimum) without noise reduction. Listen back to the absence of sound. It should be mostly "hiss," but the presence of various pops or thunks would imply that some component in the chain is magnetized.

Eddie Ciletti  
Contributing  
Editor  
EQ  
magazine

## APPLIED ADVICE

**Q** I'm trying to repair a Marantz 2000, which has the same transport as the Panasonic SV-3700. It records and plays fine, but won't fast wind. After hitting either "fast" key, the transport does its normal "slow spool" in the proper direc-

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JUNE 1998

World Radio History

# WANT THE BEST OF BOTH WORLDS?



## 2408 Digital Hard Disk Recording System

MOTU



A R T

## Pro MPA and VLA Modules

APPLIED RESEARCH AND TECHNOLOGY

Analog or digital? Chances are, you want the best of both worlds: the warmth and creative flexibility of tube processing and the exacting clarity and editing ease of digital recording. Too expensive? Think again! Enter the amazing 2408 Hard Disk Recording System from Mark of the Unicorn and the lush Pro MPA stereo tube mic preamp and Pro VLA stereo tube Compressor from ART. These devices complement each other perfectly, bringing a wide range of creative power to your rig. Sure, you could spend more than four times as much to get the same sonic quality and features. But don't you have better things to do with your money? Let's take a look at what makes these products so special . . .

With Mark of the Unicorn's 2408, you get up to 24 simultaneous digital inputs and outputs, 8 channels of analog I/O and as many tracks as your computer allows, 16-bit recording (expandable to 24-bit), digital I/O to connect with ADAT, DA-88 and S/PDIF and much more, all for under \$1,000! It even works as a stand alone translator between ADAT, TDIF and analog. Connect up to three 2408s for 72 inputs and outputs! Works with your choice of Mac or Windows computers and a wide variety of music software including MOTU's award winning Digital Performer sequencing/recording package. Cut, copy and paste any portion of your performance for unsurpassed editing ease. Just add the 2408 and your home computer rocks! It becomes a professional digital audio workstation with power far beyond limited tape-based or stand-alone systems.

The 2408 is one of the hottest new products we've ever had at Sweetwater. It's great by itself or in combination with a tape-based system such as ADAT or DA-88. If you've been wanting the ease and power of random access multitracking but were waiting for a more economical approach, your time has come. With the money you save on the 2408 over other systems, you can buy yourself an amazing computer to run it on!

Classic tube preamps and compressors have become hot commodities, costing thousands of dollars. What if you could have all of the sound, coupled with today's low-noise, high-reliability design advancements for a fraction of the cost? The processors from ART give you that vintage sound to warm up your digital recordings. Hit them softly for a clear, transparent sound. Crank it up to add more "heat." Check out some industry raves:

"Useful on all kinds of sessions . . . whisper-clean or add a nice warm thickness. The Pro MPA is great for making mid-priced mics sound like pricey, big-ticket models. An excellent value. ART has a winner on its hands." — *George Peterson, Editor, Mix Magazine*

"Every manufacturer loves to use buzz words like transparency, warmth, and musicality. For my money, ART is justified in using exactly those words to describe the Pro VLA . . . One of the few products I have encountered that has caused me to rethink the way I work in my studio. ART has built a real winner"

— *Jim Miller, Electronic Musician*



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# TAXI

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*tion for about 2-3 seconds then stops. As per Eddie Ciletti's Nov. '97 column ("Crunch a la Mode"), I tested all mode switches and even tried swapping the Servo board as well as the capstan motor. No luck.*

*As per your suggestion (from a previous e-mail), I changed the entire flat ribbon assembly, which connects not only the reel table optical sensors, but also the tape sensor switches, brake solenoid and mode motor. That did the trick! After a day's test run the defect returned, only this time it was highly intermittent. After staring at the reel sensors with an oscilloscope, I noticed a brief distortion on the supply table output. A crumbling brake pad was the cause. Removing its debris solved the problem.*

Tim  
via Internet

**A** I am glad you had success by following the advice so carefully. You should also replace the primary brake pads as well as the "soft" brake under the take-up reel.

Eddie Ciletti  
Manhattan Sound Technicians, Inc.  
NYC, NY  
edaudio@interport.net

### PRO TOOLS 24 QUESTION

**Q** *I read Roger Nichols's review of the Pro Tools|24 system in the January '98 issue. Now I'm about to purchase a Mac 9600/300 and a Seagate Cheetah 9.1 GB Ultra2 SCSI drive to use with Pro Tools|24. I've been told to use the Adaptec AHA-2940U2W Ultra2 SCSI card to connect the drive to the Mac.*

*The salesperson at my Mac store told me this SCSI card is not Mac compatible. I went to the Adaptec Web site and it mentions nothing about Mac compatibility (no mention of downloadable Mac drivers). The Digidesign Web site says this SCSI card is compatible. Am I missing something here?*

Pablo Domene  
via Internet

**A** First, welcome to the ever-growing family of PT users. Your question brings up an important issue with regards to buying products for integration into Pro Tools systems in general: When a customer is ready to make a purchase, we strongly advise them to do just what you did; that is, check with

Digidesign on the compatibility of any new component. We take pride in the fact that we have a dedicated testing department consisting of 15 people whose only responsibility is to constantly check on the compatibility of Digidesign's products with both third-party and Digidesign products.

These ongoing test cycles result in what we call "compat-o-docs," documents that list all tested and approved products and configurations. These lists are your guarantee that the products included will work with each other and with what you already own. So before making a purchase, always check the specific compatibility list, which is accessible on our Web site ([www.digidesign.com](http://www.digidesign.com)) or can be requested from our pre-sales department or our fax-on-demand service (650-842-6602), so you can shop for the best deals, while ensuring compatibility.

To answer your specific question, the SCSI accelerator cards supported by the Pro Tools|24 system are the: Adaptec Power Domain AHA-2940UW (single port); Adaptec Power Domain AHA-3940UW (dual port); and ATTO Disk Express Single and Dual Channel cards. On the Adaptec cards, please note that the "Power Domain" designation means that these products are dedicated designs for use in MacOS systems. (For further inquiries, you may also contact Adaptec at 800-442-7274.) All mentioned cards are available both through Digidesign dealerships and selected computer hardware resellers.

The Adaptec AHA-2940U2W card that you mentioned is a PC-only version, so this card will *not* support your Pro Tools|24 configuration. Please also be aware that Seagate's Cheetah 9.1 GB Ultra2 SCSI drive is not officially approved for Pro Tools|24 use at this time, and therefore is not included in our (compat-o-doc) listing of compatible drives.

If you want to find out more in-depth details about specific products and their integration or interaction with Pro Tools systems, you can always get in contact with our pre-sales department at the aforementioned number. Once you have all the compatible components together, and know that they are guaranteed to work together, you can really get into the fun of using Pro Tools without ever having to worry about your configuration. So enjoy!

Martin Berneburg  
Digidesign

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# The TM-D8000 Works As Smart As You Think



World Radio History



FAXBACK document # 8000

# TASCAM engineers have done their homework so you don't have to

**The TM-D8000 sets a new world class standard in digital mixers!** No digital mixer in its class looks or feels this good—intuitively and ergonomically the “smartest” mixer on the planet. There isn't another mixer in this price range that even comes close.

**Bigger than it looks!** The TM-D8000 is compact. But don't let the compact design fool you. 40 full inputs, world class phantom-powered mic preamps and 6 stereo returns won't steal valuable studio space. It makes no difference how you use the inputs or tape monitors—it's 40 channels of pure digital.

**The built-in display screen becomes your visual control center!** Your eye scans quickly to the back-lit LCD display window for all the mixer information you need. You always know exactly where you are in the mix, at all times.

**The TM-D8000 has Intelligence built-in!** Just touch any channel fader and the screen instantly switches to the fader you've just moved. Any way you look at it, the TM-D8000 has the smartest moves.

**No Multiple layer screens!** All functions on every channel, (EQ and AUX sends) are on one screen, not in multiple layers; so you never worry about where the faders are or if a function is buried inside a screen.

**The TM-D8000 has you surrounded!** Whatever your production style, surround mixing couldn't be simpler, faster or more automatic. You can fly between any of the surround panning modes with a single button. Select 5.1, 2+2, 3+1 or stereo in real time. No refresh required means no time wasted. This mixer understands 5.1 surround like no other mixer. Check stereo integrity instantly. One move, one button and the mixer already knows you want 6 busses. It automatically disconnects the stereo monitoring and assures the integrity of both the 5.1 and stereo mix.

**You define the exact position of the “Sweet Spot!”** Not only can you take any channel and put it any place in the mix, you can control the “Sweet Spot.” Control separation between speakers, front-to-back, side-to-side, as focused or as wide as your heart desires as you view it on the display screen.

**Total control!** The transport control center offers seamless machine control over DTRS recorders, MIDI machine control devices and Sony P2 protocol, all from the front panel. A Control Pod of virtual controllers made up of soft rotary controls and soft switches are assignable to pan, trim, frequency select, etc. View all parameters and critical mix data on the display screen.

**World class standard! Everything you need is built-in!** Everything is where it should be! While the TM-D8000 excels as a stand alone unit, an optional computer can provide off-line editing of data and cue list information and expand the capabilities of the system's automation and graphical user interface (GUI). TASCAM engineers have done their homework so the DIGITAL experienced is the way it should be... ..simple!

**See your TASCAM dealer today and get your hands on the TM-D8000 Digital Mixer**

**TASCAM**  
**CHANGES EVERYTHING**

CIRCLE 75 ON FREE INFO CARD

# EQ PRODUCT VIEWS

## MASTER PLAN

Completely hand built in Denmark, the Fairman Tube Master Compressor (TMC) re-creates the dynamic characteristics of classic Fairchild 660/670 units while offering better handling of high frequency transients. The dual-channel TMC's dynamics processing sections utilize 16 tubes (four matched quartets) operating in a pure Class A push-pull stage. The TMC contains no printed circuit boards: all circuits are hard wired to terminal strips. Instead of potentiometers, levels are set by 20-position stepped controls built with precision resistors and gold contacts. The power supply uses a tube high voltage rectifier for soft start-up, and separate stabilizers are provided for heaters and high voltage on both channels. U.S. list price is \$9500 (but won't your friends be envious). For more information contact ATR Service Company, 1502 Cobb Street, San Mateo, CA 94401. Tel: 650-574-1165. Circle EQ free lit. #102.

## CONDENSED KIT

The KPS (Kurzweil Percussion System) is a component-based system consisting of a new pad kit with switchable composite sensing two zone pads, variable control hihat, and a new foldable upright kick. The controller is a one rack space, 16-input trigger-to-MIDI converter doing extensive MIDI control plus ongoing hardware and software updates. The sound module is the Kurzweil K2500R sampling synth. The new KPK-9 Kurzweil Percussion Kit is an accessory pad kit. It is 100 percent compatible with Yamaha DTX, Roland TD5, TD7, and V-Drum modules. It is expected to retail for \$1995 (not including the K2500R). For more information, contact Kurzweil, 12440 Landale St., Studio City, CA 91604. Tel: 818-980-7871. Circle EQ free lit. #101.



## THE URGE TO SURGE

New Frontier Electronics' new SX115R Series Mode surge suppressor provides guaranteed surge protection and power conditioning for any audio, video, and computer equipment. Housed in a magnetically-shielded, single-rack-space enclosure, the SX115R features eight standard grounded AC receptacles and



improved EMI/RFI filtering circuitry. Six of these receptacles may be switched on or off by the user via an illuminating red rocker-style switch, while two remain permanently on. For more information, contact New Frontier Electronics, 2744 N. Sugar Road, New Hope, PA 18938. Tel: 215-862-9344. Circle EQ free lit. #103.





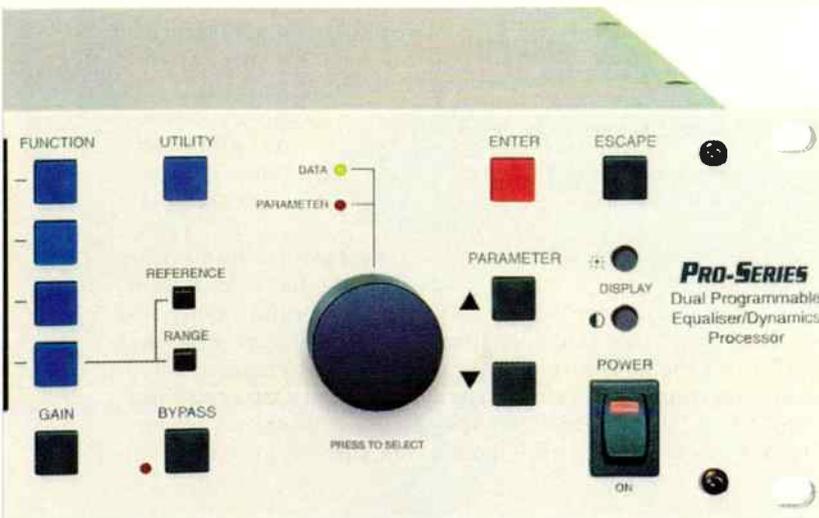
## MD FOR DJ

The Denon DN-M2000R MiniDisc recorder houses a single transport with integral controller in its 19-inch, 3U chassis. A Hot Start feature allows songs or sound effects to be loaded into memory locations for instant

playback at the touch of one of the machine's five front-panel Hot Start buttons. The DN-M2000R's Pitch Control slider may be set to offer pitch adjustment up to either +4 or +8 percent of playback speed in 0.1 percent steps. The DN-M2000R sports a large jog dial and shuttle wheel similar to that found on the Denon's DN-2700F Pro DJ CD player for fast searching and precise cueing. Once a track has been selected, the MD player's Auto Cue function cues it to the point where audio starts, rather than where the track starts. Up to five cue points can be assigned to each track for quick searching, and up to 25 tracks can be sequentially programmed for track-by-track or continuous play. For more information, contact Denon Electronics, 222 New Road, Parsippany, NJ 07054. Tel: 973-575-7810. Circle EQ free lit. #104.

## TWO FROM NEOTEK

Designed for recording, post, and broadcast applications, the Neotek Elite II offers 24 multitrack busses, two stereo busses, and 32 aux busses at mixdown. Frame sizes accommodate up to 96 inputs. Signal routing includes Neotek's Dual Channel Architecture, with two discrete audio paths per input module, controlled by separate channel faders. For further flexibility, the channel high-pass filter, patchbay, insert point, and 4-band parametric EQ may be independently assigned to either path. Channel output signals can be routed to the multitrack busses, which include a second stereo bus, or to the main stereo mix bus through a logic-controlled mute function. A new Multimedia Module provides full monitoring in multichannel LCRS or 5.1 channel environments. Prices for the Elite II start at under \$50,000 for a 32-input configuration; a 64-input model is \$90,000. The Neotek Elan II Series (pictured) is a scaled down version of the Elite II, designed mainly for use in smaller production suites. Using the same components, quality frame and interconnect system, the Elan's architecture is pared down to 24 multitrack busses, 4-band sweep EQ, in-place solo and up to 30 aux busses. Prices start at around \$29,000 for 32-input configurations. For more information, contact Martinsound, 1151 West Valley Blvd., Alhambra, CA 91803-2493. Tel: 626-281-3555. Circle EQ free lit. #105.



## DIG IT

New from LA Audio is the DigEQ, a programmable graphic and parametric EQ. It features simultaneous graphic and parametric equalization, sweepable high- and low-pass filters, shelving EQ, compressor/limiter, and noise gate. Options include dual channel slave units, a choice of wired or wireless remotes, RTA, digital delay, and digital I/O. For more information, contact LA Audio, 6-24 Southgate Road, London N1 3JJ, England. Tel: 44-0-171-923 7447. Web: www.laaudio.co.uk. Circle EQ free lit. #106.

# EQ PRODUCT VIEWS

## AMPS TO SPARE

**T**he AX2 is the flagship Digital Guitar Amplifier System from Line 6 — a combo amplifier with built-in stomp box and rack-style digital effects. This 100-watt stereo combo features 28 TubeTone™ Amp Models that emulate the sounds of an all-star collection of classic guitar amplifiers. The AX2 features an expanded set of effects, interface improvements, and a set of 256 preset amplifier-and-effects setups stored in memory. The AX2 includes new and improved versions of all of the original Amp Models of the FlexTone Series, plus three additional models not available in the FlexTones. For more information, contact Line 6, 11260 Playa Court, Culver City, CA 90230. Tel: 310-390-5956. Circle EQ free lit. #107.



## CROWN'S ACHIEVEMENT

**T**he new CP660 6-channel power amplifier from Crown has a 75-watt average power output per channel that makes it the ideal amplifier for a variety of surround-sound uses. Rear-mounted controls and connectors on the CP660 minimize the chance of unauthorized changes and provide a clean look for the front panel. The CP660 has been constructed using graded, high-current metal transistors and other quality components. Each amp is backed by Crown's three-year, no-fault warranty, which guarantees the amplifier is covered no matter what. For more details, contact Crown International, 1718 W. Mishawaka Road, Elkart, IN 46517. Tel: 800-342-6939. Fast Facts Fax: 800-294-4094. Web: www.crownaudio.com. Circle EQ free lit. #108.

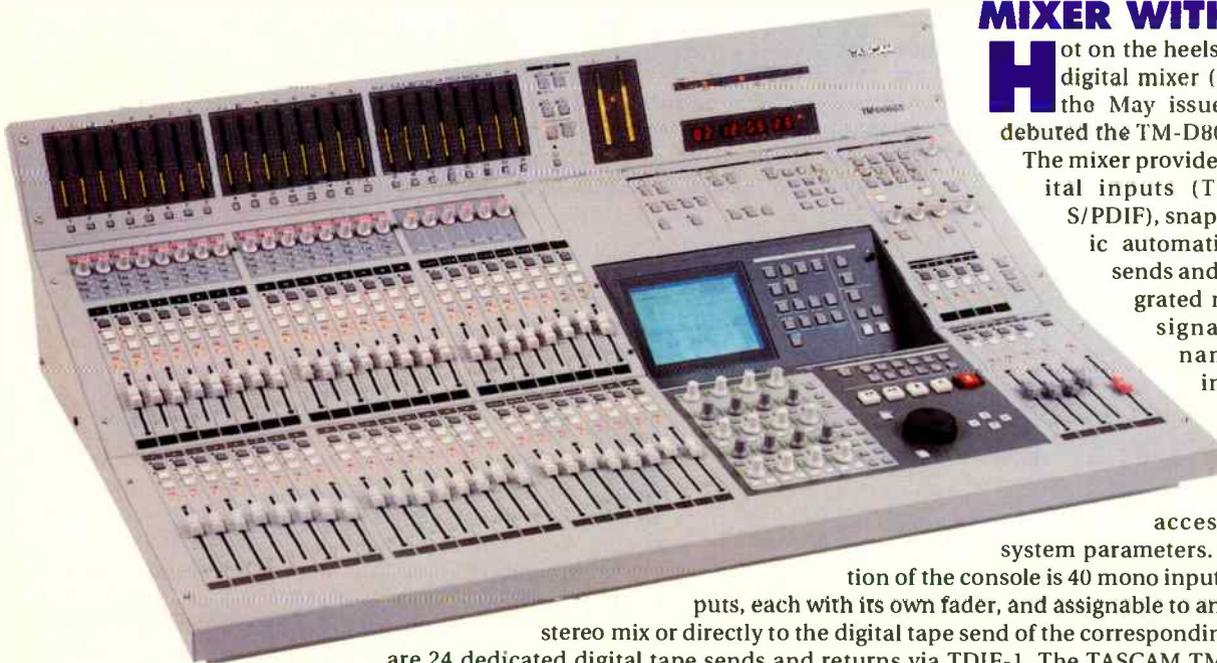


## MIXER WITH MORE

**H**ot on the heels of its TM-D1000 digital mixer (see First Look in the May issue), TASCAM has debuted the TM-D8000 digital mixer. The mixer provides a variety of digital inputs (TDIF, AES/EBU, S/PDIF), snapshot and dynamic automation, digital AUX sends and returns, an integrated meter bridge, assignable digital dynamics, and an intuitive "control pod" with a variable contrast LCD display for rapid access to numerous

system parameters. Basic configuration of the console is 40 mono inputs and 6 stereo inputs, each with its own fader, and assignable to any of the 8 busses, stereo mix or directly to the digital tape send of the corresponding channel. There

are 24 dedicated digital tape sends and returns via TDIF-1. The TASCAM TM-D8000 also implements MIDI Machine Control. Suggested retail price of the TM-D8000 is \$9999. For more information, contact TASCAM, 7733 Telegraph Road, Montebello, CA 90640. Tel: 213-726-0303. Web: www.tascam.com. Circle EQ free lit. #109.



# EXPERIENCE THE WARMTH OF AKG'S SOLIDTUBE MICROPHONE.

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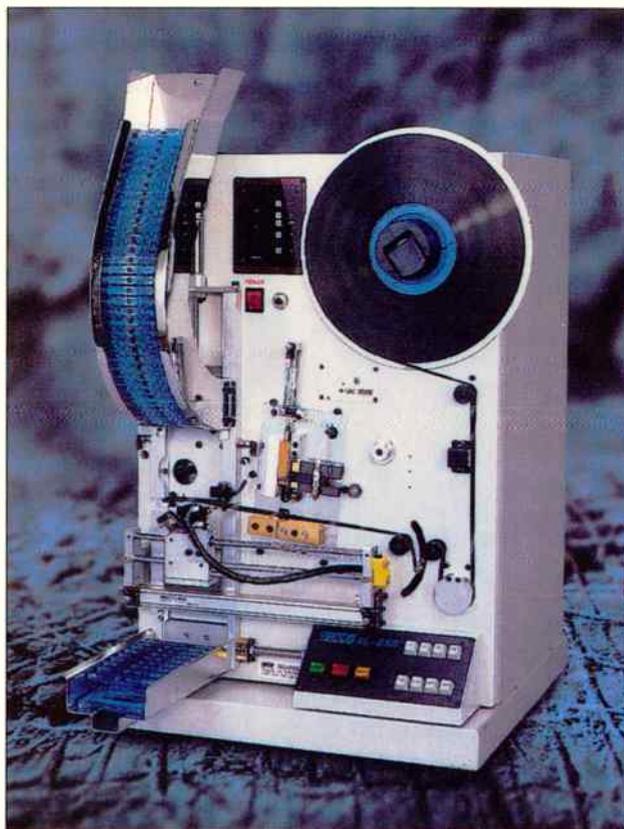
# EQ PRODUCT VIEWS

## ANALOG LIVES

**T**he Studer A827 is a 24-track analog deck with a variety of features, including a fast transport with microprocessor-controlled DC capstan motors. The A827 also offers three tape speeds for its 14-inch reel capacity, switchable onboard Dolby HX Pro, and menu-controlled input for all operating parameters. For more information, contact Studer U.S.A., 1449 Donelson Pike, Nashville, TN 37217. Tel: 615-399-2199. Circle EQ free lit. #111.

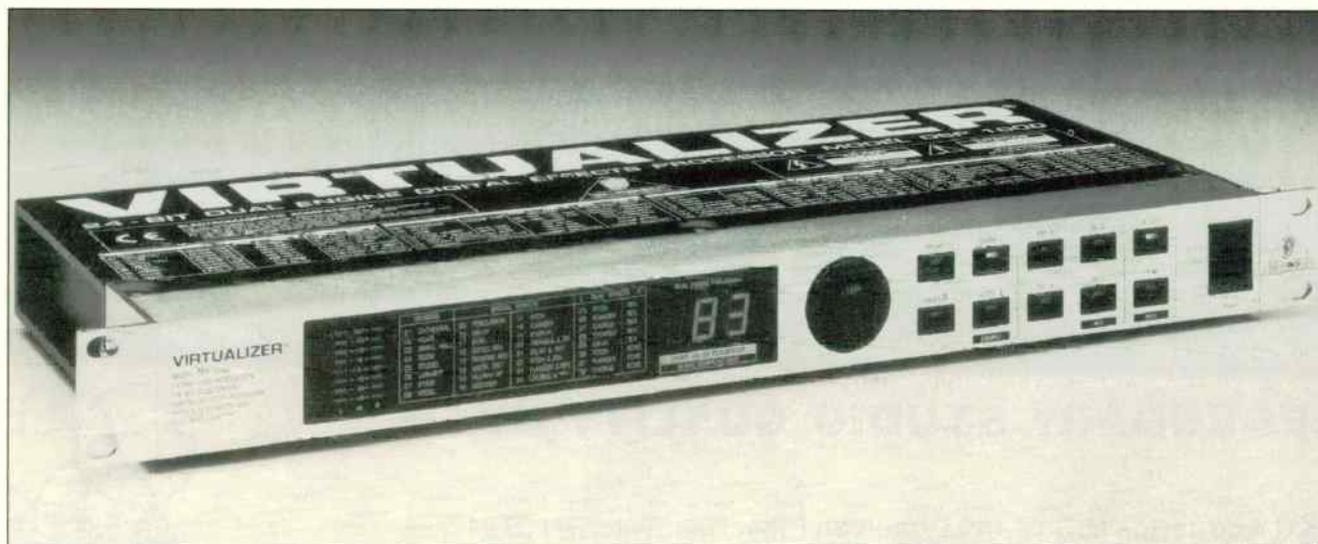
## DON'T FORGET TAPE!

**W**ith dropping CD-R costs, the days of the cassette demo may be over. Hoping to turn back that tide, Otari has released the AL850, which can turn your table top into an automated audio cassette loader. The unit is capable of loading 220 blank or pre-recorded cassettes per hour. The AL850 can load up to four C-60 tapes a minute. Operators can relax while the microprocessor controlled, automatic In-feed buffer feeds tape through hardened precision tape guides to user defined pre-set perimeters for consistent quality loading. The AL850 measures in at 20 inches wide x 29 inches high x 20 inches deep and weighs 75 kg. For further information, contact Otari Corporation, 378 Vintage Park Drive, Foster City, CA 94404. Tel: 650-295-2286. Web: [www.otari.com](http://www.otari.com). Circle EQ free lit. #110.



## VIRTUALLY YOURS

**E**quipped with up to 900 effect variations, the Virtualizer DSP 1000 from Behringer is distinguished by natural-sounding acoustic reverb algorithms. The Virtualizer uses a 24-bit DSP with dual processing engines to produce 32 new algorithms with both parallel and serial processing available from both engines for "virtual rooms," special effects, and combinations. Effects include different reverbs, tremolo, chorus, flanging, stereo delays, a powerful vocoder, and more. Additional hi and low shelving EQs can be used to fine-tune every effect. Edits can be stored in a bank of 100 user memories. The Virtualizer includes 20-bit A/D and D/A converters and a professional 48 kHz sampling rate. Suggested retail list price is \$219. For more information, contact Samson Technologies Corp., P.O. Box 9031, Syosset, NY 11791-9031. Tel: 516-364-2244. Web: [www.samsontech.com](http://www.samsontech.com) or [www.behringer.de](http://www.behringer.de). Circle EQ free lit. #112.



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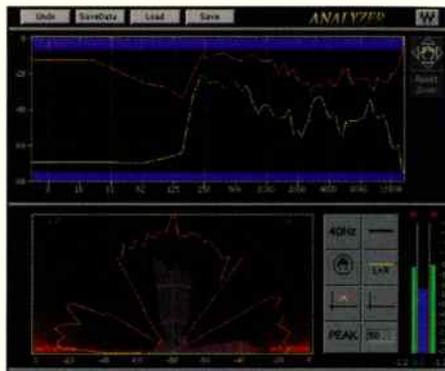
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# EQ STUDIO WARE

## ALL THAT PAZ

The Waves PAZ Psychoacoustic Analyzer Plug-In for native Macintosh platforms including Adobe Premiere, Steinberg VST, and DirectX provides accurate visualization of psychoacoustic experiences and contains three modules: Frequency Analysis, Stereo Position Display, Loudness/Peak Meter. The PAZ was previously available for use with the Waves MultiRack program, Digidesign Pro Tools TDM (NuBus/PCI), and Sound Designer II (NuBus). The RTA is from 0 to -80 dBFS, with unweighted, C- and A-weighting options. Cost is \$100. For more details, contact Waves, 6716 Central Avenue, Suite 8, Knoxville, TN 37912. Tel: 423-689-5395. Web: [www.waves.com](http://www.waves.com). Circle EQ free lit. #113.



## DOUBLE DIGITAL WORKSTATIONS

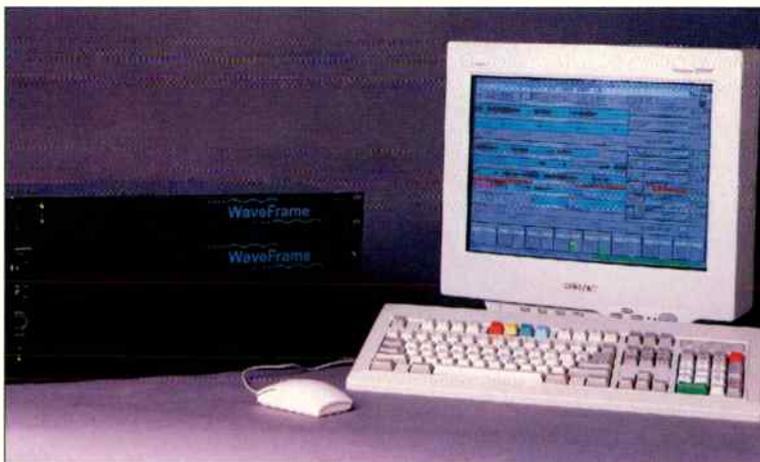
Interactive Microsystems' DST2000 and IMI2000 are complete multitracking and mastering digital audio workstations. The DSR2000 comes standard with 8 ins and 8 outs, 9.1 GB HDD, CDR/RW,



and all the software. The DSR2000 can be expanded to 24 ins and 24 outs. The IMI2000 is a complete mastering digital audio workstation with stereo digital inputs, 9.1 GB HDD, CDR/RW, and all software. These digital audio workstations start for under \$6000. For more information contact IMI at 34 Brandywine Rd., South Barrington, IL 60010. Tel: 847-426-1950. Web: [www.imdaw.com](http://www.imdaw.com). Circle EQ free lit. #115.

## CLEAN UP WITH 408

WaveFrame's 408 Plus is a new digital audio workstation that offers seamless compatibility with TASCAM's new MMR-8 recorder. The new 408 Plus provides playback of eight audio tracks from a single SCSI bus, which reduces the number of drives and connections needed, thus reducing overall system size, bulk and complexity. WaveFrame 408 Plus is based on the latest generation of fast Pentium processors for increased editing speed and enhanced real-time control. A new software package (v6.2) provides OMF 2.01 file compatibility, support for optional multichannel digital VO, and import/export filters for WAV, AIF and SDII file formats. For more information, contact Advanced Systems Group, 5447 Telegraph Avenue, Oakland, CA 94609. Tel: 510-654-8300. Circle EQ free lit. #114.



## PLUG IN, TURN ON

MSoft's M&E Pro Intranet is an easy-to-use upgrade to M&E Pro, and offers online sound effects and music searching, auditioning, and transferring using Internet browsers. M&E Pro Intranet is a client-server software/hardware package based on Microsoft NT server technology for the server side, with Ethernet network connection and Netscape Navigator or Microsoft Explorer browsers. Features include central database library for all sound effects and production music, cross-platform software to operate on PC, MAC, or UNIX workstations, low resolution samples for auditioning of commercial CD libraries, high-resolution audio downloading in any sound file format, online connection to central database libraries over phone lines, upload sounds to Digital Audio Workstations, and automatically record onto hard disk in AIFF SDII, WAV, and other sound file formats. For more information, contact Gefen Systems, 6261 Variel Avenue Suite C, Woodland Hills, CA 91367. Tel: 818-884-6294. Web: [www.gefen.com](http://www.gefen.com). Circle EQ free lit. #116.



Four-track digital recording

ATRAC  
version 3.1

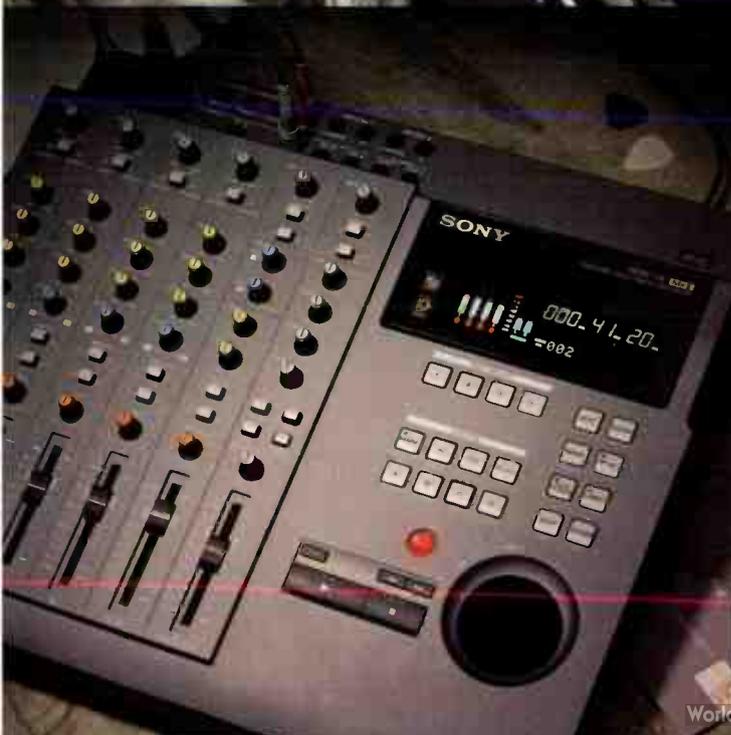
Wide linear  
frequency  
response  
100%

100% linear  
track spacing

100% linear  
pitch

100% linear  
pitch  
control

On the road with  
Davey Johnstone and John Jorgensen,  
the red lights always mean go.



Sometimes it's hard to tell where the road ends and a song begins. That's why Davey and John are recording every chance they get during their world tour with Elton John. Their new acoustic release is going from the Sony MDM-X4MKII MiniDisc multitrack direct to CD. "The editing features make the possibilities endless," says John, "but the sound quality was really the determining factor for this project." Hear what the Sony MiniDisc multitrack recorder can do and you'll be running some red lights, too. And to find out more about their new CD, Groovemasters Vol. 2, visit [www.acousticmusicresource.com](http://www.acousticmusicresource.com).

To get a  
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sampler of their  
MiniDisc  
recording call  
1-800-635-SONY  
ext. MD

[www.sony.com/proaudio](http://www.sony.com/proaudio)

**SONY**



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Each I/O interface configurable to ADAT® or SPDIF optical Full Windows® audio drivers for PC plus Cubase VST™ drivers for Macintosh® & PC, so it works with your existing software Independent 1/4" stereo monitor/headphone jack Real-time stereo sample rate conversion

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Optional STUDIO/O-Sync Backplate for sample-accurate punch capabilities

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CIRCLE 94 ON FREE INFO CARD

# EQ STUDIO WARE

## WAVES OF WARMTH

WaveWARM software is designed to add the warmth and richness of analog recording and vacuum tube amplification to PC digital audio files. WaveWARM incorporates proprietary digital audio algorithms developed by Acoustic Information Processing Labs. A complete set of audio parameter sliders allows you to tailor and fully customize the warming effect. For more information, contact Gadget Labs, 333 SW 5th Ave., Suite 202, Portland, OR 97204. Tel: 503-827-7371. Web: [www.gadgetlabs.com](http://www.gadgetlabs.com). Circle EQ free lit. #117.

## PLAYWRITE WRITES RIGHT

Microboards is offering two enhanced dual-function Rewritable CD-R packages that will allow Windows 95 and Macintosh users to record "permanent" CD-Rs in 4X speed on regular CD-R media and to re-record up to 1000 times using 2X speed rewritable media. Priced at \$749, the PlayWrite 4000RW is an external drive with a SCSI interface. Also priced at \$749, the PlayWrite 4001 RW is an internal drive with an ATAPI interface. For more information, contact Microboards, 1480 Park Road, Suite B, P.O. Box 846, Chanhassen, MN 55317. Tel: 612-470-1848 or 800-646-8881. Web: [www.microboards.com](http://www.microboards.com). Circle EQ free lit. #118.



## IN NUENDO

Steinberg's NUENDO for Silicon Graphics Computers combines native audio processing with EQ, real-time effects, VST-compatible plug-in architecture, and up to 256 tracks of digital audio plus MIDI recording and editing into an easy to use application. Audio can be recorded, processed and played back in any desired professional format: 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz and 16-, 20-, or 24-bit. Audio processing is performed entirely with floating point accuracy. NUENDO also includes extensive automation features with graphical editors, advanced synchronization options including MTC and LTC master/slave, and, yes, NUENDO has MIDI. For more information, contact Steinberg, 21354 Nordhoff St., Suite 110, Chatsworth, CA 91311. Tel: 818-993-4161. Web: [www.us.steinberg.net](http://www.us.steinberg.net). Circle EQ free lit. #119.



Tom Size  
Tomland  
Pacheco, CA 94553  
(925) 825-8677  
(925) 825-8692 fax

5/18/98

To Antares Audio Technologies:  
Brian,

Thanks for the use of the ATR-1 rack. This units works so well it should come in different flavors and have a hole in the middle, it is truly a life saver.

When tracking vocals I have been using a Soundlux U-95 tube mic into a Amek 9098 Mic-Pre/EQ with Focusrite Red 3 Compressor. It's a real clean, clear vocal chain, one of the cleanest I have ever used. Using the ATR-1 on this track I felt as though I did not lose any quality, the clarity remained. The ATR-1 took an otherwise uncomfortably out of tune vocal and turned it into a great vocal performance. It saved the record. Thank you.

Sincerely,  
Tom Size

RECEIVED MAY 18 1998



We were just finishing up the flashy introductory ad for our new ATR-1 real-time pitch corrector, when this unsolicited\* letter came humming out of our fax machine. (Tom, in case you don't know, has been engineer on projects for artists as varied as Aerosmith, Joe Pass, Mr. Big, Steve Miller and many more.) Since a letter like this is the sort of thing our marketing people usually only dream about, they insisted we share it.

Be sure to check back next month for our "real" ad. The photo came out great and we think you'll really like it.

\*Honestly! In fact, that's Tom's real phone number up there. Feel free to give him a call and ask him about the ATR-1.

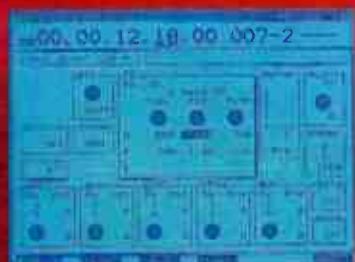


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CIRCLE 95 ON FREE INFO CARD



See all track and input parameters with the push of one button including routing for all 12 output busses, V-tracks and EQ settings.



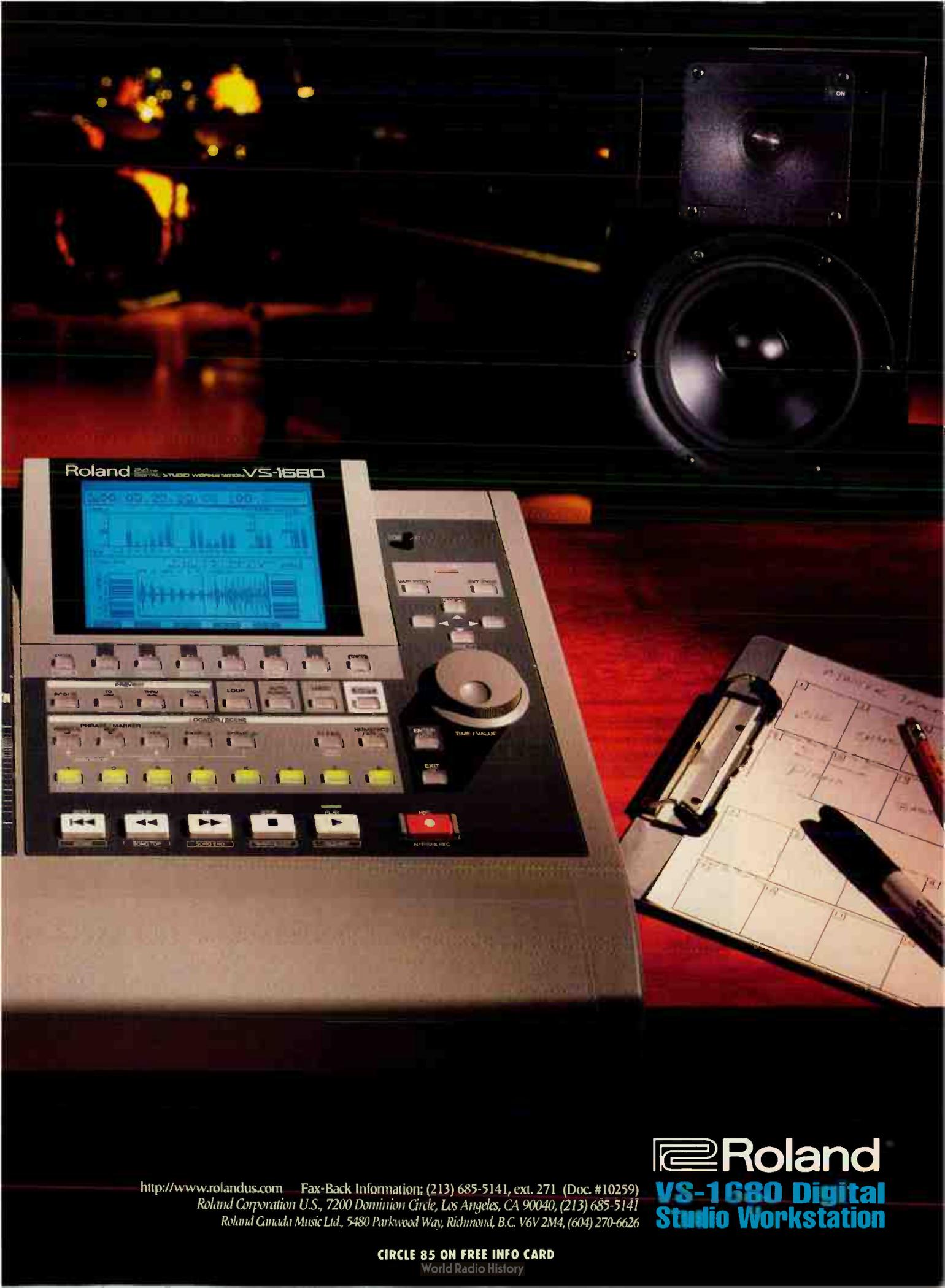
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\* With two optional VS8F-2 Dual Stereo Effect Expansion Boards



Roland **VS-1680**

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**Roland**  
**VS-1680 Digital**  
**Studio Workstation**

**CIRCLE 85 ON FREE INFO CARD**  
World Radio History

# Going to Xtreme

This New Jersey-based postproduction studio is on the right (sound)track

**STUDIO NAME:** Xtreme Medium

**LOCATION:** Ridgewood, NJ

**MAIN PEOPLE:** Darryl Kubian, owner/composer/engineer (inset photo); Naomi Freshwater, assistant engineer/performer

**PROJECTS RECORDED:** Soundtracks include National Geographic's CBS Saturday morning series *Really Wild Animals*, *Tales from the Wild*, *The Rise and Fall of the Soviet Union*, and *Living Fossils*; Pangolin Pictures Discovery channel series *Jaws and Claws* and *Fatal Destiny: The story of the USS Indianapolis*. Upcoming audio projects include Kubian's own solo CD, featuring the Zeta 5-string MIDI violin and a host of vintage guitars.

**CREDITS:** Kubian is First Violinist with the New Jersey Symphony Orchestra and Principal Second Violin of the Brooklyn Philharmonic.

**CONSOLE:** Yamaha 03D w/AES I/O card  
**RECORDERS:** HHB CD Recorder; TASCAM 112 cassette deck

**KEYBOARDS:** Korg Trinity, T2 EX, Wavestation A/D and SR; Roland JV 1080 and 990; Yamaha tx81z and VLM70; Alesis D4; Kurzweil K250.

**SAMPLERS:** Digidesign SampleCell II TDM; Synclavier Rev L software with original keyboard

**MONITORS:** Genelec 1032A's; Yamaha NS-10's; Optimus A/V Speakers; Panasonic TV monitor 2-inch speaker.

**COMPUTERS & SOFTWARE:** Macintosh 9600/233 w/Pro Tools III hardware, 4.1 software; Quadra 950 with Sound Designer II hardware and software (used

for mixdowns and DAT DDS-2 data backup over Ethernet), Opcode StudioVision Pro, Galaxy, Recycle, Jam, and many TDM plug-ins.

**DAT MACHINES:** Sony PCM-7030 and TCD10-Pro

**SYNCHRONIZER:** TimeLine MicroLynx

**VIDEO EQUIPMENT:** Sony BVU-800; Tektronix Waveform/Vectroscope; Skotel LTC/VITC burner/insertter; Hotronics TBC; Digidesign Video Slave Driver; Horita blackburst

**OUTBOARD GEAR:** TC Electronic Finalizer; Roland R-880; Lexicon PCM70; Ensoniq DP4; Drawmer Comp/Lim; TL Audio tube comp/mic pre

**MICROPHONES:** Neumann U87 [2] and KM 184; AKG 414 [2]; Crown CM700

**ALTERNATE MIDI CONTROLLERS:** Zeta 5-string MIDI/electric violin; Drum KAT 3.5; Yamaha WX5

**EQUIPMENT NOTES:** The Yamaha 03D's stellar sound quality, total recall, and dynamic automation has allowed me to tackle many diverse projects simultaneously. Being able to store the mixer state with the synth patches for an entire project in Galaxy+ gives me extra time to experiment with the added confidence of repeatability.

Of course, my Zeta violin is a con-

stant inspiration since it acts as a natural extension of my acoustic fiddle. Every time you change preamps, synth patches, or effect settings, you are redefining the violin's sonic capabilities in the same way that an instrument maker would select a fine grain of wood or internal dimensions. The idea of altering the sound after it exits the output jack is what makes all electric instruments so exciting!

**STUDIO TIPS:** Don't be tempted to quantize everything to 100%. Most music grooves because events are happening ahead or behind the beat. If the way you played something feels right from the start, move on. Even if you're working in a techno/industrial style, the serial nature of MIDI dictates that no two events are really simultaneous, so moving dense MIDI tracks ahead or behind the beat in relationship to your other tracks will give the illusion of a super-tight rhythmic feel. 



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

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



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



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



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



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



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

# American D9AT

More volume at  
half the price  
(or so the  
literature says)

**MICROPHONE NAME:** American D9AT

**FROM THE COLLECTION OF:** Mike Sokol

**PRICE WHEN NEW:** \$45

**TYPE OF MIC:** Dynamic

**POLAR PATTERN:** Unidirectional

**FREQUENCY RANGE:** 60 Hz to 10,000 Hz

**OUTPUT:** Approximately .003 volts for a 1 bar sound pressure level

**IMPEDANCE:** 38,000 ohms

**DIMENSIONS:** 7 x 2.25 x 2.5 inches (height x depth x width)

**WEIGHT:** 2.5 pounds

**MIC NOTES:** This D9AT is one of several types of D9's that were manufactured by the American Microphone Company (Pasadena, CA). Its brother was the D9A, which was a low-impedance (50-ohm) version, and the mic was also available (on order) in 200-ohm and 500-ohm versions. American's literature for the D9AT touted it as having "30 percent more volume than any microphone at twice the list price." It was designed for use in public address and general sound system installations, as well as close-up vocal use. Although American did not publish a frequency response specification, they did publish a frequency response chart that showed the range mentioned above with a tolerance of about  $\pm 2$  dB from 100 Hz up to 10,000 Hz. The D9AT was supplied with a 25-foot cable and a locking Canon connector.

*Technical Data courtesy of James Steele.*



PHOTO BY EDWARD COLVER

Credits

*Let Love Rule*

*Mama Said*

*Are You Gonna Go My Way*

*Circus*

5

"I cut<sup>my</sup> latest album **5** entirely in Pro Tools... **NO** tape!"

– Lenny Kravitz

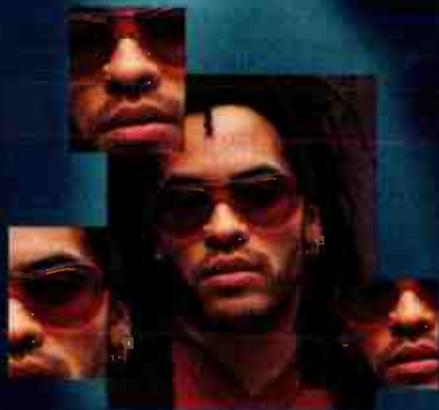
Lenny Kravitz refuses to be limited by his creative tools.

"I turned to Pro Tools, because I felt like a kid who needed more crayons to play with. Now anything is possible. I record everything into Pro Tools and have this tremendous palette to work with. It's all album-quality, so I can piece songs together and mix them however I like. There are no boundaries."

Wait a minute: Isn't Lenny, like, an analog guy?

"I can still run sound through my old tube equipment or use Plug-Ins like flange or some weird little filter. Any color that I want, I can get with Pro Tools. It depends on the record I want to make. Pro Tools is the future."

Lenny's finally found a box of crayons as unlimited as his imagination. Isn't it time you had the tools to expand yours?



For more information about Pro Tools and Third-Party Developer products, call 1.800.333.2157 ext. 367 for a free Pro Tools video, or to schedule a free demo.

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[www.avid.com](http://www.avid.com)

**LENNY KRAVITZ, ARTIST | PRODUCER | SONGWRITER**



# Frankfurt Musik Messe Highlights

The Messe may be over, but the product introductions remain...

BY CRAIG ANDERTON

As usual, the Frankfurt Musik Messe had plenty of new product introductions. Although we can't cover everything, here are some highlights. For more information, check out the various company Web sites.

**Digidesign:** Expanding on the original 882 I/O 16-bit audio interface, the 882120 8-channel audio interface (\$1375) provides 20-bit conversion. Other I/O includes two channels of 24-bit S/PDIF I/O and slave clock I/O. Analog connections are 1/4-inch TRS balanced and software-switchable between -10/+4 levels. Web: [www.digidesign.com](http://www.digidesign.com). Circle EQ free lit. #121.

**JoMoX:** The *Sunsyn* Analog Complex Wave Synth is a rack/tabletop unit that offers four complex oscillators per voice, configurable 4-pole analog filter (each pole has individually adjustable

1212 digital audio cards, giving 24 true ins and outs. Web: [www.korg.com](http://www.korg.com). Circle EQ free lit. #123.

**Kurzweil:** Kurzweil isn't the first company to let you route signals through a keyboard's effect processors, but the latest effects for the *K2500* sound excellent and have very low latency. If you're contemplating a keyboard for the studio, the FX alone just might tip you over to Kurzweil's side. Web: [www.youngchang.com/kurzweil](http://www.youngchang.com/kurzweil). Circle EQ free lit. #124.

**Lexicon:** Progress on the *Lexicon Studio* continues apace (fig. 1); ETA is now June. Meanwhile, the *PCM81* signal

processor builds on the *PCM80* with more onboard effects and algorithms, along with AES/EBU digital I/O. The pitch shifter options have been expanded to provide functions ranging from automatic pitch correction to special effects, and are tweakable for optimum quality given particular program material. Another new product, the *PCM91*, one-ups the *PCM90* with dual reverb and spatialization (surround sound) algorithms, as well as AES/EBU digital I/O. Web: [www.lexicon.com](http://www.lexicon.com). Circle EQ free lit. #125.

**Novation:** The *SuperNova* polyphonic rack-mount synthesizer emulates analog synth sound qualities and offers extensive controls. One interesting feature is that envelopes and LFOs are not generated digitally, which avoids "stair-step" control waveforms and creates an extremely

smooth sound. To simplify real-time operation, there are 28 knobs and 98 switches. All knob movements can be recorded via MIDI (arpeggiators and LFOs can also synchronize to MIDI clocks). Each of the 16 voices (optionally expandable to 32 voices) offers three oscillators, noise source, two ring modulators, multimode filter, etc. Web: [www.nova-uk.com](http://www.nova-uk.com). Circle EQ free lit. #126.

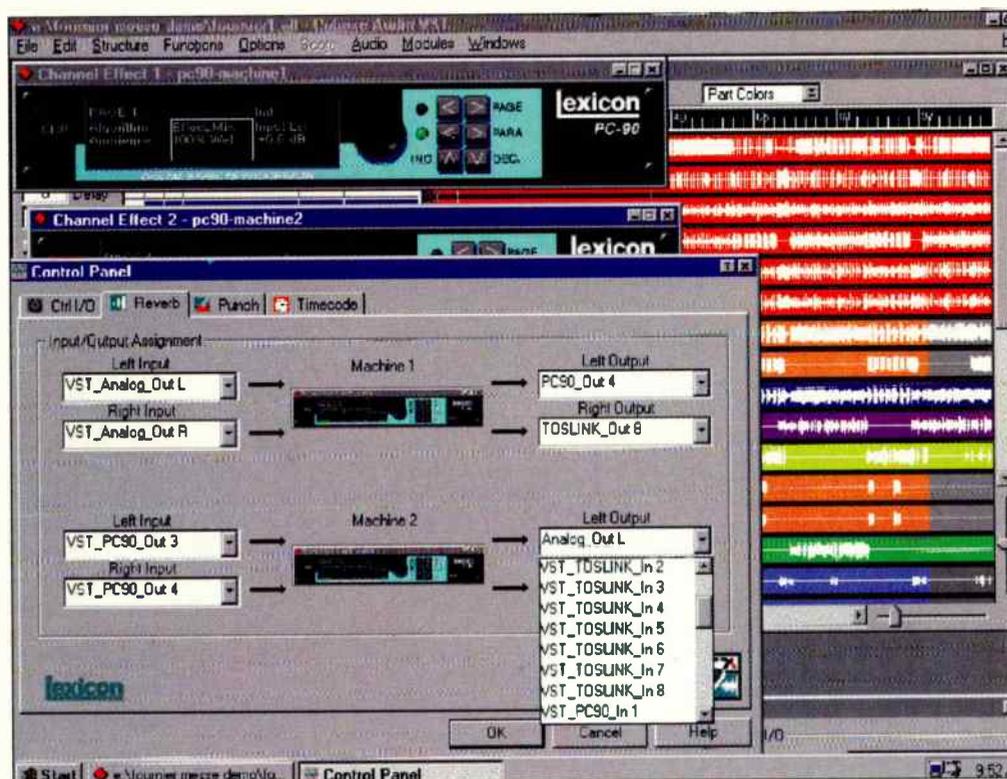


FIGURE 1: At Frankfurt, Lexicon's Studio was reading and writing multiple tracks with Cubase VST.

**Behringer:** The *Blue Devil GX 112* guitar amp is a 2-channel, 75-watt combo amp with a single 12-inch speaker. It features modeling technology to emulate different types of amp sounds, 3-band EQ, and a 24-bit internal signal processor with 20-bit converters and an effects loop. The 100 presets include effects such as reverb, delay, chorus, flanger, pitch shifter, etc. Web: [www.behringer.de](http://www.behringer.de). Circle EQ free lit. #120.

parameters), envelopes and LFOs, and all-analog modulation routing (which avoids the "roundoff" calculation errors that can occur with DSP). The user interface has 40 knobs for real-time control of crucial parameters, and which also send/receive MIDI data. E-mail: [jo-mox.mich@berlin.snafu.de](mailto:jo-mox.mich@berlin.snafu.de). Circle EQ free lit. #122.

**Korg:** New drivers are available for Cubase Mac that allow using two *Korg*

Opcode: If you need lots of MIDI I/O, the *Studio 128X* (\$429) is a cross-platform MIDI interface with eight independent MIDI Ins and Outs, OMS compatibility, SMPTE sync, and MIDI patchbay capabilities. Up to four units can be cascaded for 512 simultaneous MIDI channels. Web: [www.opcode.com](http://www.opcode.com). Circle EQ free lit. #127.

Red Sound Systems: The *Micro BPM* analyzes and calculates the tempo of any audio signal, then displays the tempo in BPM on a 4-digit LED. It also includes a headphone amp with 2-band EQ and stereo/mono switching. The *Voyager 1 Beat Xtractor* is similar, but analyzes two different audio inputs (with individual displays) and also generates a MIDI clock signal from one of the audio inputs. This is suitable for driving devices like the Roland MC303, E-mu Planet Phatt, QuasiMidi Rave-O-Lution 309, computer-based sequencers, etc. Very cool. Web: [www.redsound.com](http://www.redsound.com). Circle EQ free lit. #128.

Sek'd: The *ADDA 2496 S* is an inexpensive, 24-bit/96 kHz AD/DA converter that offers XLR connectors for audio inputs and outputs, XLRs for AES/EBU digital I/O, RCA connectors for S/PDIF digital I/O, four sample rates (44.1/48/

88.2/96 kHz), and claims a dynamic range in excess of 100 dB. Web: [www.sekd.com](http://www.sekd.com). Circle EQ free lit. #129.

Sonusus: The *A U D I / O AES/8* (approx. \$1000) provides bidirectional format translations and sample-rate conversion between TASCAM TDIF, ADAT light pipe, and four AES/EBU (switchable to S/PDIF) inputs and outputs. Clock selection includes internal 44.1 or 48 kHz; AES, ADAT, TDIF, and word/video; the TDIF and ADAT interfaces accommodate 24-bit word lengths. Web: [www.sonusus.com](http://www.sonusus.com). Circle EQ free lit. #130.

SPL: The *Transient Designer* is a 4-channel signal processor that accelerates or

slows down transients, as well as prolongs or shortens sustaining sections of audio. The effect is somewhat like compression, but seems to affect "punch" more than level. This is a processor that's tough to describe in print, but extremely interesting to audition. Web: [www.spl-electronics.com](http://www.spl-electronics.com). Circle EQ free lit. #131.

Steinberg: Steinberg will be licensing Apogee's *UV22 MasterTools*, a software



FIGURE 2: Trancemitter is a free plug-in — just download and go.

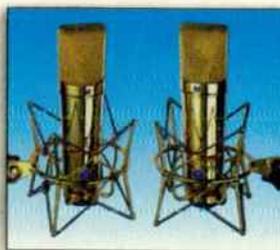
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1<sup>ST</sup>

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2<sup>ND</sup>

M 149 Tube Set



3<sup>RD</sup>

TLM 103 microphone



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Canada: Tel: 514-426-3013 • FAX: 514-426-3953 • Mexico: Tel: 52-5-639-0956 • Fax: 52-5-639-9482  
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CIRCLE 56 ON FREE INFO CARD

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CIRCLE 71 ON FREE INFO CARD

tool for mastering, which includes a high-quality word-length reduction system (e.g., translates 24-bit to 16-bit for CDs) along with "over" protection, logging against timecode, etc. Steinberg will continue to develop the TDM version for Pro Tools, as well as produce versions for VST, WaveLab, and DirectX. Also note: For a free plug-in, check the Steinberg Web site for *Trancemitter* (fig. 2), a Windows VST/WaveLab-compatible filter whose frequency and resonance can track amplitude changes or an internal, multi-waveform LFO. Web: www.steinberg.net. Circle EQ free lit. #132.

**TC Electronic:** The *TC UnitY* card plugs into an 02R expansion slot to provide M2000-quality reverb and other time-based effects (chorus, pitch change, delay, phaser, etc.) for approximately \$850. An 8-channel AES/EBU digital I/O connector is available for about \$300. Web: www.tcelectronic.com. Circle EQ free lit. #133.

**Waves:** *PAZ*, the Real-Time Psychoacoustic Analyzer plug-in, is now available for Mac native processing platforms, including Adobe Premiere and VST. Also, the *Renaissance* compressor, previously available only for TDM or Sound Designer II, is now compatible with Adobe Premiere, VST, and DirectX. Finally, three new plug-ins (3-band EQ, reverb, and compressor, all with low CPU overhead) have been added to the *EasyWaves* entry-level DSP bundle (compatible with DirectX for Windows and Adobe Premiere for Mac). Web: www.waves.com. Circle EQ free lit. #134.

**Wizoo:** This new media company publishes books and sample CDs. Books (approx. \$25) include a guide to the Kawai K-5000 (with a CD containing patches, a Logic environment, and SoundDiver-compatible samples). A similar guide to the Nord Modular includes a CD with over 100 patch examples and audio clips. A guide to Cubase VST is next.

Akai-format sample CDs (approx. \$50 each) include *T-Rex Vintage Sounds* (OB-8, Jupiter 6, Synergy, RMI Harmonic Synthesizer, etc.), *Hamburg Loops* (drum loops with variations and drum sets for each loop), and *Lofi Junkiez Vol. 1* (grooves from the Cologne underground). Roland and WAV format disks are also slated for introduction. Web: www.wizoo.com. Circle EQ free lit. #135.

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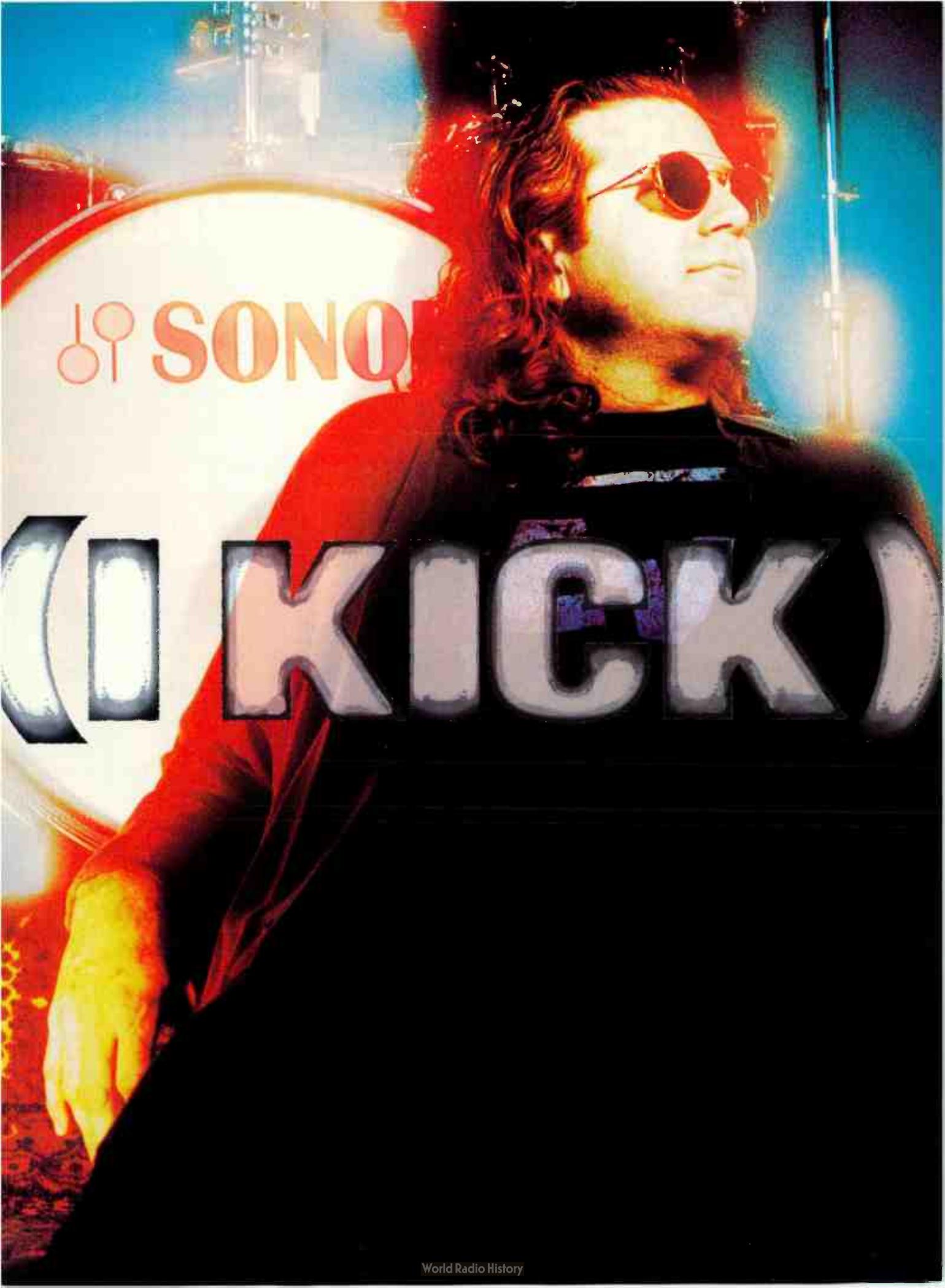


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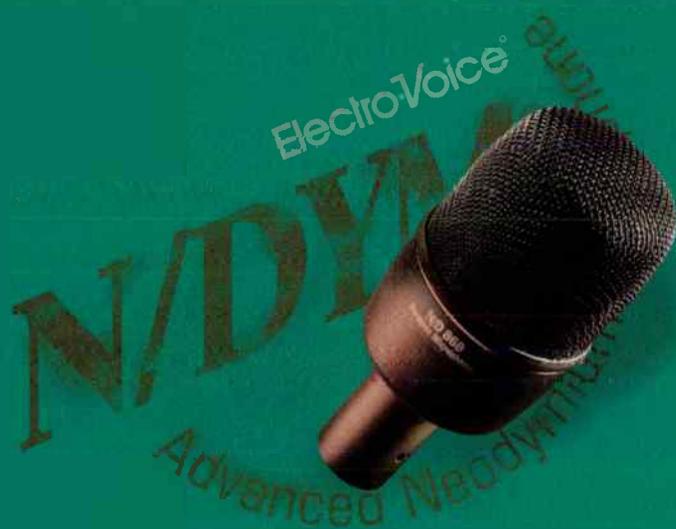
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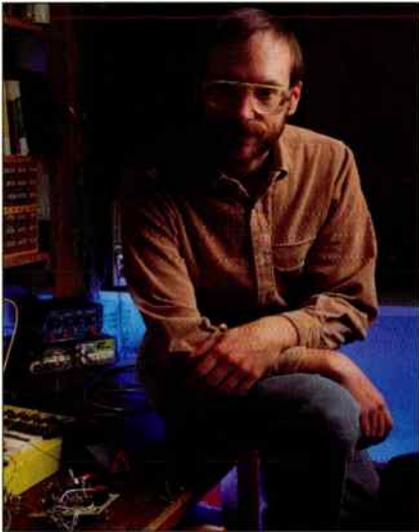
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World Radio History

# Why Do Fools Fall In Love?

How to avoid the typical pitfalls of the one-person songwriter/performer/producer/engineer



BY CRAIG ANDERTON

Technology has opened up many opportunities. The fact that one person can write, play, produce, record, master, and even duplicate music is unique to the late 20th century. But just because we *can*, does that mean we *should*? There's much to recommend human interaction, and the reality check that comes from a trusted associate who can give honest, objective feedback (and in the case of a producer or engineer, offload some of the left-brain activities from the artist).

So is being a solo (in all respects) artist an inherently flawed concept? Not necessarily, because doing all the tasks yourself is highly educational. Programming drum parts made me a better bass player. Producing myself forced me to be more objective, and engineering — well, I wouldn't have much to write about in *EQ* if I didn't engineer myself. And over the years, I've gotten

reasonably skilled at these arts. Sure, I'd rather have John Robinson do my drum parts, but you can't have everything.

The key to pulling off the difficult task of being a solo musician is *not to fall in love with your music*. Distance yourself from what you do, so you can make the kind of objective decisions normally reserved for the producer. Following are some tips on how to create "better music through detachment."

## THE RADIO FACTOR

A song's intro is crucial. If a radio station or A&R person doesn't like the first 10 seconds, you're through. They *might* listen to 10 seconds of your next cut, but don't count on it.

Here's a test for intros. Picture an office party filled with a variety of people, from the new mailroom guy to upper management. They're all a bit tipsy and chatting away, while the radio provides background music. A commercial comes on, followed by an announcer saying the station logo — "K-TONE, where the music still matters" — then they lead into your song. Picture this scene as vividly as you can in your imagination.

Try to put yourself in the position of one of the partygoers, then "look" around you. How do the people react? Do they stop talking and listen? Do they listen for the first few bars, then go back to conversing? Do they ignore it entirely? Is there something in the first few seconds to grab their attention and keep it? For your tune to be played on the radio, think of it in the context of radio play. It has to be able to segue from anything to anything, appeal to short attention spans, and be different. Doing this exercise can help clarify what needs to be done to make the song stand out more.

## GOT LIVE IF YOU WANT IT

My preferred way to test a song is to play it in front of an audience (preferably non-musicians). It's the quickest way to find out what connects and what doesn't. Then you can apply that feedback to improving the song.

These days I'm between bands, and don't have that opportunity. Also,

I throw basic songs together relatively quickly, so often the song has taken a crude shape before I've really thought about the best way to arrange it. To simulate the effect of playing a piece one-on-one to an audience, I go back to square one, pick up a single guitar or keyboard, and re-arrange the song for playing as a solo performer in real time.

Something good happens every time I try this. For example, in one song I had what I thought was a nifty little instrumental figure between the verse and chorus. It was not possible to duplicate with solo guitar, so I substituted an alternate chord pattern — which ended up being more compelling than the original, and, as a side benefit, could be played live.

Remember, songs used to be honed on the road and captured in the studio. Now songs are created in the studio, and re-created on the road. I really think this is backwards. There's no better preproduction than touring for six months before recording. As you work on a tune, always imagine that you're on stage, playing to an audience. It will make a difference in how the song develops.

## THE CLEVERNESS FACTOR

For me, the paramount lesson from doing years of studio work behind songs was that *everything* supports the lead singer. Your licks are there only to make the lead vocal more effective.

Many years ago, I came up with a lyrical, melodic bass part for a verse. It was composed in isolation, while waiting for the engineer to get a good snare drum sound, and I fell in love with the part. But played behind the vocal, it was too distracting. The producer told me to simplify the part, and I ended up playing something that any moron who had just picked up a bass could play. It was hard to let my clever bass part go, but the simpler version made a far greater contribution to the tune.

Many solo musicians lay down rhythm tracks, then put the vocals on top. Instead, try printing a click track, something to mark the chord changes, then immediately record a scratch vocal. Develop all other parts while playing along with vocal and imagine that you

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are playing behind an extremely good vocalist, who is also a prima donna with a nasty temper and hates studio musicians. Your goal is to come up with something that makes the singer look good.

**TIME HEALS ALL EGO**

One way to become more objective about your material is to let some time pass after recording the tune. What works for me is writing a song in the studio, finishing it as much as possible, then doing a rough mix. For the next several months I listen to the tune, play it for people, solicit feedback, cut a tape to take with me on trips, etc. Overall, this seems to have a similar effect as playing a song night after night.

Eventually, I recut the song, sometimes completely from scratch. At this point, the tune is drilled into my brain, so all the parts are more supportive to the lead, as well as to each other. Also, any parts that seemed a little "off" when I first cut the tune seem *incredibly* dumb after months of listening! This precipitates arrangement changes. Recutting provides an interesting combination of the old —

the song I've come to learn — with the newness of giving it a "new set of clothes." The elapsed time adds just enough emotional distance to increase objectivity.

**THE FINAL CUT**

Of course, all this assumes that you want to connect with an audience. But I don't necessarily advocate that. Creating music is, in the larger sense, about self-discovery, and that's the magical part. Even if I were told that I'd never sell another CD in my life, I'd still make music.

I feel there are only two ways to be successful. One is to be totally true to yourself and hope that the music you create strikes a chord in others as well. This usually creates the brightest stars with the longest careers, because there is no artifice. And if it doesn't "fit" with a mass audience, at least what you have is honest, and your friends will probably love it.

The other option is to carefully study past hits, cool chord progressions, pick lyrical subjects with wide appeal, etc., and craft tunes designed to appeal to specific demographics. I've known songwriters who take this approach, and while there

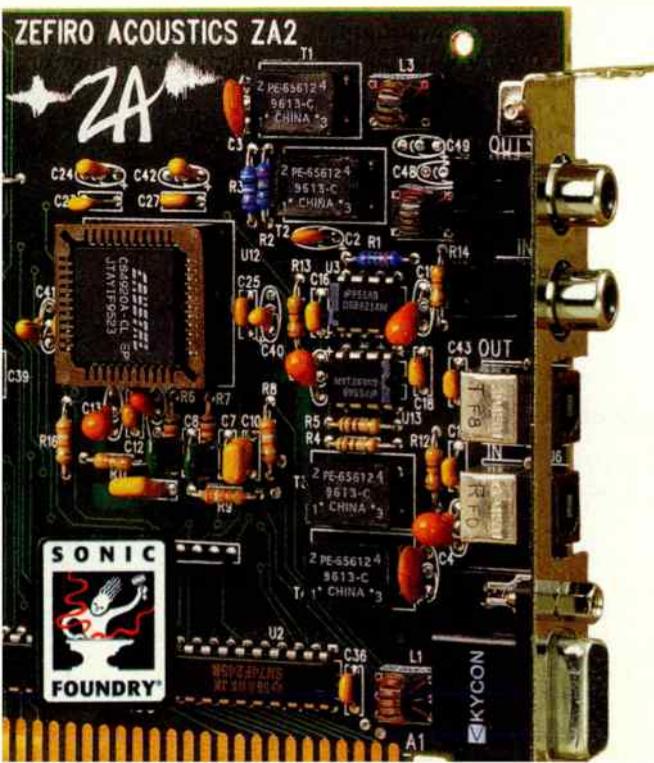
is always a kernel of soul in what they do, they approach writing more as a business than as art. That's fine too, and can lead to a comfortable, good-paying career without the drawbacks of fame.

I think combining the two approaches yields the best results. Let the artist in you create, then let the hard-headed, objective part of you produce and mix. This column has concentrated on what it takes to become more objective, but I don't mean to trivialize the creative factor. As in so many aspects of life, it's the synthesis of opposites that creates the best results. Go ahead, love your music — but don't be *in* love with it if you want to remain objective.

*Carbon-based life form Craig Anderton spends most of his life catering to the needs of silicon-based life forms. He also plays music, writes books (he's currently collaborating on a series of recording books with Jay Graydon), lectures around the world on technology and the arts, and spends as much time as possible immersed in water.*

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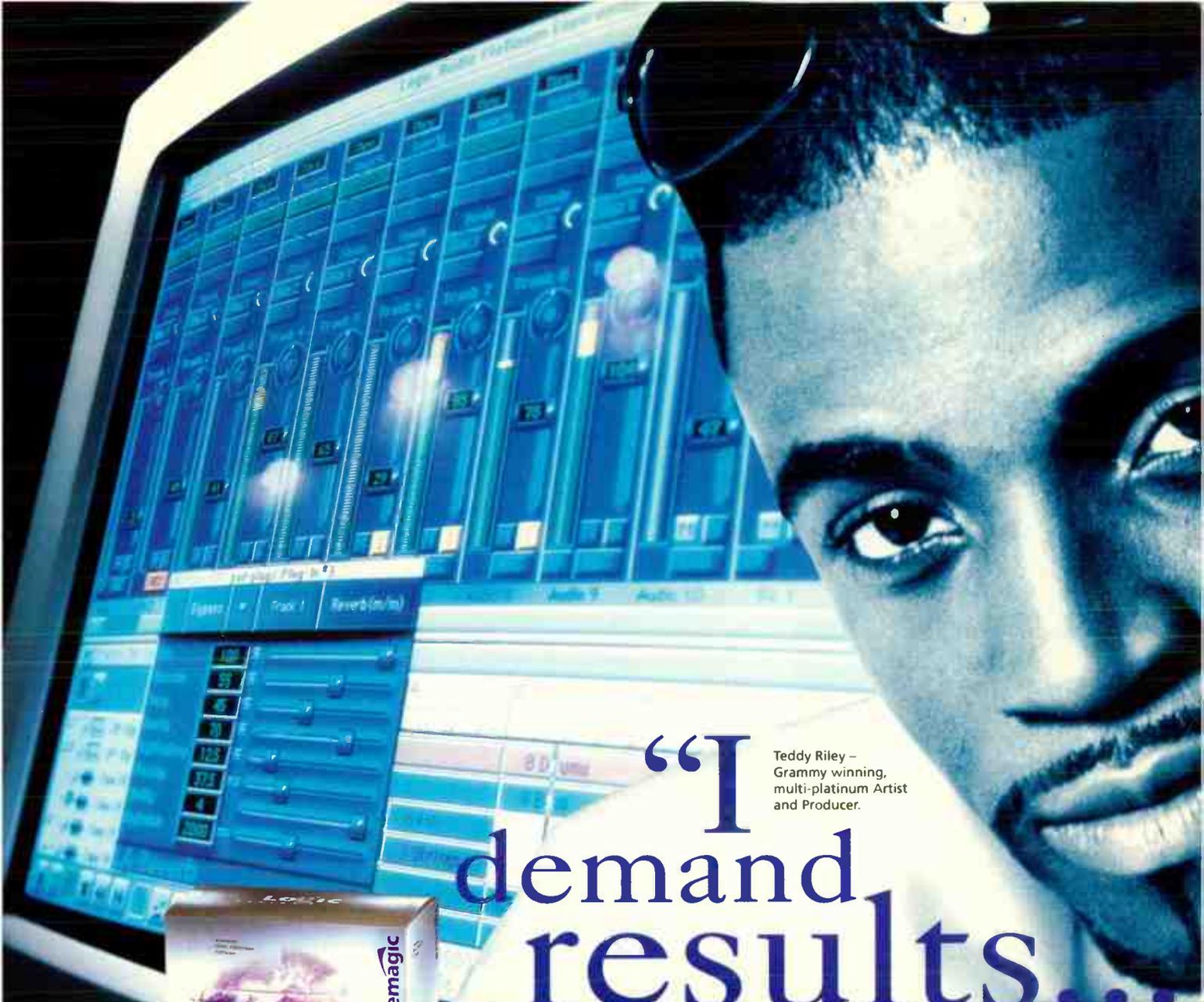
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World Radio History

# Striking A Blow For The Abused



PHOTO BY JIM HERRINGTON

Songwriter, producer, keyboardist, and, now, consumer advocate

BY AL KOOPER

Recently, I was scheduled to guest on a local morning radio show. They called in advance and asked if I would perform live on the show. There weren't many tunes in the repertoire that were possible to emote well at that time, since my visit was scheduled for 7 AM. I told them I wanted an 88-key Korg Trinity, which is basically what I have in my living room and is something I can depend on for any time of the day. It seems the radio station had a deal with the biggest music store in town and that they could supply me with a keyboard *if* I went over to the store the day before and picked one out.

The day before the show I arrived at said music store at 10:30 AM. I met someone from the radio station there and we were directed to the head of the keyboard department. As I glanced around, I happened to notice the exact keyboard I wanted just kinda sitting there calling out to me. I pointed to it and said as much. The head of the keyboard department, whom we

shall call Butch, cause that is as good a name as any for him (only one letter off actually) said, "No. We don't even own that keyboard. It's strictly a demo that is owned by Korg and we are not even allowed to sell it."

Undaunted by this explanation, I innocently asked, "I have a very strong relationship with Korg. If I call them and they say it's okay to release it for a few hours, would *that* be satisfactory with you?"

He quickly jumped into the fray, "Even if you did that, the computer wouldn't allow me to release it because it's a demo [shades of 2001!], he answered quite unhelpfully. Meanwhile, I'm thinking to myself: if Korg owns it and wants it back someday, will they have to destroy this store's computer to release it? Why wouldn't he try to steer me to another keyboard that might be satisfactory for me? While these thoughts are swerving around the windmills of my mind, this unhelpful Butch blurts out, "Ya know, I'm not making any money on this deal..."

Well, that explained *everything* to me, and I quickly replied, "Yeah, well thank you so much for your time," and the radio guy and I marched out of the store. As we stepped into the street, I asked Mr. Radio if he had a cell phone. He handed me his cell phone, and I quickly dialed up Korg in LawnGuyLand, New Yawk. The guy I was referred to, who wasn't the guy I normally dealt with, listened patiently to my story.

"What time do you want that keyboard at the radio station, Al?" he asked. "Six-thirty AM would be great, Joe," I replied expecting some hemming and hawwing. "Don't give it another thought, Al. It'll be there. Let me talk to the radio station rep and have a great show!" Joe was my hero.

I got in my car and drove home and that should have been the end of the story. But I was still rankled by the attitude of that salesman. Fortunately, he didn't know who I was, so I was treated like any other person walking into the store. That gave me a gauge of what sort of behavior I could expect the next time I walked in there. Well, there wasn't going to be a next time. That's all there was to that. Except...wait...didn't I have a clinic scheduled there in a few weeks?

Yes, damn it. Well, I *must* cancel that clinic. It's the principle, after all. I sat down at the computer and dashed off a note to

Butch to let him know I was not pleased about the situation. At the same time, I copied the head of Korg, the head of personnel at the store Butch worked in, the company I was doing the clinic with, and anyone else I thought would enjoy my note.

I complained about the fact that once Butch ascertained there was no money in it for him, he relegated my problem to the bottom of his priority list. I tried to strike out for every person who has walked into such a store and been treated like that. I then advised Butch that money wasn't everything and if he stepped back and realized that, his life would be enriched. I also canceled my clinic there as long as he was head of the keyboard department.

Shortly thereafter, the company I had canceled the clinic with called to say they had come up with a solution to the problem. If the only reason I was canceling the clinic was because Butch was employed by that store, then the clinic could proceed. The store had transferred him to another store in a god-forsaken part of the world effective immediately. Except for one thing: It wasn't my letter that had gotten him transferred! It was because he was the #1 keyboard salesman in the company and they wanted him in a new store they were opening. Coincidence? Perhaps.

I discussed this incident with one of my classes at The Berklee College Of Music where I teach. Butch was known to some of them, and they chose to do business with other salesmen there they could relate to. But when sales slips were drawn up, Butch would swoop in and take over the sale, much to the chagrin of my students and the other salesmen. "That's what you have to do to be the #1 keyboard salesman at that company," I explained to them with a grin on my face. The irony was not wasted on them. We also discussed the power of writing letters of dissatisfaction in that class. A few students had written to various companies explaining problems they had with various products and had always received prompt replies and new product in return for the old.

I'm going ahead with that clinic and I advise you all to pick up pen and paper and complain if you have a problem. Don't just sit there and take it. After all, this is America, where products can be replaced, Presidents can make whoopee, and children of bad parents can be wonderful people, if indeed, there is a son of a Butch. 

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World Radio History  
CIRCLE 20 ON FREE INFO CARD

# Danny Saber



PHOTO BY ED FREEMAN

The outspoken producer/remixer tells it like it is

BY MR. BONZAI

**Bonzai:** What is your main recording tool?

**Saber:** The Laminator.

**Is that a new processor?**

No. You laminate with it, you know? Fake IDs, backstage passes...

**What's your console of choice?**

I like these SSL 9000's for mixing and I have a Mackie in my project studio upstairs at Record Plant. That's where I work out my ideas and do my programming, preproduction.

**Do you have a lot of computer background?**

Not really. I started with a little RX-7

drum machine, a Juno 106, and a TASCAM Portastudio when I was a kid, back in '85. I got into doing tracks, and then I got a sampler — before anyone else in the neighborhood. That was hot. And I played guitar — I wanted to be Reeves Gabrels, David Bowie's guitarist.

**What are your main computer tools now?**

I'm using the Logic Audio sequencing program interfaced with Pro Tools. Digital audio with MIDI sequencing.

**What do you do in the little studio and how do you get it into the big studio?**

My main gig lately is the "fixer." I'm doing remixes, but even when I'm producing, I usually get some sort of demo or multitrack. Sometimes I just write and record the song from scratch. I record everything directly

into the Logic and Pro Tools, then chop it all up and arrange the song. Get all the programming, the beats and the loops, and all the keyboards happening. Get the skeleton of the song. Then I dump it onto multitrack and take it to a big room for the real overdubs: live drums, guitar, bass. Sometimes I'll go all the way in the project room and just

take it out and mix it. Depends.

**Do you do the engineering?**

I do the engineering in my room, but John X is the main guy for the finished

stuff. He's worked with me on Seal, the Stones, and Black Grape. John X is the anchor, which is kind of frightening to think about when you meet him.

**Stones, Bowie, Jesus Lizard, Marilyn Manson...why do they come to you?**

My manager tricks them into letting me work with them.

**You take a finished popular song and then alter it for a new audience?**

It could be anything. What we're doing tonight is taking an album cut — I played bass, keyboards, and guitar on the original release. The band has given it back to me to create a radio cut.

**When you slice and dice the song, what if the artist doesn't like it?**

Tough shit — they don't have to use it. Naw, it's not that extreme. The greatest thing about all this work is that you get to develop relationships and get to know people. In this instance, I know what the band wants and I have a feeling for what will fly. At the same time, I'm not afraid to go for it. That's what you gotta do sometimes — be unpre-

**Suspect:** Danny Saber

**Occupation:** Producer, Writer, Remixer, Guitarist, Programmer

**Birthplace:** Long Island, NY

**Childhood:** The Valley, LA

**Residence:** Hollywood

**Vehicle:** 1967 Firebird, BMW 328 Ragtop

**Distinguishing Marks:** Large red splotch on left shin. "It's migrating around my leg — I think I got it when I was abducted by aliens. That's when I really started getting creative."

**Location of Mug Shots:** Saber's room at Record Plant.

**Location of Interrogation:** Record One

**Cuisine:** Ribs

**Selected Credits:** Seal, Black Grape, U2, Rolling Stones, David Bowie, Public Enemy, Jesus Lizard, Garbage, Marilyn Manson, Megadeath, Madonna, Terrorvision, Monster Voodoo Machine.



PHOTOS BY MR. BONZAI

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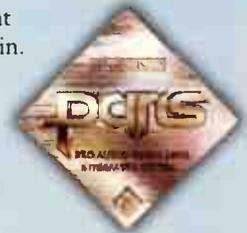
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**How much do you get paid?**

I get a fee to do a project. I don't want to talk about money, but let's put it this way — it's a lot. *[Laughs.]*

**OK, when it's done, they can't replace the track on the existing album. Where does it go?**

Well, sometimes they come to me before the record's done, so it does end up on the album. Sometimes my new versions end up on soundtracks, B sides, club mixes. This one is just for radio and may never come out commercially.

**Do you have a good manager?**

I have the best manager in the business:

Shannon O'Shea. She had the vision and was there when nobody else was. I'm her Frankenstein monster.

**Do you have a good lawyer?**

Yes. Shannon and I strike the deals and my lawyer makes it stick.

**Any preference between analog and digital?**

Not really. Analog sounds better, but other than that...

**Are you a hot dog or a hamburger?**

Hot dog.

**Any anecdotes about the Stones?**

Hmmm...so many.

**Did you get your skull ring from Keith Richards?**

No, but I showed it to him and told him I was ripping him off. He goes, "All right, baby," and slammed his skull ring right into mine. Bam!

**What about Marilyn Manson?**

Cool guy. He's dead normal.

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

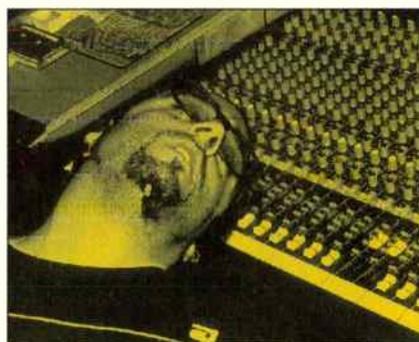
A dildo.

**What do you listen to while you're driving around?**

I like to listen to the sound of the engine roaring and the CD skipping.

**If you could go back in time, what would you like to hear?**

I'd like to go back to the '40s — those



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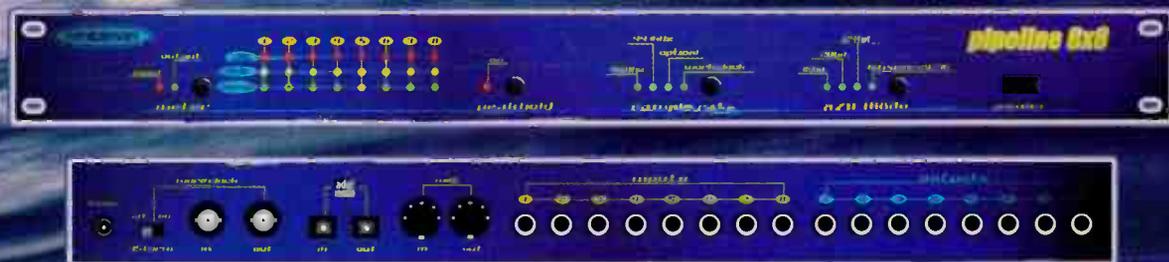
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jazz and blues musicians were the bomb.

**What's the first record you remember?**  
 "Yellow Submarine." And the Banana Splits and the Bugaloos. I still have my Bugaloos lunch pail.

**Is there anybody you'd like to meet?**  
 All the people I want to meet are dead: Jimi Hendrix, Charlie Parker...

**Do you know any good business tricks?**  
 Lying, cheating, and stealing — those are good business tricks. [Laughs.]

**What were you in your former life?**

I think I was some bird crap that fell on somebody's windshield while they were driving down the freeway.

**Have you ever witnessed a miracle?**  
 Yeah, me getting a job!

**What's the biggest mistake of your life?**  
 Too much information can be a bad thing.

**How would you like to be remembered in history?**

Just to be remembered at all would be nice.

**Do you have any irritating character-**

**istics?**

My whole personality is probably irritating. This is what I do. You're cool, Mr. Bonzai; you're a fun guy. We can hang out. But these tech magazines can get a little boring with all these dickheads sitting at their consoles! The kids see that and they think they gotta be a certain way — it kills 'em.

**What's your advice for a good start in the music business?**

Lubrication. It won't hurt as much when you get reamed. No, honestly — I've been pretty lucky. My nose isn't too brown.

**Can you share some recording secrets?**

This whole secret technique thing is a load of crap. It's all hard work; go with your instincts and have the balls to stand behind what you believe in. All the technical things will work themselves out. That comes with time in the studio. Get around some experienced people and steal -- uh -- learn from them.

**What kind of guitar do you play?**  
 I've got a '78 BC Rich "Bitch." Just got a '53 Les Paul "Gold Top." And I'm getting a Parker.

**What animal do you identify with?**  
 John X.

**Where do you want to be in five years?**  
 Right where I am now -- with more money.

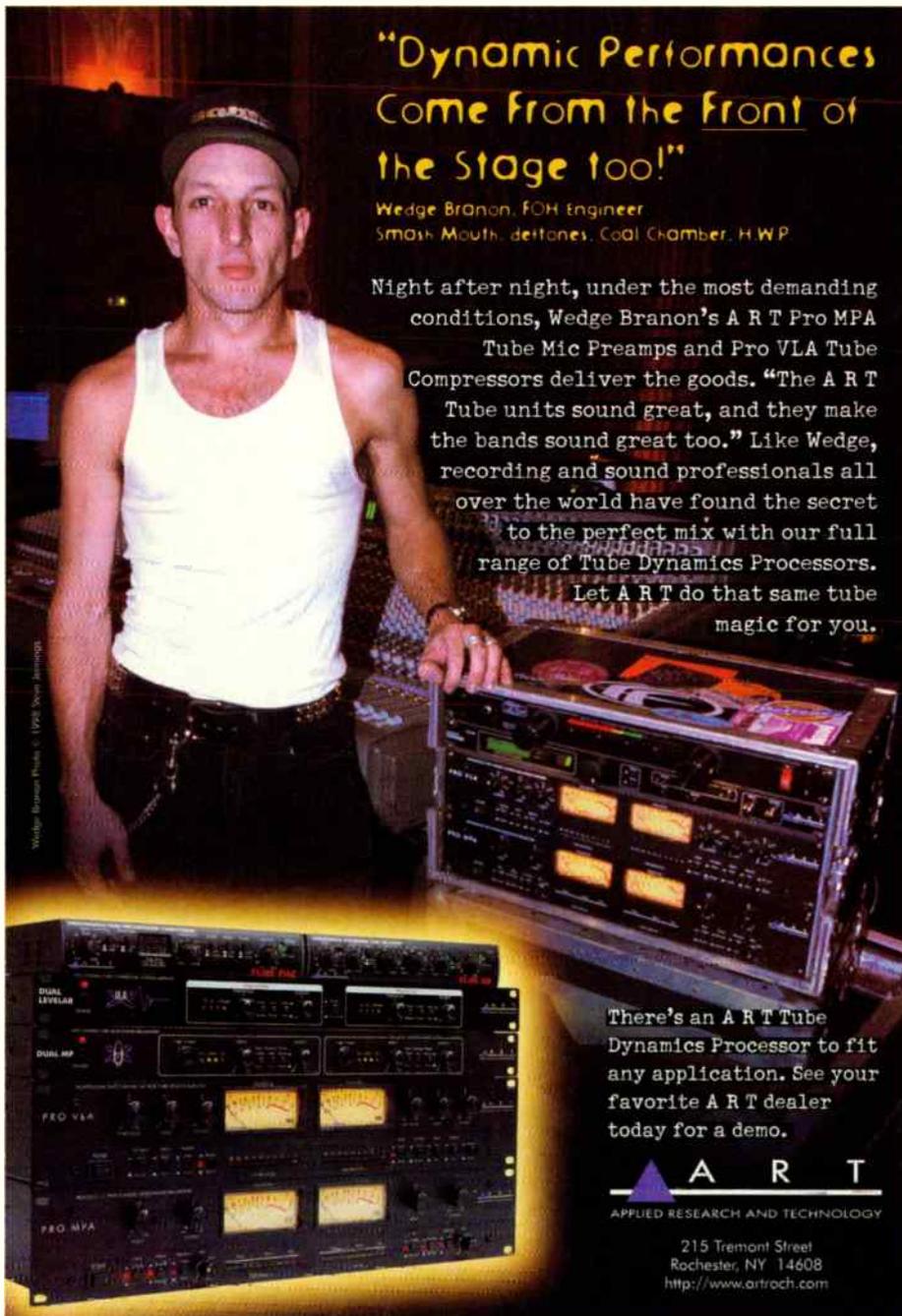
**What do you think of the new Music Producers Guild?**

Join up! I like [MPGA President] Eddie Cherney a lot, and if he's on to something, it's gotta be right. You know, in Europe, producers get royalties on videos and airplay. And some remixers, too. When I do a remix, I'm really rewriting the song. I've done a few where the band's tracks didn't do much, but the remix got on the soundtrack. The band right there got their money back that they paid me, and they keep all the publishing. I get paid, but it's like a buy-out. There are a lot of issues that the Producers Guild can fight for. 

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The advertisement features a photograph of Wedge Branon, a FOH engineer, standing next to a rack of ART audio equipment. The equipment includes a Pro MPA tube mic preamp, a Pro VLA tube compressor, and a Dual HP tube compressor. The background is dark with some stage lighting. The text is overlaid on the image in a yellow and white font.

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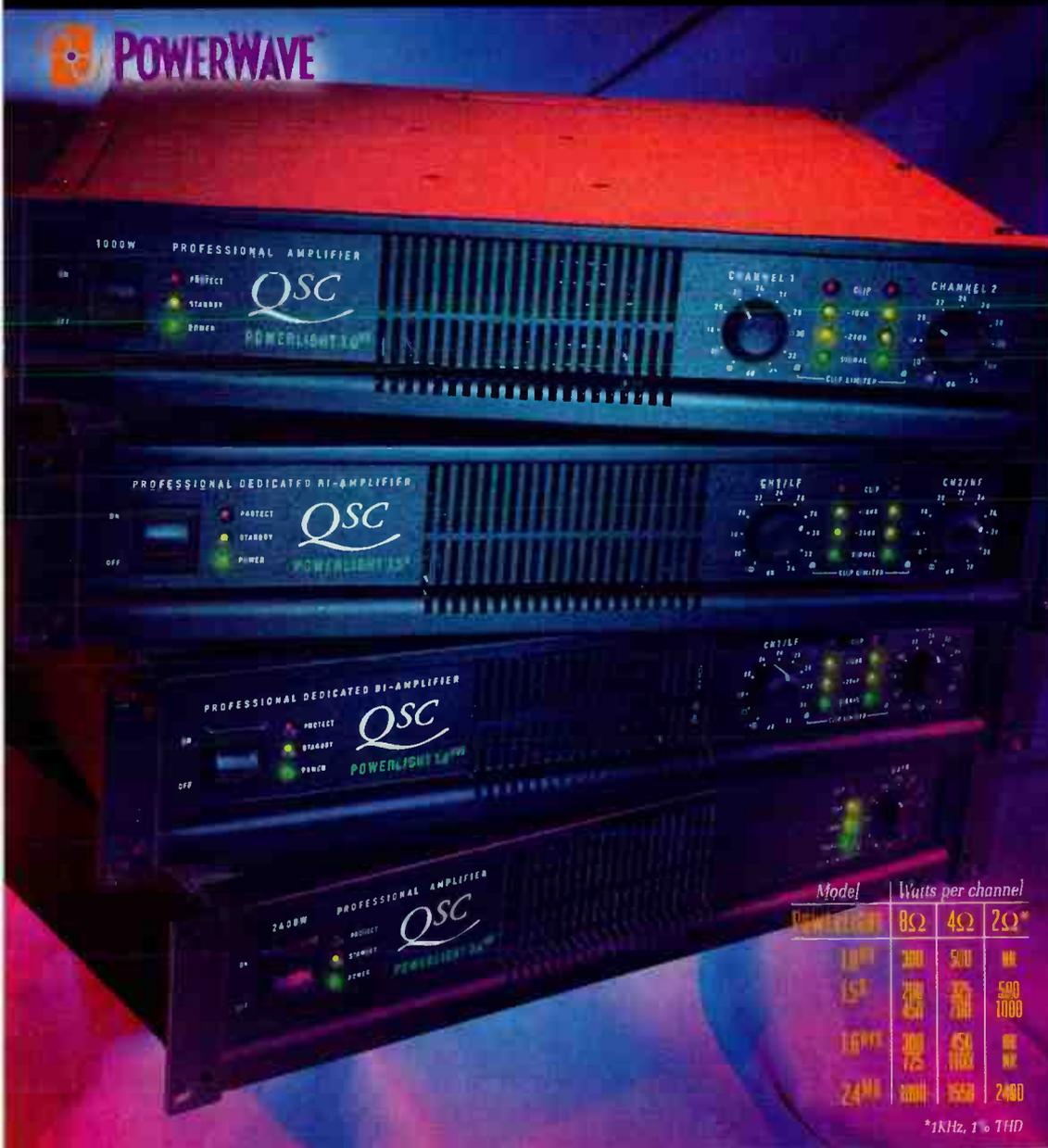


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15X	200	300	500
1.6HVX	200	450	800
2400W	600	1500	2400

\*1KHz, 1% THD

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The PowerLight 1.0HV use a high voltage power supply to deliver 300 watts/channel at 8 ohms and 500 watts per channel at 4 ohms. Employing an ultra-low distortion Class AB output circuit (0.01% THD typical), it is ideal for powering midrange and high frequency drivers, studio monitors, and other critical sound system applications.

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## RZA's Edge

How the successful producer/engineer uses his project studio to keep on the top of the charts

BY STEVE LA CERRA

*Producer/engineer RZA may be best known for his work with Wu-Tang Clan, but he has also worked on projects with heavy hitters such as Method Man, Texas, Big E. Smallz, and Bono. Currently working on a solo album, RZA took some time to speak to EQ about recording hip hop and what he's doing in his new studio.*

**You recently put together a new studio, correct?**

Yes, I just built a room in the basement of my house with an Amek Galileo board and just about all the outboard gear you could think of, including Avalon VT-737 and Purple Audio limiters (MC76), which I really like for vocals. When we do vocals with Wu-Tang, I usually record through a Focusrite Blue EQ to a Drawmer 1960 (tube compressor) or vice-versa. Depending on the individual voice, I might put the EQ second, but the Focusrite Blue and the Drawmer 1960 are my main units for doing vocals. For mics, I'll use a C12 or the 414 or a Rode Tube Classic. If I'm at another studio, I might use the U87.

**What's your favorite piece of outboard gear?**

For my ear, it's the Drawmer 1960. I'm hooked on it and I love to put vocals through there. But then I just got this Avalon (VT-737), and I can plug the mic right

into that and the shit just sounds better. It has EQ in it, and I go right to tape.

**Are you recording to analog tape?**

I record onto 2-inch analog tape and I also have three ADATs, so it's 24 and 24, digital and analog. The machines are locked together with a TimeLine synchronizer, so if I have to go 48, I can, but usually I don't. Usually I go 24-track, mostly analog. I have the TASCAM ATR-80 and I use Ampex 499, hitting it hard. Is it the type of a thing where if you need extra tracks you'll lock the ADATs to the ATR-80 and use those for extra tracks? Right.

**How about mixdown?**

I mix down to DAT, but I plan to get a 1/2-inch machine. I want to mix down to analog just to hear the difference for releasing a single. I think it would sound more thick on wax if I mixed to analog. **When you are recording, are you thinking in terms of vinyl or CD?**

Well, my favorite sound is cassette tape — I love how cassettes sound. If it was up to me, I'd mix to cassette and then master, but that's not a standard in the industry. I'm not sure I want to be the first person to take a chance and do something like that. If it's not successful, I don't want it to be sitting at the bottom after selling so many records.



PHOTO BY BOB BERG

**RZA SHARP:** More than just a member of Wu-Tang Clan, RZA uses his Amek Galileo-equipped project studio to produce other artists and his own solo work.

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CIRCLE 90 ON FREE INFO CARD

But it's something I have been thinking about a lot. To me, it sounds better on a cassette — like a rap tape from the old days.

**How do you edit?**

I use Pro Tools on an Apple Macintosh PowerPC with (Digidesign) 888 interfaces.

**Do you ever record into Pro Tools?**

No. I only use it for editing. I'm old fashioned — I need to push the buttons and twist the knobs.

**If you get a 1/2-inch analog machine for the studio, will you still edit in Pro Tools or on tape?**

Probably in Pro Tools — I'm more skilled at that than cutting tape.

**What kind of monitors are you using?**

I'm monitoring through Westlake, Genelec, Yamaha, and I just got a pair of Quedsted monitors. I use them all, but I've been hooked on the Genelecs for the last two or three years. If it sounds right on them, then it'll be OK. Everybody uses the NS10M's of course, but I really trust the Genelecs.

**Do you do all of your own engineering?**

For some albums I have, but for others

I haven't. For the RaeKwon (member of Wu-Tang) and the GZA (another member of Wu-Tang) albums, it's all my own engineering. For the Wu-Tang I brought in some engineers, like Scott Harding and Carlos Best. They have worked with me on many projects and I'm comfortable with them. Also, I've been working with a guy named Nolan who we worked with in the old days when we used to go to Firehouse Studios.

**I assume that the reason you built your own room was so that you can work whenever you wanted...**

You can consider it as my project studio — I make records there. Sometimes I'll still go to a studio like Sony to get the utmost in sonics, but where I'm at right here, I can make records in my basement and I can do it a lot faster than if I had to book a studio. Plus I'm an equipment fiend! I'm trying to break the habit, you know...

**What are you working on right now?**

I'm working on the RZA solo album and I'm working on Method Man's new album.

**How is your solo record coming along?**

I think it's going to be an advancement

in hip hop. I think I'm a little bit ahead of the game with some of the stuff I am doing. As far as production is concerned, my mind is in a nonstop creative mode, but also a nonduplicative mode. I am creating constantly, but I'm not duplicating things that have already been done.

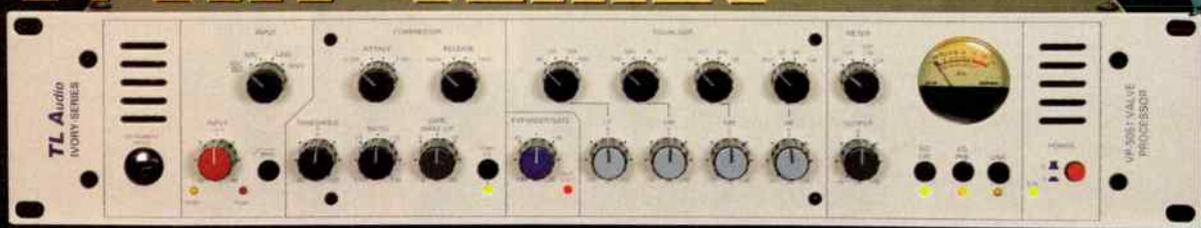
My rhyming style is now being translated to my music. Most people say, "Oh RZA, his style is crazy. I don't know what the hell he's doing." My music is coming along like that. My lyrics on top of my own music creates a certain marriage that I don't think other producers are able to do. They don't have the same type of talent, lyrical content, and production content. They may be better in the production or the lyrical, but I have advanced in both. It's going to be a pleasing listening experience; an emotional and an informative album.

**And having your own studio is helping that creativity...**

Guaranteed. When I want to do it do it I can. There's no booking.

**How are your sounds coming about?**

I'm not using a lot of samples lately —



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I've been using a lot of synths. With the equipment I have, I can make them sound like samples, putting them through the Avalon, the Focusrite, and then bringing them back up to Ensoniq DP4's. I can make them sound like they came from an old record because of the warmth. To me, every piece of equipment gives off a certain hum of its own — whether you hear it or not. That's what makes hip hop samples so raw. Putting the synths through these boxes can bring the sounds right back for me.

**What synths are you using?**

Everything from a Roland JV1080 to a (E-mu) Carnival. Whatever they make, I go buy it. Kurzweil, Kawai — I try everything. Being that I am successful and making money in the music business by using equipment, I dedicate a percentage of whatever I earn to that. It's not just for myself, but for the other producers that are coming up under me. They may find a particular piece of gear that they can really get deep into, whereas I might only scratch the surface. Also, I have a good investment and I can always make something creative.

**How do you get your drum sounds?**

Sometimes I sample live drums. Like on the Wu-Tang album, we brought in different sets of drums for two weeks, and we sampled the drums until we had what we wanted. On the song "Reunited" (from the *Wu-Tang Forever* CD) you can hear this. It sounds like a live drummer because we did have a live drummer play and we recorded it to tape to get the thickness. Then I sampled it from tape, used the sequencer to loop it, and played music to it.

**So you get the analog tone by printing it on tape but you still have the ability to loop...**

...and the only way somebody else is go-

*I love how cassettes sound. If it was up to me, I'd mix to cassette and then master, but that's not a standard in the industry. I'm not sure I want to be the first person to take a chance and do something like that.*

ing to have those drum sounds is by sampling one of our records.

**Which samplers are you using?**

The Ensoniq ASR-10 or the (Akai) MPC3000. The MPC3000 is a standard right now — if you don't have one of those you ain't working right. [Laughs.] **When working with Wu-Tang, do you run into trouble recording so many different people?**

No, because I have been recording them for years. Being that we use my

own studio, I have some of my equipment preset to the vocalists. So Old Dirty or RaeKwon can come in and I already have an idea of what to do. I have three 1960's and three Focusrite Blues. Out of those, I might have four channels set for different voices. When they come in, we just patch them and go.

**Do you prefer working outside of Wu-Tang or do you prefer the group?**

Wu-Tang has been doing it for five years now, so it's always better doing it with them. This is the first year where I'm looking to work with other people. I'd like to work with Snoop and some of the West Coast guys. I'd like to see what kind of music my sound and their voices could make.

**Do you ever sample weird sounds and use**

**them for percussion?**

Not really. When I first started producing, I used to do that. I'd sample anything, then layer it and loop it to make sounds. I had hundreds of discs of sounds that you would consider to be original, but I had a flood and a lot of my discs got damaged. Now I have about 10 or 15 of those discs left that have special sounds.

**What is the weirdest sound that you have ever recorded?**

I'll say, on a portable DAT, I was walking around Manhattan in and out of those little bodegas, recording people.

**Did you use that on a record?**

Yeah. We used it on GZA's album. You'll hear a skit with motorcycles pulling up

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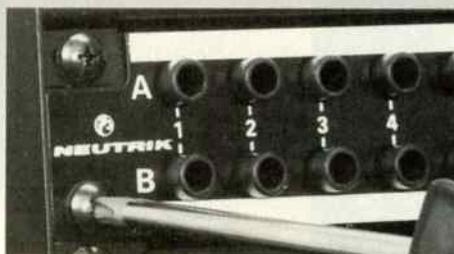
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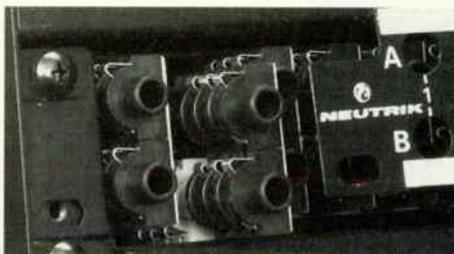
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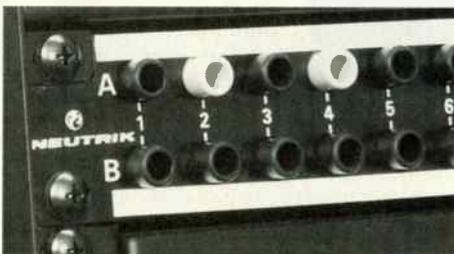
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and people talking in the background — and it was all live. There was cursing and arguments going on in the background and you can hear all that.

**Where do you get your bass sounds?**

For bass sounds, I'll use anything from a live guitar to an acoustic Guild to a Fender Strat. I'll sample any of those and put them through filters, or I'll use filtered basses from samples — I'll filter out everything but the bass. And there are some synths that have great bass sounds these days. The Korg Trinity bass and strings are probably better than any synth ever. Those sounds played with the right rhythm will sound like there was somebody in the studio playing. The thing I don't like about the Trinity is the user interface.

**Do you ever use guitar in the traditional sense?**

Yes. If you listen to the Ghost Face album *Ironman*, I have a song on there called "Assassination Day" where I play a slide guitar. Even though I only know a few chords, I used a metal slide and played the parts live. I also brought in live flute, vibraphone, and percussion. **Are you playing everything on your solo record?**

When I get near the end of it, I'm going to have some professionals come in and help me out. When I did the song with Texas, I programmed everything first and then called in a live band from Staten Island (NY) to replay what I programmed. We layered it all together for a sound of its own. On "Reunited" I brought in a top solo violinist to play. If you listen to the parts she played, they started in my head and I hummed them to her. Within an hour she caught it and went crazy with it. To me, that's a groundbreaking song for hip hop. As time goes on, more and more people will get into it. The sounds of my albums will make more and more sense as music that has not been on the planet before — this is new and sometimes it's hard for people to adapt. Even though we sold four million copies, I still think a lot of people don't know what it is. **Not until you sell ten million...**

Right.

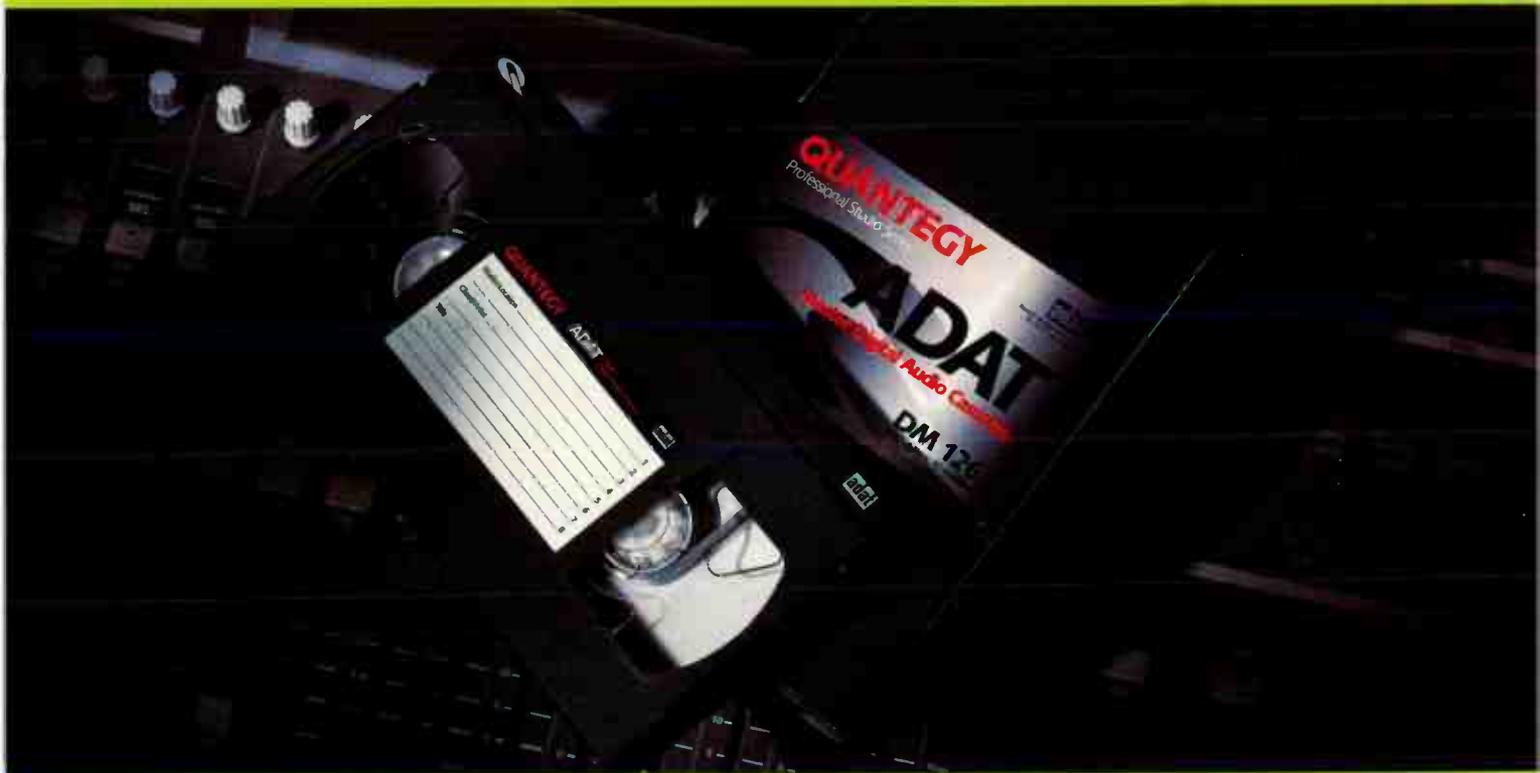
**What upcoming releases can we expect from you?**

My solo record should be out around May or June. Then we have the Capadonna album coming out in March and the Method Man album should be out in the summer. It should be a good year.





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World Radio History

# Maintenance Checklist

Troubleshooting your own gear is a way of saving both time and money

BY EDDIE CILETTI

Maintenance is a state of mind — creative in its own way. Audio gear may seem like complicated stuff, but, as you will see, sometimes the solutions are quite simple. Always take a moment to re-read the manual, troubleshoot, and document the problem *before* contacting a technician. Don't call without first being prepared to answer several questions.

## THE SYSTEMS APPROACH

Two friends recently had similar equipment problems with one channel of their individual console's main stereo mix bus: one's was completely gone, the other distorted. (No jokes about my friends, OK?) Both were ready to pay for a service call. As a favor, I attempted to troubleshoot the problem over the phone. I was asked several times whether a broken wire, a capacitor, or some other component might be to blame. Funny questions, I thought, because "even if," these were not serviceable items for either user.

The Systems Approach to troubleshooting eliminates potential detours, one by one, from an external perspective; that is, without opening anything up. In case one — a Mackie 1604 — the problem was due to a compressor being permanently patched to the stereo insert points. After moving the rack, one of the connectors leading to the compressor had been partially pulled out. This is a

good reason for devising a method to relieve strain from cables.

In case two, an old D&R mixer, the immediate goal was to be online enough to do overdubs. Reseating all of the connectors on the rear of the master module didn't do it. I had the user check the 2-track return, making sure the problem was on the bus and not in the monitor chain. OK, so far. As a short-term solution, using any two of the eight "group" busses would do the job. Getting a tech on a weekend is not quite so easy, but at least the session was able to proceed.

## RX

Later, while writing this column, I thought about all the external circumstances that might cause *signalis interruptus*. Then it dawned on me: the mix bus showed up in three places on the bantam patchbay in order to feed three

machines. Call number three began with the question, "Had any gear been changed or removed?" "Uh, yeah!" The 2-track analog machine had been pulled and the wires were left in a pile on the floor. One of the male XLR pins had shorted to ground. Need I say more?

## ORGANIC SOLUTIONS

That's not to say that problems don't originate inside the device, but before you throw money out the window, check all of the external connections first. Comparative analysis is your friend. Swap Left with Right at every step: Inputs, Inserts, and Outputs. Try bypassing questionable hardware — especially insert points at the console that are not being used.

Plug a CD player into a pair of channels — assuming one [channel] is operational and the other not. Plug a



CLEAN UP YOUR ACT: Maintenance may be a drag, but keeping up with it can keep your studio running smoothly.

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known working insert cable into the non-functioning channel, connecting the send and return together. If this does the trick, you've either got a tired jack normal or a cold-solder joint. If not, try cross-dressing! Connect the insert-send from the "bad" channel to another's return. In addition, feed the insert-return from another module's insert send. By doing so, you can check the input section of the modules separate from the output stage.

**TAPE MACHINES**

With tape machines, you don't have to be able to translate every cryptic error message — just don't ignore them, OK?

As crude as it may seem, "cranky" behavior is communication. Table 1 shows how to interrogate machines that have the ability to display errors. I strongly feel that Error Rate should be a dedicated front-panel button and not the roundabout path taken by many manufacturers. That said, I am very thankful for what has been provided.

**CLEAN AND "DIRTY" TAPES**

If you're not inclined to manually clean your recorder's heads, don't be afraid to use a cleaning tape. Make sure to follow the manufacturer's recommendations. This is especially important for TASCAM's DTRS machines, because the

tape drags across 270 degrees of the head's surface, and one cleaning can reduce head life by about *nine* hours. By contrast, since "DAT wrap" is only 90-degrees — one-third the surface area — using a cleaning tape reduces head life by only *three* hours.

If you *can* check the error rate, and it is good, then don't use the cleaning tape. TASCAM suggests [cleaning] no more often than every 50 hours for DTRS machines. Don't ever re-use or rewind a cleaning tape. When it gets to the end, throw it away! For DAT machines, run the tape for five or ten seconds. Do not walk away from the machine or get distracted. If the problem is

**TABLE 1**

This table shows how to query most tape machines for error rate. This should be done on a regular basis. It's the only way to discover a potential problem! It should be easier than this, don't cha think?

<b>Make</b>	<b>Model</b>	<b>Error Message</b>	<b>Button Sequence</b>
Alesis	ADAT	Flashing decimal	None
Alesis	ADAT XT	Flashing Sunburst (Also see the resetting the PG setting section in the main story.)	Set Locate & Record Enable 3. Press Play
Fostex	R-8	Flashing LED above "SF" (sub frames)	Press "Home," then press "Next" 8 times, then "F1." Press play. "0000" is great. Low numbers are good.
TASCAM	DA-38	PB condition LED On	Press SHIFT (LED will blink), then press MENU until "b.E.r. off" appears. Press Down Arrow or Up Arrow buttons to enable or disable this feature. PB LED will blink when enabled. Press shift to return to the normal ABS display. Meters 1 & 2 will now indicate head errors during PLAY mode.
TASCAM	DA-88	Error LED "on"	FF-STOP-PLAY on power-up. Press STOP again. Display should say "test." Press REMOTE. Meters 1 & 2 will now indicate head errors during PLAY mode.
TASCAM	DA-98	PB condition LED On	Select Menu 9, press ENTER, then select BER.
TASCAM	DA-302	Digital Distortion	Press MENU seven times until "E—AH" is displayed.
Panasonic	SV-DA10, -3200, -3700, -3800, -3900	CLEANING	MODE-RESET-PAUSE, then press mode until "AB" appears at the top. Four-digit number at lower right is the "error rate."
Fostex	PD-2	PCM Error	Press "Clr" & "Batt" keys. "Function" will appear. Enter the number "26" then use arrow keys to select "04" and press the "Execute" key. Choose the "PCM and SUB" option. Afterwards, press "Quit" to view error rate.
Sony	PCM-R500	ERR	Modifications must be made to the remote control. See EQ's May '98 issue or visit <a href="http://www.tangible-technology.com">www.tangible-technology.com</a> for details. Press 91 on the remote. If you see "91" on the machine's display, press the TEST key on the remote. You should now see an "A" on the far left of the display followed by four pairs of numbers. Low numbers are good (zeros are best).

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not resolved with one pass, try a second time, but no more.

Don't overlook the recording media as the source of the problem. Always try another batch or brand of tape. Old tapes may shed and "promiscuous" tapes may bring dirt from other machines into your machine. Short of abstinence, it pays to know how to clean your own heads.

**COMMON TAPE DECK PROBLEMS**

**Frozen Heads:** This is not a new cocktail drink, but it is a problem with older machines whose rotating heads get stuck. This has been the case with the venerable Panasonic SV-3500 and now with the nearly vintage SV-3700. It is much easier to access the latter — with the cover removed — by opening the drawer halfway. If the head is stuck, just apply a little rotational pressure in either direction. If you can stand the occasional inconvenience, the head is otherwise functional.

**Compatibility:** Alignment issues usually show up when tapes are sent out

of house. Contrary to hearsay, while Sony and Panasonic make their own alignment tapes, the end result is the same. However, many Sony machines are less likely to stay in alignment and should therefore be suspect. (I still like the PCM-R500, however.) A misaligned machine will play its own tapes. With new machines, Alesis suggests that a new tape be formatted, dated, tested, and put away, so that when a problem arises you have a point of reference.

Loading problems have been common to TASCAM's DA-30 MKII and the DA-P1 portable. Both use the same ALPS mechanism. Deep inside the mechanism, a rubber belt the size of a dime links a motor with a worm gear. The gear is sometimes over-lubricated. Gravity combined with centrifugal force "spits" *schmutz* onto the belt, causing it to slip and eventually deteriorate.

**Portable Life Span:** I'm no fan of the Sony "cigarette-pack" portables, because, while these are technical works of art, they are in no way affordably ser-

vised. Treat them with the utmost respect. Don't loan 'em to a friend and please don't drop them. The two most reliable and serviceable portables are the HHB PortaDAT and the Sony D-10 Pro. Other portables like the TASCAM DA-P20 (and similar models by Casio and Denon) are worth repairing. Less conscious humanoids have been known to accidentally reverse and force the power connector, causing internal damage. Otherwise, most of the failures are mechanical. Parts are still available because TASCAM's original DA-30 uses the same ALPS mechanism.

Batteries and power supplies are no longer available for many portables, but don't throw out the bad adapter. If the cable and connector are still intact, ECO-CHARGE sells external rechargeable battery systems. Their prices are often as good or better than the original manufacturer, and with greatly improved performance. The same applies to the Panasonic-Technics SV-25x series, although these are less serviceable.

*continued on page 143*

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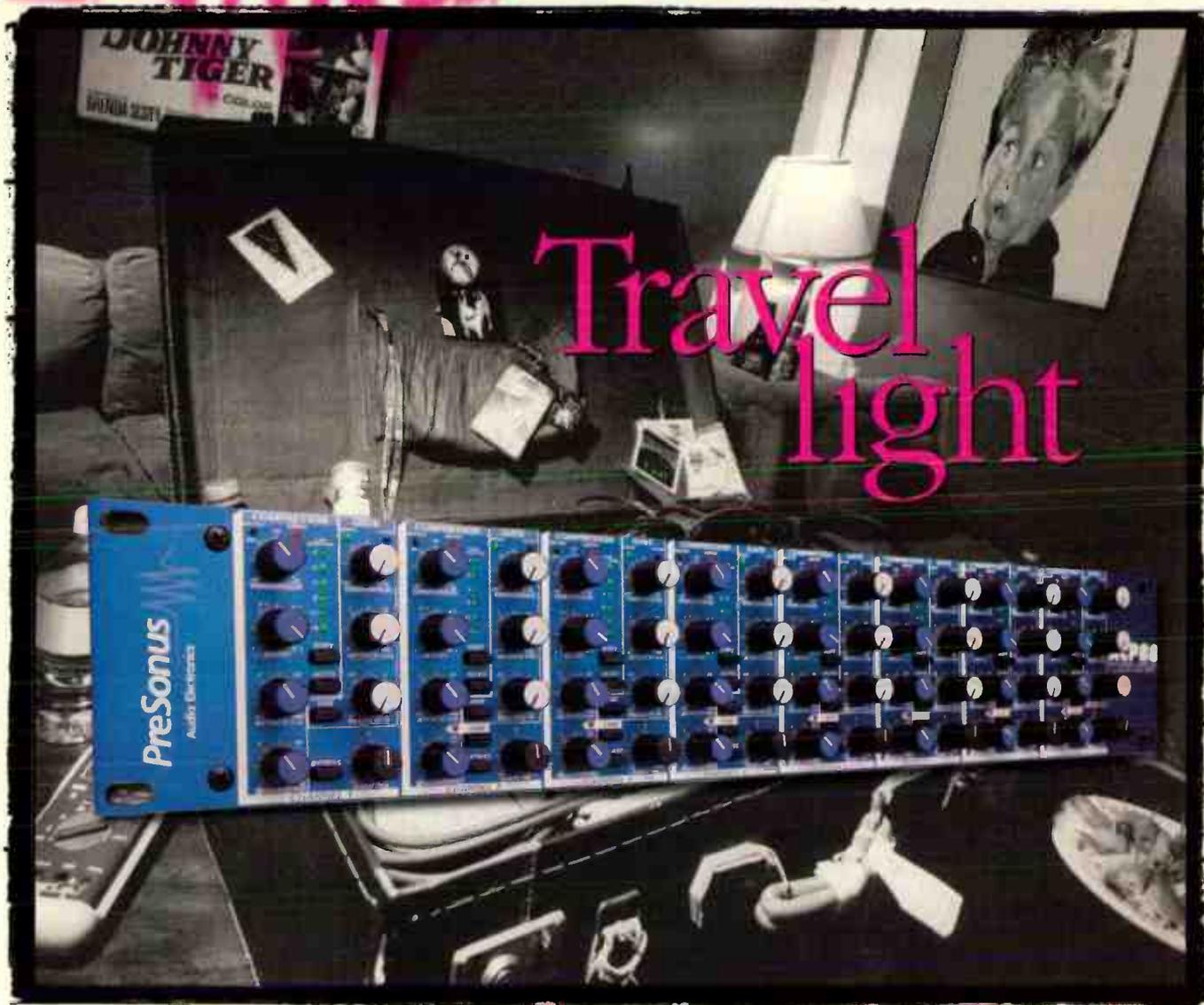
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World Radio History

# Acoustic Treatments for Studios

What to do when you can't rip down the walls

BY JOHN STORYK

When asked to begin a general discussion on acoustics for recording studios, I often suggest that people separate their thinking into two large worlds: [1] Noise and Isolation and [2] Internal Room Characteristics.

Most of the fundamentals in acoustics come equally to play in both of these arenas. For this article, let's assume that we have a studio environment that has the following characteristics:

a. Acoustic isolation between its neighbors.

b. Acceptable noise criteria (NC) value — basically the HVAC system is quiet (or quiet enough).

c. Room proportions that are reasonably correct with respect to fundamental room eigen tones.

Having a quiet room in no way ensures that the room "sounds good." Conversely rooms that have very reasonable internal room responsiveness (in both frequency and time domains) can be very noisy and thus not very useful as a recording environment.

"I want my Control Room to sound good." What does this mean? I'm sure there are many answers to this question. Most simply, we would agree that a control room "sounds good" when the environment does not interfere with the accuracy of the signal being reproduced by the room's listening system — the system under test (SUT). A more expanded set of characteristics might be:

a. This accuracy needs to happen for as large a listening area as possible — the listening position.

b. This accuracy should be for the full listening audible frequency range (within reason and within the limits of the electronic monitoring system). This will change from room to room and will also have limits as a function of the size of the room.

c. This accuracy needs to take place in the frequency and time domains.

d. While all of this is happening, it is desirable for the room to retain the naturalness and reverberation associated with

music and listening in general. In other words, music reproduction in a non-echoic environment (although having near perfect frequency response) would be extremely unnatural.

most common acoustical problem we see in small control rooms is a lack of effective control at low-mid and low frequencies (40 to 250 Hz). What is unfortunate is that, in many cases, the correct materials are al-

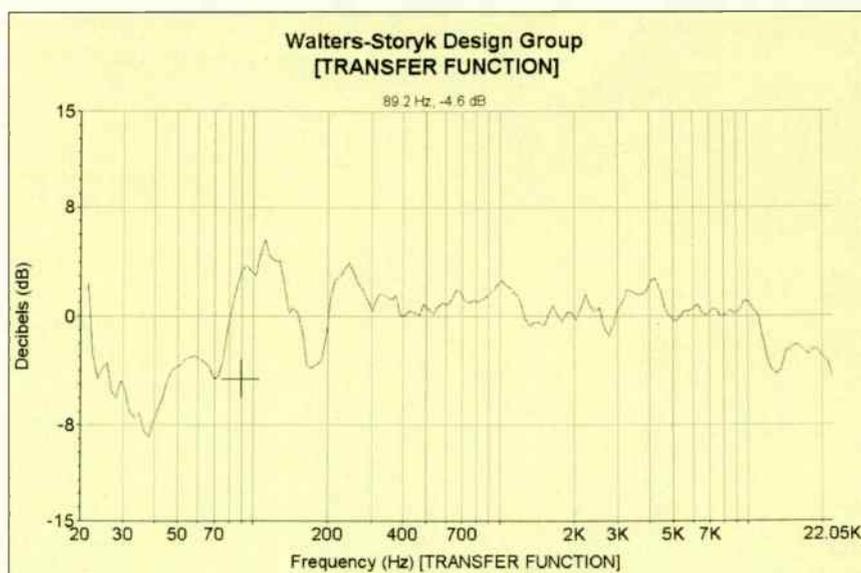


FIGURE 1: Transfer Function Measurement at the console mixing position for a small control room with low-frequency anomalies.

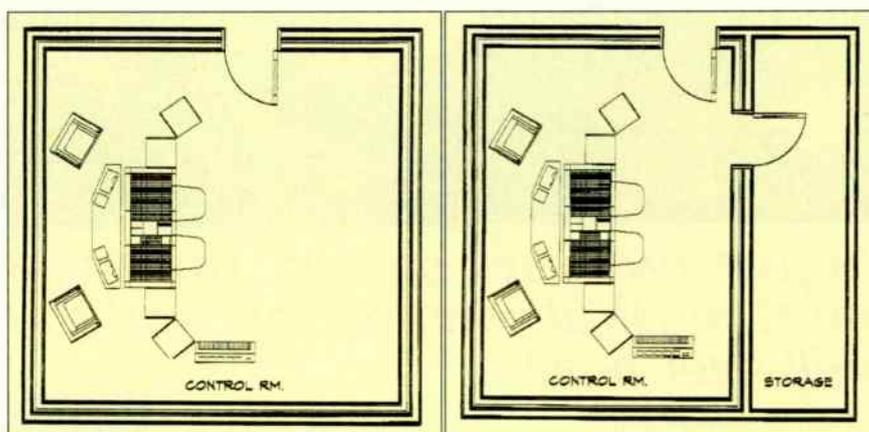


FIGURE 2: Two control room plans — before (left) and after the addition of a small storage closet — note the changed room ratio location on the "Acceptable Room Ratios Look-up Graph."

Thus the definition of accurate sound is a complex one at best. Acoustics is much less black magic and much more engineering than is typically recognized! For most small rooms, simple equations and guidelines are available for determining the amount, placement, and mounting details for sound controlling materials. The

ready in place, however insufficient quantities or incorrect mounting details have been used, limiting the effectiveness of the materials and treatments at lower frequencies. It is important to mention that while many small control rooms have less than ideal geometry (shape), the proper use of sound absorbing and diffusing ma-

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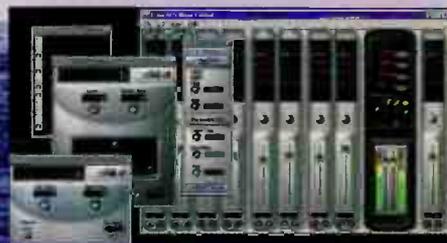
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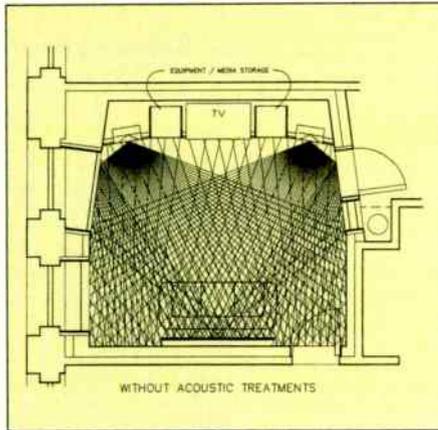


FIGURE 3: Ray Trace Diagram — typical control room.

materials can help to create an accurate mixing environment.

### A DESIGN PHILOSOPHY AND GUIDELINE

There is, in fact, no one sure way to design a control room. There is no one step by step “how-to” procedure. However, in an attempt to satisfy the mission of this article, let’s try to develop one. Although not necessarily in this order, we might list the design steps as follows:

**1. Observation and Measurement.** If the room is up and running, we have a great advantage. We should be able to learn a lot about the room either from observation (listening!), comparative listening between material in the room and in other rooms that we’re familiar with, and acoustic testing. Between all of these techniques, we should then have a pretty good idea of what’s happening in the room. I prefer transfer function analysis (2-channel) — the kind of measurement that you get from obtaining an impulse response, aligning the test and receiving signal, and then observing the transfer function of the system (usually the room). This is accomplished easily (and economically) by using a testing system such as JBL SMAART (Windows based).

### 2. Low Frequency Control

**A. Problems.** Acoustic (audible) problems generally are in a few broad categories:

**1. Lack of low-frequency control (i.e., build-up at low frequencies).** This is usually due to no (or little) low-frequency absorption in the room or much less low-frequency absorption compared to mid/high-frequency absorption. This will typically result in low-frequency build-up due to the environment.

**2. Poor eigen tone spacing.** This lack of

spacing is commonly called a “standing waves” problem, although I have never completely understood this title. Standing waves are, in fact, the room fundamental frequencies and their increasing harmonics. It is generally agreed that the goal of good room design (at low frequencies) is to have a room proportion that results in as equal a spacing of these tones as possible. There is no perfect room ratio (although a number of acousticians have suggested that there might be). More accurately, there are a family of ratios that are acceptable, and — even more so — there are some that are not (i.e., a square or a cube would be an example of a room ratio set that would result in a poor set of eigen tones).

Figure 1 shows the transfer function (taken at the console listening position) for a small control room environment with poor low-frequency control. Both a low-frequency “build-up” as well as an eigen tone

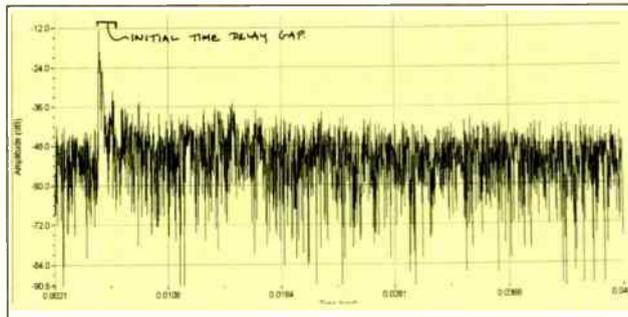


FIGURE 4: Impulse Response — showing initial delay gap.

“unevenness” exist.

**B. Solutions.** Correcting low frequency room anomalies are difficult!

**1. Eliminating poor room ratios is always something that should be considered.** This, of course, is not always possible, but I have witnessed many small rooms drastically improving their low frequency response by simply adding a small storage room! It may sound strange, but consider fig. 2.

**2. Introduce targeted low-frequency absorption.** Low-frequency absorption will not remove room mode anomalies, but it will reduce the negative effect of them. Try to use absorption that is only low frequency, such as membrane absorbers, panel absorbers, “bass traps,” or resonators. These are surface treatments that control (absorb) low frequency with little or no effect at higher frequencies. Remember: We are not interested in making a control room a nonreverberant space. I recommend that control rooms try to have

RT60 values of around .3 at 1 kHz. Most low-frequency absorption treatments require air space.

**3. Deep low frequency diffusion is also a solution for larger rooms.** This is expensive, but very effective. You need real estate for this as well!

**3. Mid/High Frequency Control.** Mid/high frequency control is usually about geometry and reflection control. Reflection control is easily predicted by simple ray trace analysis (see fig. 3). Most people now agree that having a good-sized listening area that is free of harsh immediate early reflections is desirable. Peter D’Antonio of RPG (and others) have named this a “reflection free zone.” When viewing an impulse response of such an environment, one would see this desired “initial delay gap” quite clearly (fig. 4). There is no one way to accomplish this.

**A. Problems:**

**1. Conflicting harsh early reflections.**

Again, view fig. 4.

**2. Often there is a great difference in the impulse response when viewed between low-frequency and high-frequency slices.** These should not vary much more than 15 percent. Some acousticians think that this number should even be less.

**3. The control room is simply too dead — too “unnatural” to listen to music in.**

**4. Any and all of the above will result in a transfer function**

(often mis-referred to as the frequency response) that is not accurate.

**B. Solutions.**

**1. As much as possible, keep monitoring at ear level.** This avoids a harsh console reflection, which is often the worst cause of a destructive (high energy) early reflection.

**2. Splay front walls to “scatter” horizontal early reflections from the speakers.** If this is not possible, then add absorption in these areas.

**3. Basically do the same for the front ceiling area as well.**

**4. When a room correction calls for low-frequency control (typically absorption), try to use a treatment that truly adds low-frequency absorption without adding additional high-frequency absorption.**

As you add absorption to the control room, take note that the room is now becoming less reverberant. Don’t add more than you need.

There seems to be little argument for not having some sort of diffusion in the  
*continued on page 67*



## TAPE TALK

JEAN TARDIBUONO

National Sales and Marketing Manager  
Studio and Broadcast Products

### NAMM-GRAM

We took the plunge and exhibited at our first NAMM convention this past January in Los Angeles. The show was well attended by everyone from superstar artists to local bands. One common theme throughout was the continuing high interest in recording. Whether you're recording to a hard disk system, an ADAT or a cassette, reliable media is essential to capturing and retaining your performance.

Many people view digital recording as a no-brainer, when in fact there are just as many critical elements to making a great digital recording as any other. You have to have good equipment, good music and, of course, reliable tape. Even if most of your recording is done to hard disk, you still need to back up, and tape provides the greatest storage density of any medium available.

So look for us again at Summer NAMM, July 10-12 in Nashville. We'll be there with a full range of digital and analog studio recording products, a fantastic equipment and tape giveaway, and friendly, knowledgeable advice from the company that invented magnetic tape more than 60 years ago - BASF-brand recording products, sold by EMTEC Pro Media. ■

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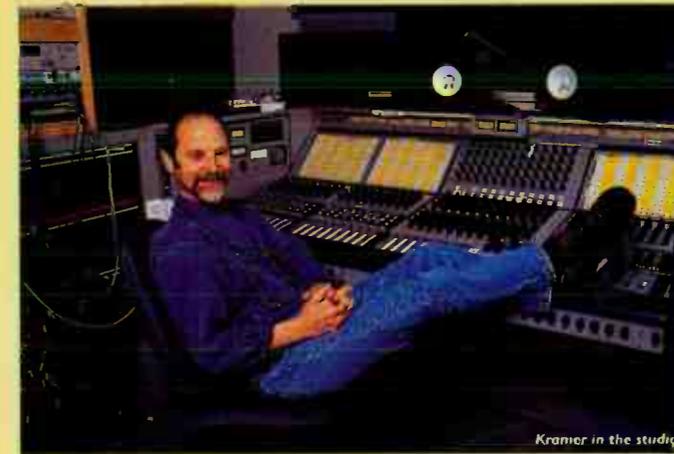
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VOLUME TWO

NUMBER TWO

# STUDIO OBSERVER

## Jimi Hendrix Alive and Well on BASF Tape



Kramer in the studio

Say the name Eddie Kramer in a crowd of music people and you're apt to hear tales of sessions with the likes of Led Zeppelin, The Rolling Stones, Kiss and (more recently) Buddy Guy, Paul Rogers and Eric Schenkman. The one name, however, that is inextricably connected with the career of this legendary producer/engineer is that of Jimi Hendrix, for it was Kramer who recorded so many of Hendrix's original hits.

Recently, after recovering the rights to the recordings, the Hendrix family asked Kramer to oversee the remastering of the Jimi Hendrix catalog for both CD and vinyl re-issue. Several of those re-issues are out now, along with some tape-related revelations.

**STUDIO OBSERVER:** What did you find when you put up the old masters?

**KRAMER:** Certainly of the first two albums, a good percentage of the original master tapes were BASF LR56. One that stands out in my mind was a rough mix of "All Along the Watchtower," which I did just before I left England in 1968. It's a quarter-inch mix from a 4-track, which was also BASF tape. The amazing thing was that when we played this tape, it sounded exactly like it did when I mixed it 30 years ago. There were no dropouts, there was no shedding. It just played. It really withstood the test of time.

**SO:** Was this an out-of-the-ordinary occurrence?

**KRAMER:** The LR56 is fairly consistent tape. You may find some edge

shedding if the guides are not perfectly aligned, but in all the remastering that we've done so far, we have not had to bake a single reel of tape. We're very pleased.

**SO:** Were all of Hendrix's albums recorded on BASF tape?

**KRAMER:** No, certainly not all, but in the early days, at London's Olympic Studios, where many of these recordings were made, the choice was BASF tape. At Olympic we were big fans of LR56, especially because of its high output.

**SO:** How do you approach the Hendrix remastering process?

**KRAMER:** All the pre-mastering work so far was done at Electric Lady Studios. If something needed special emphasis or pre-EQ, or even needed to be mixed - as in the recently released *South Saturn Delta* album, where some of the tracks we mastered never had been mixed - we recorded to half-inch analog tape. Then those tapes, along with

whatever original quarter-inch masters needed no additional work, were taken to Sterling Sound where they were transferred to a Sonic Solutions system for assembly editing only. Finally, they were mastered through a Neve digital mastering console for both vinyl and CD release. We kept everything in the analog domain for as long as possible.

On the *Band of Gypsies* album, which has just been re-released, I did one version for Capitol Records for CD and one for Classic Records on vinyl. We used the original master, played straight, no digital processing.

Continued on next page



The Band of Gypsies Album

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## FROM THE TOP

This edition of *Studio Observer* marks our first issue under the EMTEC Pro Media Inc. banner. In March, BASF manufacturer EMTEC Magnetics, based in Germany, completed the acquisition of its North American sales and distribution companies. Because of the substantial gains made by JR Pro Sales, EMTEC decided to incorporate us and our sister company, EMTEC DataStoreMedia – which is responsible for BASF-brand data media – into the EMTEC family as subsidiaries.

What does this mean to you? Since EMTEC Pro Media Inc. retains the entire staff and operations of JR Pro Sales, it's business as usual. Our BASF-brand studio and broadcast products remain unchanged as well. The big difference is that our efforts to support you – our customers – will be enhanced by this new relationship and the resources that EMTEC Magnetics has committed to the North American market.

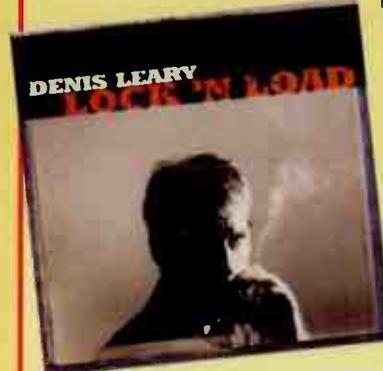
So look for the BASF booth at trade shows, visit our Web site ([www.emtec-usa.com](http://www.emtec-usa.com)) and take the opportunity to try some of our products. We believe you'll see and hear the difference.

Joe Ryan

President  
EMTEC Pro Media, Inc.

## Steve Remote Captures Comedian Denis Leary with BASF SM 900

Recently, HBO premiered Denis Leary's new one-hour comedy special, *Lock 'n' Load*, captured live during a two-week run at the Angel Orensanz Arts Center in lower Manhattan.



Album producer Joe Blaney brought in veteran location engineer



Remote and Blaney

Steve Remote, owner of the remote recording company Aura Sonic Limited, to handle the sound recording for the television special as well as the accompanying CD. He specified BASF SM 900 as the tape of choice.

"My first experience with BASF SM 900 was at a tape listening session last year at Avatar Studios in New York," Remote says. "Now I use the tape whenever I can."

"SM 900 sounds great, very musical," Blaney adds. "It delivers a tight bass response with a clear, warm top end and an insignificant amount of tape noise." ■

## BASF Giveaway Winners



Candace Stewart, studio manager of Soundcastle Recording in Los Angeles, was the winner of the Winter '98 NAMM Giveaway. EMTEC Western Sales Manager Doug Bernhardt presented Candace with a Tascam 122 MK3 cassette recorder and 100 BASF Reference Master cassettes.



Tom Hanna (right) of Prime Time Recorders in Akron, Ohio, won an Alesis ADAT XT and a case of BASF ADAT Master during a drawing at AES '97 in New York. The prize was presented by Don Morris, EMTEC Midwestern Sales Manager.

Jimi Hendrix, Alive and Well  
continued from previous page

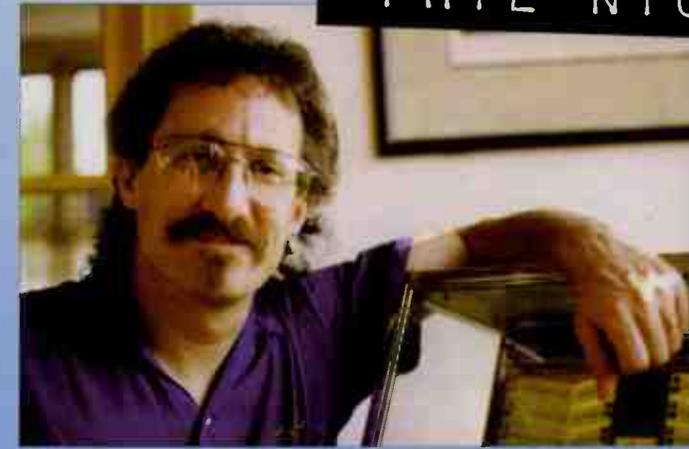
and it sounds phenomenal. Listen to the LP if you can, but even the CD sounds great.

**SO:** Lately you've been using a lot of BASF SM 900 tape. Do you see a connection between the LR56 of 30 years ago and today's SM 900?

**KRAMER:** The old LR56 had a certain solid feel to it, and you could bang it with a lot of level. Also, it certainly seems to have held up well. Meanwhile, I recently completed a promotional album project in California on SM 900 tape. It has a wide range of great music on it: country, rock, heavy rock, jazz, blues and folk. And I have to tell you, that tape is great. The noise floor is so quiet. It's my new favorite tape.

You know, you work with a product that is consistently good and you can't help but say great things about it. And my experience with BASF goes back 30 years. ■

## IN SESSION WITH PHIL NICOLO



In Conshohocken, Pennsylvania, outside Philadelphia, stands a 25,000-square-foot building that, since 1994, has been the home of RuffHouse Records and Studio 4, the record label and recording studio complex of twin brothers Phil and Joe Nicolo.

With a discography that includes recordings with Billy Joel, Amy Grant, Sting, Bob Dylan, Bon Jovi, The Rolling Stones, Aerosmith and Foreigner, Phil and Joe are a storybook recording industry success story.

In 1980, they built the original Studio 4 in center city Philadelphia. Through the '80s, Studio 4 developed a local clientele with artists like The Hooters, Tommy Conwell, Robert Hazzard, DJ Jazzy Jeff and others on their way up. Phil recorded many artists' first albums and became known for recording rock and rap.

In 1988 Phil and Joe started RuffHouse Records. The Nicolos obtained a distribution deal for RuffHouse with Columbia, and over the past decade have seen tremendous success with such bands as Cypress Hill, Kris Kross and the Fugees. Artists traveled thousands of miles to work at Studio 4, and the Nicolos realized that Studio 4 was no longer just a local phenomenon. When the opportunity to rebuild in Conshohocken presented itself, they made the move. In October 1994, Studio 4 reopened in its present location with recording sessions that resulted in Dishwalla's platinum hit "Counting Blue Cars."

Nicolo recently recorded the new Thin Lizard Dawn album on BASF SM 900. Studio Observer called to ask him about the experience.

**SO:** What happened when you used BASF SM 900?

**PHIL NICOLO:** It blew me away. The drums were more dynamic, everything felt more present, and the noise floor seemed lower to me. Now, you can't get me not to use it. I used it on Thin Lizard Dawn and on Pluto, and I plan to use it on an upcoming project for A&M Records.

**SO:** So it's safe to say you are an analog guy?

**NICOLO:** I like what analog does to the signal, how it warms it up, makes it dense and more tangible. In the end, it's going to become digital,

so I like to capture that analog sound right away. I track on analog two-inch tape and use high-quality analog processing gear.

But when it comes to printing the mix, I go completely hi-tech

digital. I love the new 96 kHz 24-bit converters and other high-resolution digital equipment. And the new formats and technologies like 5.1 surround mixing and DVD are exciting for the music business.

It really pays to create the character of your sound in the analog world, and then use the best of the new digital technology to deliver a quality product to the listener.

**SO:** The success you and Joe have achieved is the dream of thousands of young engineers and musicians. How do you make those breaks that push you from struggling to successful artist?

**NICOLO:** You just keep doing it, always trying to improve, to learn from what you're doing and what others are doing. After 20 years, if you've got half a brain, you'll get good at it. Knowing how to treat people is important, too. We have a good sense of what artists like and how to make people comfortable.

**SO:** Are there any high points in your engineering and producing career that really stand out?

**NICOLO:** The Thin Lizard Dawn and Pluto projects were terrific. It's wonderful to see this return to melody and song-oriented music. But probably the greatest musical experience I've had in the studio was working with 1997 Grammy® winner Taj Mahal on his *Like Never Before* album for Private Music. He is so driven, motivated, honest and positive about what he does. I learned so much from him about what to look for in music. It was an experience I'll never forget. ■



Phil in the studio with the members of Thin Lizard Dawn

# Acoustical Treatment Manufacturers

## Acoustic Sciences Corp. (ASC)

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Web: www.tubetraps.com

ASC/Tube Traps has been outfitting private, project, and commercial recording studios with acoustics for over 15 years. ASC Studio Traps are tripod mounted, vocal range bass traps with built-in treble diffusion. They form the Attack Wall, a stable acoustic environment for big sound mixing on midfield mains, and the QSF, a mic subspace for creating accurate recordings that are independent of the room. ASC provides a no-charge design service and several package options.

## Acoustical Solutions

3603 Maryland Ct.  
Richmond, VA 23233  
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Web: www.acousticalsolutions.com

Acoustical Solutions offers a complete line of sound and noise control products for many applications. Specific products include Alpha Pyramid and Wedge acoustical foams, Sonex products, AlphaSorb Fabric-Covered Wall Panels and Hanging Baffles, Soundtex Acoustical Wall Fabric, AlphaTec Ceiling Tiles, AlphaFlex Ceiling Banners, Audioseal Sound Barrier and Blankets, Bass Traps, Diffusers, Equipment Enclosures, and Modular Recording Booths. Acoustical Solutions, Inc. sells direct nationwide and the staff provides assistance with applications planning.

## Acoustics First Corporation

2247 Tomlyn St.  
Richmond, VA 23230-3334  
Tel: 888-765-2900  
Web: www.acousticsfirst.com

Acoustics First Corp. provides materials such as Geometrix broad-band absorbers, diffusers, sound barriers, acoustical wall panels, and ceiling treatments for sound and noise control in broadcast and recording facilities, home theaters, churches, distance learning classrooms, and so on. These products are available in 40-plus colors for visual coordination, as well.

## Auralex Acoustics

8851 N. Hague Rd.  
Indianapolis, IN 46156-1284  
Tel: 317-842-2600  
Web: www.auralex.com

Auralex Acoustics, Inc. sells acoustic products that solve many of the problems those involved in sound encounter. The company offers free consultations and you can visit their Web site for a list of their famous clients as well as their studio construction primer, "Acoustics 101."

## ClearSonic Manufacturing

706 Barbara Ct.  
Akron, OH 44319-2204  
Tel: 330-644-5923  
Web: clearsonic.com

ClearSonic Mfg. manufactures transparent acoustic panels designed to provide acoustic separation as well as instrument volume reduction. Forty-eight- or 66-inch tall systems can be configured using up to six 24-inch-wide clear acrylic panel sections. Sections are connected using heavy duty full-length transport hinges. ClearSonic Panels arrive assembled and fold "accordion style" for easy transport and storage. Available options include F3-6 sound

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## Folded Space Technologies

Tel: 770-427-8761  
Web: www.mindspring.com/~f-space  
Folded Space technologies manufactures the Cloaking Device Modular Acoustic Conditioning Systems and Micro Room Silent Speaker System. The Cloaking Device may be used free-standing to create neutral subspaces or be permanently installed. The modular design allows economical expansion and reconfiguration. The Micro Room maintains the amplifier-speaker-air-microphone signal path. Record any amplified instrument silently. It includes a 100-watt capacity speaker, and microphone.

## illbruck, inc.

3800 Washington Ave. N.  
Minneapolis, MN 55412  
Tel: 800-662-0032/612-520-3620  
Web: www.illbruck-sonex.com

illbruck, inc. manufactures SONEX™ acoustic panels and baffles for a wide range of room acoustic control applications. Many products are available in either polyurethane or willtec™, a melamine foam that is Class-One fire-rated for low flame spread and low smoke production (ASTM E84). New products from the company include SONEX-Classic panels and SONEXone panels.

## Systems Development Group

5744 Industry, Suite J  
Frederick, MD 21704  
Tel: 800-221-8975  
Web: www.sysdevgrp.com

The Systems Development Group manufactures acoustic absorption and diffusion products. Products include the Art Diffuser patented line of two-dimensional; the Sonora Panel high-density rigid fiberglass panel/baffles covered with fabric; the Cutting Wedge 2000 wide bandwidth acoustic foam; and the Bass Eraser tunable wide-band low-frequency bass traps.

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Jersey City, NJ 07302  
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For years Taytrix has been a leader in studio installations in the NY metropolitan area. They are now offering their prefabricated studio furniture, patchbays, acoustical panels, and their EQ Blue Ribbon-winning stackable, modular, lightweight STACKIT gobo system.

## WhisperRoom

116 S. Sugar Hollow Rd.  
Morristown, TN 37813  
Tel: 423-585-5827  
Web: www.whisperroom.com

WhisperRoom, Inc. is a manufacturer of portable/modular Sound Isolation Enclosures. Various sizes are available and each unit includes a floor, door, window, ventilation system, interior acoustical package, and cable passages. In addition, two levels of isolation are available: Standard or Enhanced. Standard models can be upgraded to Enhanced by installing Isolation Enhancement Packages (IEP). An IEP consists of a full set of secondary isolation components designed to increase the overall noise-reduction capability.

rear of most control rooms. There are some exceptions such as very small rooms; rear glass vision due to a program requirement; theater mixing environments (diffusion in theaters is not usually recommended); and so on.

4. Summary. Apply surface treatments to a control room that is well propor-

tioned, acoustically isolated, and soundly constructed only when and where they are necessary. Most small rooms simply use too much mid/high frequency absorption (such as acoustic foam or fabric covered rigid insulation), while at the same time not using enough low frequency control.



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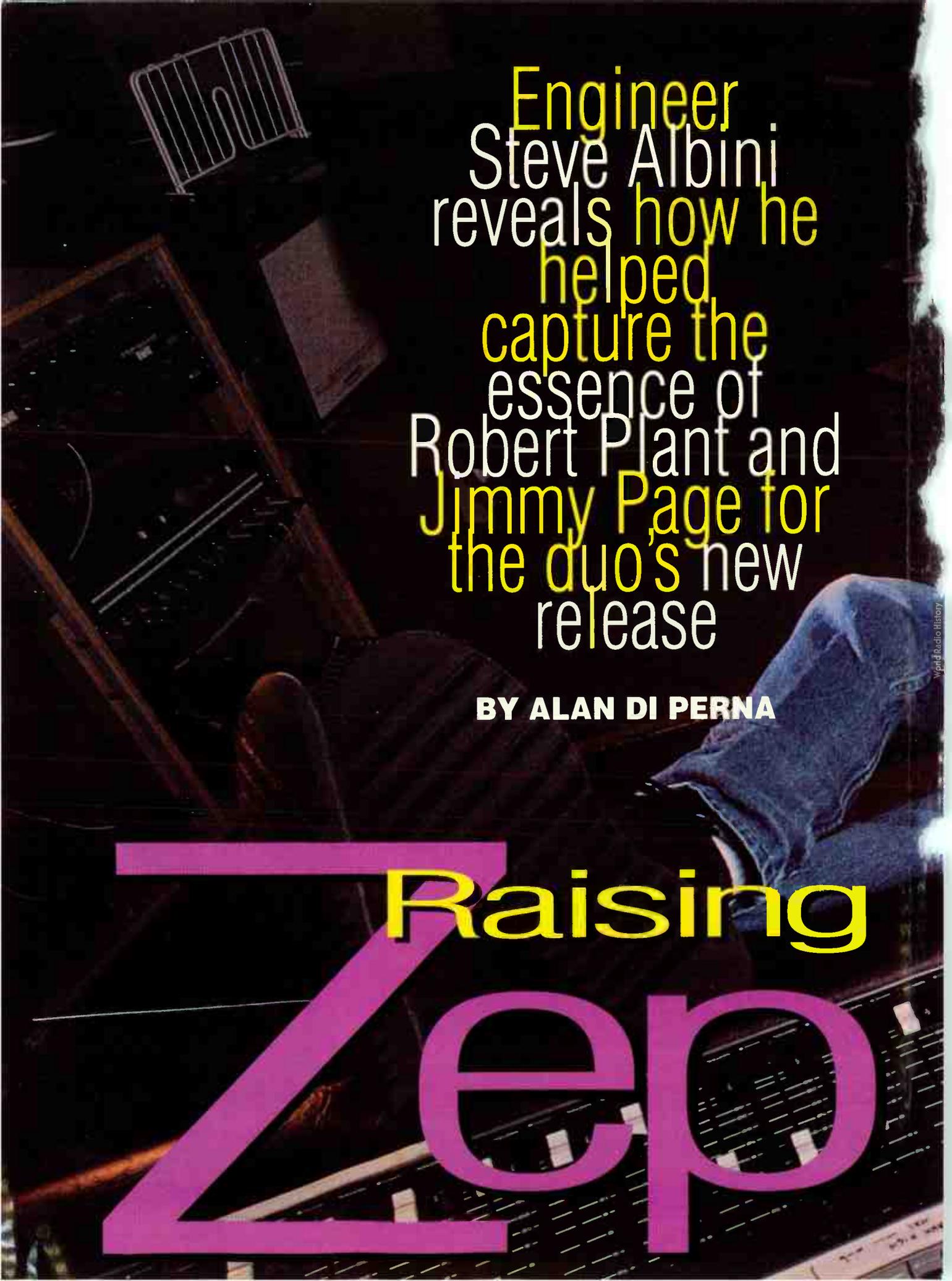
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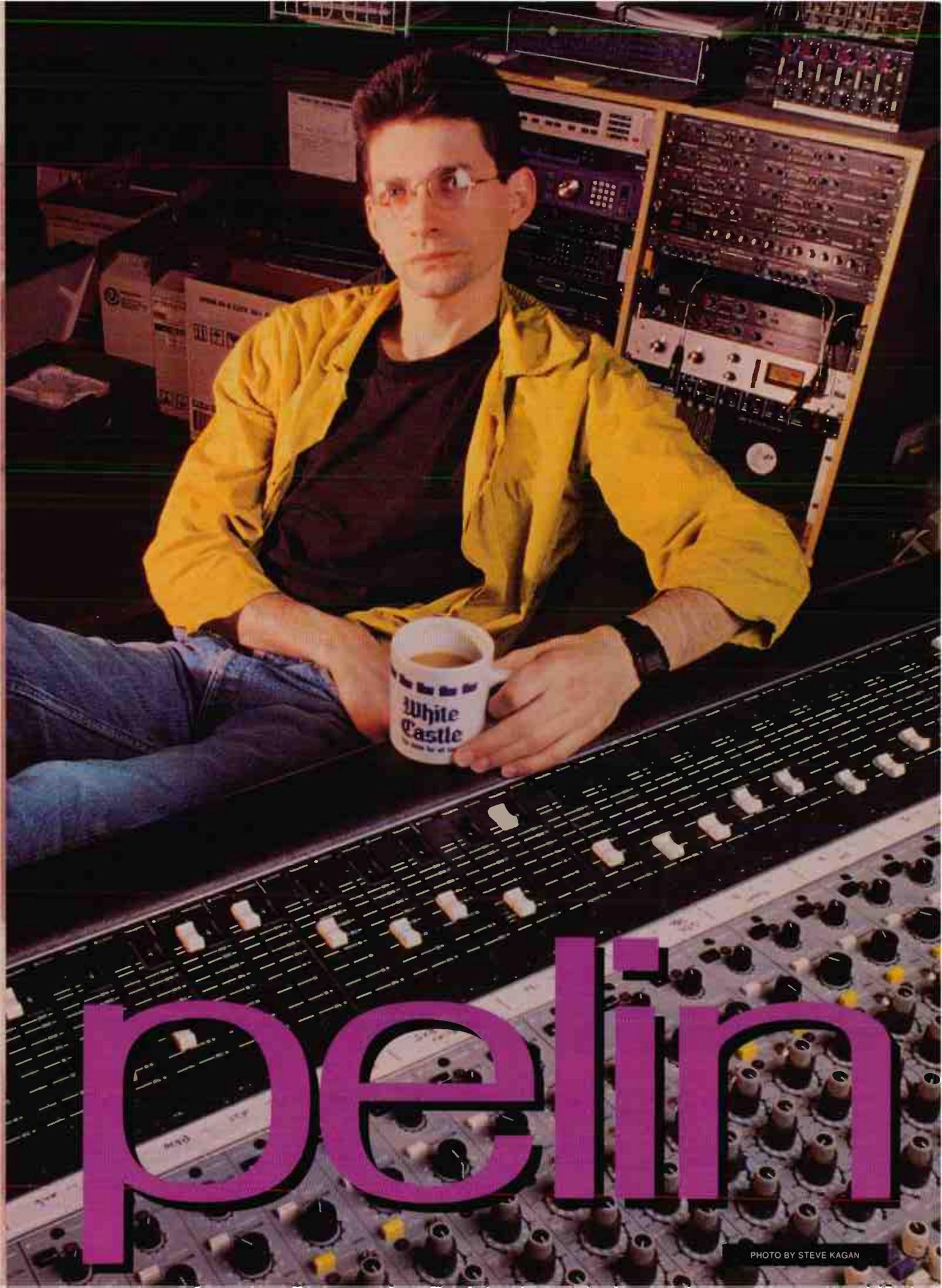
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Engineer  
Steve Albini  
reveals how he  
helped  
capture the  
essence of  
Robert Plant and  
Jimmy Page for  
the duo's new  
release

BY ALAN DI PERNA

# Raising Zep



# pelin

# Raising Zeppelin

Everything was recorded analog, presumably.

Yes. There were a few minor repairs that were done using a digital editing system. But all the music and vocals were recorded as analog masters.

**I know you're not a big fan of compression. So I'm assuming the guitar wasn't really processed as it went down to tape.**

No, it wasn't. The only difference between my normal working method and what was done with the Jimmy Page/Robert Plant record was that Robert Plant is absolutely enamored in hearing his voice altered in some way between the microphone and his headphones. Even for the guide vocals, he always wanted to have at least some sort of an effect or quite heavy compression or distortion on his vocal sound — because it gave him a little something extra to play with in his headphones. So we rigged his vocals so that the send to his headphones was controlled by a little mixer he had. He could put screwy effects on, overload his mic amp or whatever, and come up with a vocal sound that was inspiring to him. And we were putting that on tape as well, so if he came up with something that was really fantastic, he could say, "That — that's what I want to have on the record." And we'd have it documented. It was a nice working method.

So from the beginning, his vocals went to tape through fairly heavy compression. Well, heavy by my standards. Like 6 to 8 dB of compression. Then, in the mixing stage, he really likes the texture of his voice brought up. Not just the pitches, the notes he's singing, but the sound of his lips parting, and the consonants and the sound of his tongue moving — all that texture and grit and sparkly stuff. So we ended up compressing the vocals a bit more in the mix on a song-specific basis, just to bring out the qualities that he liked. Like Jimmy, he knows what his signature sound is. He'd be able to say, "For this one, I'm going to need 45 milliseconds of ADT. And for this one I'm going to need a bit of plate reverb, and for this one a slap echo." That's one of the benefits of working with somebody who's got 30 years of experience.

**What kind of microphone did you use on his voice?**

For the basic recordings — for the guide vocal — he was using a Beyer M88, mainly because it has good rejection and good detail, but it isn't a real fussy microphone. It wouldn't pop if he got too close to it. Then for the separate vocal overdub recordings we used a microphone that was made by David Josephson from California. It's called the M700. Josephson also made microphones for me that I used on the drum

kit on that session as well.

**What about the compression on Robert's voice?**

The peak limiting for the basic recordings was either an 1176 or a Manley electro-optical compressor, which I ended up really liking. The more creative compression, where things were parametrically dialed in, was almost always the GML 8900. The bulk of that was stuff I had to bring with me from the States, because Abbey Road's equipment complement is quite minimal. It's all really good equipment and it's kept in good repair, but they don't have a whole lot of variety. I had to bring quite a bit of stuff with me.

**Tell me about your approach to miking the drum kit.**

It's pretty simplistic. I just try to get a photographic representation of the kit. I tend to use a stereo pair of close overhead mics in front of the drum kit. In this case it was either a Neumann SM2 stereo tube mic or two Schoeps 221B microphones used as a Blumlein pair. The Blumlein miking technique is something I use a lot. That's where you have two microphones in a figure-eight pattern that are crossed at 90 degrees. The beauty of that technique is that any sound in a 360-degree circle around the pair will have one microphone that it is on-axis for and another microphone that it is off-axis for. So you get very clear

*continued from page 72*

the same sort of techniques I later used with Zeppelin. Two producers I would've liked to work with, but never got the chance to, are Sam Phillips and Phil Spector.

**When you're getting a guitar sound together for a track, are you thinking about how you're going to compress it going down to tape and the whole effects chain all the way down the line?**

Sometimes. Compression is really good on acoustic guitar. It brings out the real bell-like quality in an acoustic. But, really, I just employed the guitar effects I've had along for the electric guitar sounds on *Walking into Clarksdale*. Apart from a Whammy pedal, it's all old stuff like my Echoplex, MXR phasers, Boss chorus, and my Tone Bender pedal.

**What was your overall vision of how you wanted *Walking into Clarksdale* to sound?**

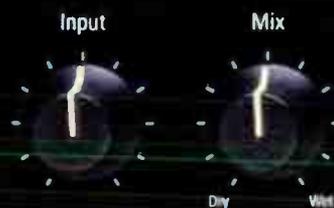
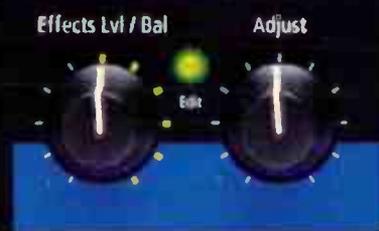
I saw it as a collection of songs and moods that hopefully present a landscape. The first song, "Shining in the Light," is the point of entry, in a way, because it's immediately recognizable as the kind of song Robert and I have always done. But from there, the album takes off into different territories —

this whole landscape with high peaks and mountains and smokey valleys. So it's an atmospheric record, really, and something with a lot of information on it. Even though we knew it was going to be very minimalistic. That was the way we wanted to go after the *No Quarter* project. Because that had so many musicians on it, when we were touring, it was hard to hear what I was really doing — the subtleties of it. So this was back to what Robert and I really know best, which is writing songs in the format we always have: bass, drums, guitar, and voice.

**What's different now about your relationship with Robert?**

We get on better than we did, especially during the latter days of Led Zeppelin. We're older and wiser. We're good pals now. Are there going to be more solo albums from each of us in the future? The answer is no. We're not solo anymore. We're a duo. It's the best way. We spark off each other in such a brilliant way. I'd missed Robert's voice and the working relationship we had. He'd certainly missed my guitar and that very same aspect of being able to inspire each other. That's really fortunate — to still have that after all this time.

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CIRCLE 43 ON FREE INFO CARD

# Raising Zeppelin

stereo separation without much interaction between the two capsules. It gives you a very wide stereo image.

Then, in addition to that close overhead pair on the drums, I also used close and ambient microphones. At Abbey Road, I was able to get about 30 or 40 feet away for the ambient miking. At

this on the record." I said, "Why not put exactly that on there?" So we did. It shows how something of very humble origins can sound quite impressive if it's used the right way. I like the contrast it creates: the broad stereo, full band sound, complemented by that little, sputtering, distorted drum bit.

On the song "Most High" were the Northern African and Arabic instruments done as overdubs, or were they part of the live basics?

On the basic track, the band was playing to a rhythmic loop that was built from marketplace recordings of different Moroccan and Turkish percussion instruments, I believe.

That was something they had been working with on their own. Then there were a number of suggested overdubs. Jimmy and Robert are big fans of a band called Transglobal Underground. There's a fellow named Tim Whelan who's one of the ring-leaders of that group. He came in and wrote some stuff to be played over the top, and they were crazy about it. That ended up being a featured part — that Arabic reed sound and Arabic accordion.

They just call it an oriental keyboard in the credits.

That's the name of the instrument. It's a

bizarre thing — a keyboard made for Arabic tavern musicians or for someone who would play accompaniment at a wedding reception or something. And it has all these Eastern and Arabic sounds built into it. In the same way that a Western keyboard might have a mock cello sound or a mock flute, this thing had an Arabic reed and Arabic accordion sound built into it. Sometimes they're quite cheap sounds, but faithful enough that people who are familiar with the real instruments can get the idea. And it's just called an ori-

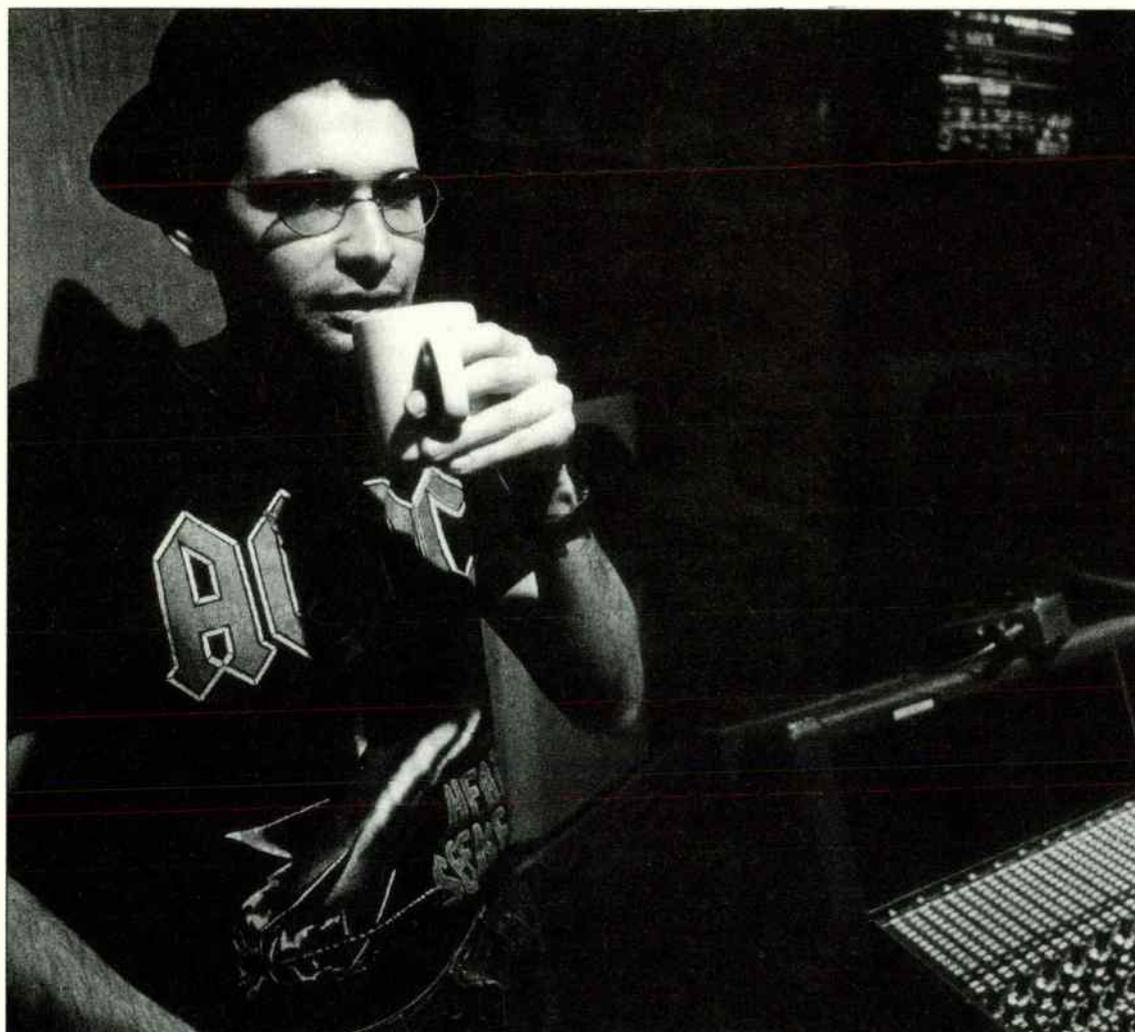


PHOTO © 1988 CYNTHIA CONNOLLY

RAK, I was only able to get 10 or 15 feet away.

The drum tracks all sound very natural and open. Except, of course, that fantastic distorted drum sound on "House of Love."

That was actually a loop created from a rehearsal room tape that they made on a cassette machine; just a little bit of [drummer] Michael Lee playing a drum beat. They brought it in and said, "We've been playing along with this loop of the drum kit. We want something like

Did you record the bass direct, or mic a cabinet?

The bass was miked off of [bassist] Charlie Jones's normal amplifiers, which were Marshall Jubilees, I think. One amplifier was feeding a 2 x 12 cabinet, I think, and the other was feeding a 2 x 15 cabinet. On the 15-inch speaker I used a Beyer 380, and on the 12-inch cabinets I think it was a 414. And for the standup bass, I used a U47 and a Neumann 563; the U47 for the finger sound and the 563 for the body resonance.

ental keyboard. All the legends on it are in Arabic. It can be set into quartertone tuning, so you get these lovely trills.

**Did the orchestral overdubs that are on some of the songs take place fairly late in the process?**

It was toward the end, yeah. There was one 24-chair overdub session, which is the biggest ensemble I've ever recorded. I've done things like a double quartet, octets, but never 24 chairs before. It's difficult to make a string section compete with a rock band without making one of them sound trivial and crappy. If the strings get very thin and reedy, you can make them poke through the rock band so that you can hear the lines better. But then it doesn't sound impressive. It just sounds raspy. But if you mute the rock band so that you can hear the detail on the string section, then you lose the driving power of the rock band and it ends up sounding like a Muzak version. It's a very difficult balance to achieve. **What kind of console were you recording and mixing on at Abbey Road?**

A Neve VRP.

**Did it take a long time to mix the album? Was it an easy mix?**

For me it seemed to take a long time, because we were only working on one or two songs a day. At my normal pace, I'd be working on four or five songs a day. But everyone else seemed quite happy with it and thought it was going quite quickly. No one was getting sidetracked or losing the thread, which can happen when you work on something too long. Jimmy and Robert seemed pleased that the mixing was going quickly, but not so fast that we didn't have time to second guess a few things.

**Are they both really hands-on in the mixing process?**

They're both quite firm about their opinions, which is the important thing. Neither one of them is shy about running up to the console and grabbing the faders and throwing them around, which is fine. Although out of respect for the fact that they wanted me to do my job, they generally didn't do that. They'd generally tell me what they wanted and I'd move things around until everyone was happy. I enjoy working with people who are very firm about their opinions. I don't like working with people who are sort of demure about saying what's on their mind. I much prefer people to say, "No you've got it wrong. This is what it's supposed to sound like." That way, I know what I'm supposed to be doing. **EQ**



## How to Fit a Real Organ into your Control Room . . . and Your Budget

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# Mic Pre





Here it is: The top ten times you should use outboard mic pres and **reviews** of models from Great River Electronics, Barbeta, Studio Technologies, and SPL. Plus a directory of manufacturers.

## Why Go Outboard?

Here are the top 10 situations where you should consider using outboard mic preamps

BY MIKE SOKOL

Microphone preamps can range in price from a hundred dollars per channel up to many thousands of dollars for a rackmount stereo preamp. What's the deal? How can you possibly justify spending that kind of money when you've already got plenty of XLR inputs on your console? Here's my top ten list of when to go outboard.

**1** Upgrade an old console with noisy preamps: Since the mic pres are one of the first places a manufacturer cuts costs, some inexpensive consoles may have very noisy designs. If you find that your quiet recordings are submerged in hiss, you might need a new mic pre.

**2** Get enough gain for low-output mics: Old mics such as my RCA 77DX have a very low output level. I hate running the fader control on the channel strip all the way up just to bring the gain high enough. You aren't doing the rest of the board's signal path any favors.

**3** Add a balanced, low-impedance input to your portable multitrack: Phono jacks just don't cut it for "real" microphones. A proper balanced XLR input not only gives you a way to hook up a professional low-impedance mic with a standard cable, it provides rejection of hum and RF garbage that can spoil your recording. Plus long cable runs won't have the high-

frequency roll-off that happens with high-impedance mics.

**4** Adding Phantom Power: Many professional mics need 48-volt phantom power to operate. This is not usually available from portable multitrack inputs and many older consoles. An outboard mic pre will allow you to use these great mics.

**5** Get mondo signal processing on a budget: Many outboard mic pres are available with parametric equalization, compression, and filtering — all in a single rack space. This can be an instant upgrade for simple consoles. Since most studio recording is done one track at a time, you can really get control of the process as you cut your bass or voice tracks. This makes mixdown much easier without having to chase levels. A full signal processing chain can be had for the price of one piece of outboard gear.

**6** Warm it up with tubes: The input stage is an ideal place to add some tube warmth and soft compression. Since it's happening early in the signal chain, this relieves some of the headroom needed by later stages, allowing you to run them hotter without clipping and get extra S/N ratio performance. Tube preamp designs generally have even-order harmonic distortion characteristics and a gradual clipping action, which not only makes it easier to control renegade signals, but also contributes to the "fattening" effect.

**7** Add a great DI: Many outboard mic pres now include an unbalanced, high-impedance input for plugging in instrument sends directly. I think it's a great trend. If you really want to hear what your bass or acoustic guitar pickups sound like, plug them into a great mic pre and get ready for a surprise.

**8** Polarity Reverse and Pads: Many early consoles didn't include these important functions while most outboard preamps have them incorporated in their design. Being able to instantly reverse the absolute

polarity of a signal can have dramatic effects on the transient impact of bass notes. Not all mics and processors are wired for absolute polarity, so now you can really "fix it in the mix."

**9** Real Meters: Yeah, I know that LED and PPM meters are really better for monitoring signals going to digital tape, but I like a good, responsive analog meter movement to help me judge what's happening. I may be dating myself, but having used VU meters for over 30 years gives me a comfort factor with them. Some mic pres now have big, sexy meters that look like a piece of laboratory gear. I just like them (see #10 below).

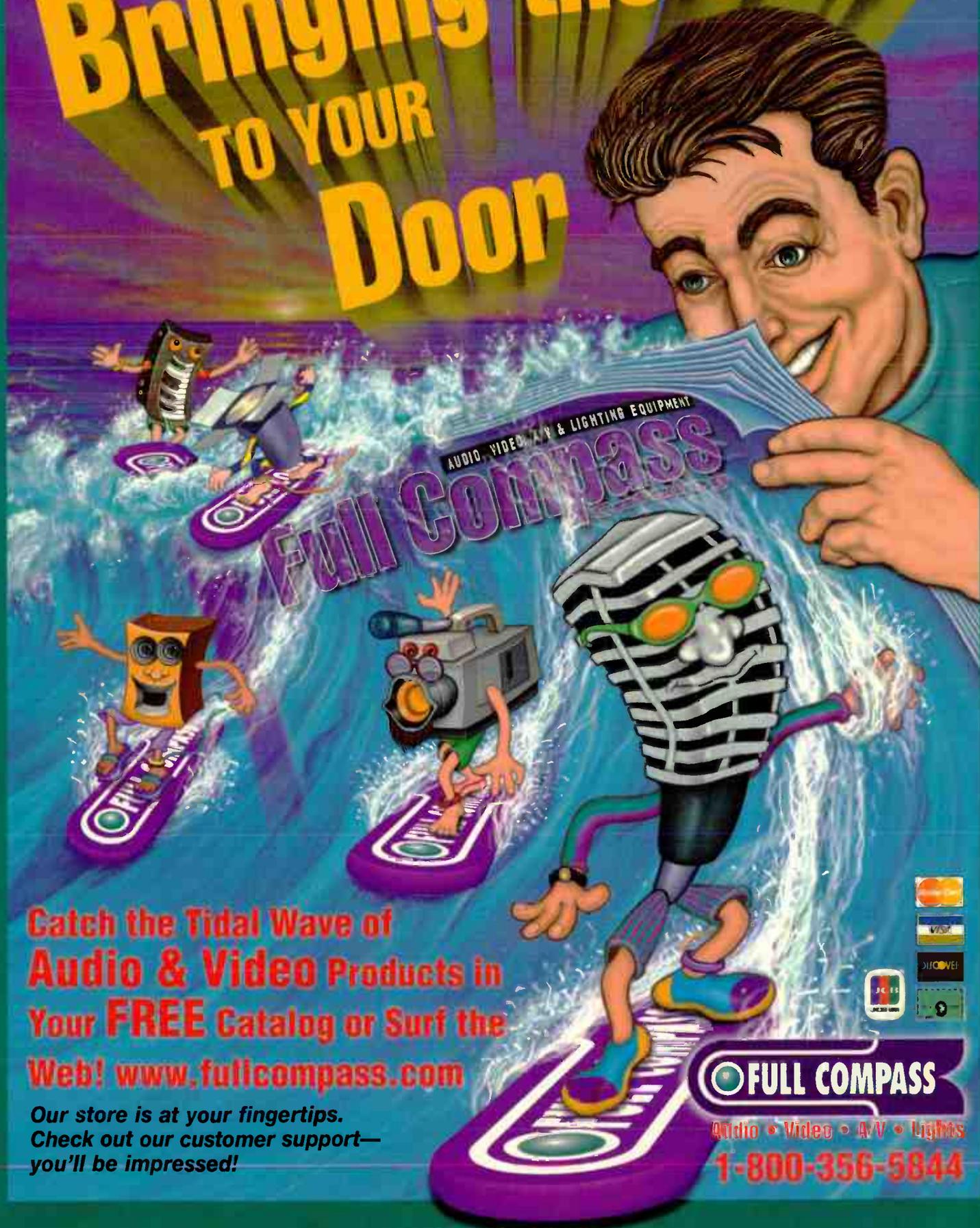
**10** The coolness factor (or sex sells): Never underestimate the psychological lift you get when using cool gear. I know we're all supposed to be impartial technicians, but most talent (including myself) get an emotional rush out of using really serious gear. This can help turn a merely good performance into a great one. Having a few channels of really excellent mic preamps can give your studio that extra edge and really wow the clients. The next time you want to see some eyes pop, pull out your Neumann mics and a lab-grade mic pre. Your talent will rise to the occasion.

## Barbetta Channel One

BY MIKE SOKOL

I'm really spoiled in my studio. Over the last few decades I've collected just about every sort of outboard sound gear imaginable. From parametric EQs to compressors to gates to tube preamps and power amps...I've got it all. A lot of it started as junk, but by visiting a few ham fests and buying schematics, it all gradually became operational. All that gear also has allowed me to experiment

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# Mic Pre MAINTA



with various signal processing chains with varying degrees of success and failure. But experiment I have, and that's one of the things that's most interesting about sound — there's always another way to approach the same sonic problem.

So I've never had to endure the portable multitrack challenge, that is, unbalanced mic preamps, no phantom power, fixed-frequency EQ, no compressors or gates. Still, a lot of my remastering clients bring in products that were recorded and mixed in that format, and I'm expected to work miracles on a finished mix. No can do, Skippy. Once it's all mixed together there's no practical way to change the EQ on just the snare, or compress the vocals without squashing the strings. Each track needs to be properly controlled as it's put down, especially if there's any track bouncing involved. But when clients find out that a single channel of compression can easily cost more than their whole portable multitrack did, depression usually sets in.

For small studios, you don't need racks of compressors or banks of EQs. You really only need one channel at a time that has all the basic processing tricks at your fingertips. And that's where the

Barbetta Channel One comes in. It's a full processing rack in one rack unit (RU). It starts with a basic XLR balanced mic preamp with phantom power, then goes to a 3-band sweepable frequency EQ that goes way beyond anything you can get on a portable multitrack's equalizer. (I won't call it a true parametric since you can't vary the bandwidth.) The signal then goes to variable high- and low-cut filters for removing infra- and ultrasonic garbage. This is followed by a simple noise gate and, finally, a surprisingly good-sounding compressor with fully adjustable ratio, threshold, attack, and release controls.

**MANUFACTURER:** Barbetta Electronics, 5345 Commerce Avenue, Suite 5, Moorpark, CA 93021-3122. Tel: 805-529-3607. Web: [www.barbetta.com](http://www.barbetta.com)

**APPLICATION:** Single-channel microphone and pickup preamp ideal for upgrading portable multitracks and inexpensive consoles.

**SUMMARY:** Basically a single channel-strip plus dynamics in 1 RU.

**STRENGTHS:** Everything you need for basic dynamic and frequency processing in a box; compressor was easy to set up and very forgiving.

**WEAKNESSES:** Only 40 dB mic gain available in the front end is insufficient for low output mics (but there is an additional 10 dB after the filters, and 10 dB from the output stage).

**PRICE:** \$799

**EQ FREE LIT. #:** 144

I tried processing some vocals and electric bass and was able to really tame the dynamics while adding a little touch-up EQ. And it really worked a lot better than I had expected. Now, you're not going to talk me out using my UREI compressors or Gates tube mic pres, but for someone in a songwriting or demo studio that doesn't have any effective EQ or dynamics, this would be a great addition. It would also make a nice front end for radio DJs that do a little voice-over work on the side. I was able to turn my voice into a mega-mouth, big-balls, shock-jock sound. (My "real"

voice has an Indiana "Hoosier" accent with a Maryland-Virginia twang.) Well, I don't think Howard Stern has anything to worry about, but the Channel One offers a lot of possibilities for those wishing to experiment but who can't afford thousands of dollars of processing gear.

So if you're just starting out with a portable multitrack/studio-in-a-box, or you've got a basic console without any external processing gear, this may be just the addition you need to get inspired. It's got everything you need for one-track-at-a-time recording, and it does it all reasonably well. There are no cables to patch for external gear, and the signal path follows the front panel from left to right, which makes it easier to visualize what's connected to what. And since the Studio One is affordable, you can start experimenting and making better mixes now, rather than later. And that's a good thing for everyone.

## Studio Technologies Mic-PreEminence

BY MIKE SOKOL

I'll call this one basic vanilla. The Mic-PreEminence from Studio Technologies is like a bowl of really good vanilla ice cream. It's not really fancy, there's no chocolate-covered almonds or other gooey surprises inside, but it's the real, honest thing. And you can always count on it to get the job done. Plus the price is much less than those gourmet designer flavors.

This is about as basic as it gets. Two preamp channels with balanced inputs, phantom power switch, polarity reverse switch, and a variable gain control. There's a 5-step LED level indicator and a switch next to each output jack to select balanced or unbalanced signals, all in a single rack space. Not a lot of bells and whistles included, but if you

just need a solid preamp without the frills, why pay for extras?

I worry about mic preamps without input transformers because it's extremely difficult to design a circuit that will have stable Common Mode Rejection (CMR) as the components age. Good CMR is essential to getting low-noise recordings in difficult RF environments. The folks at Studio Technologies, however, have taken the challenge in stride. They not only provide full schematics, but calibration procedures to adjust CMR as well. And they detail how you can make other field modifications, such as enabling the output coupling capacitors, or changing the coupling caps from polypropylene to film type. They include procedures on adding inductors if you do

have an RF rejection problem (for instance, using it at a radio station could cause potential RF overload). For those of you who like to mess around under the hood, this preamp offers a chance to play with the inner workings with the manufacturer's blessings.

The basic sound as delivered was very good to begin with. I tried it with a variety of mics, including my Electro-Voice RE-20, Shure SM-7 and RCA 77 DX, and it handled all of them quite well. It had enough gain to get the old ribbon mic up out of the noise floor, and the SM-7 had a nice top end without any extra bottom. The RE-20 lost some of its "woolly" quality that some preamps impart to it. No, this isn't a tizz and boom preamp. I'd call it honest. It just

**MANUFACTURER:** Studio Technologies Inc., 5520 West Touhy Avenue, Skokie, Illinois 60077. Tel: 847-676-9177.

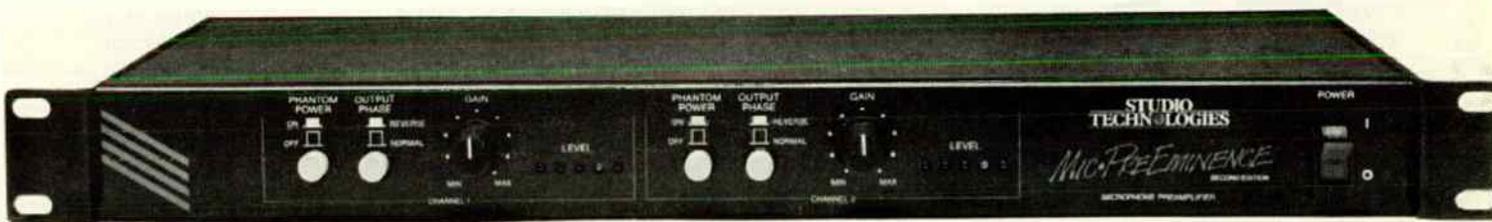
**APPLICATION:** Stereo mic preamp with balanced and unbalanced outputs for use as an outboard mic pre for your existing console or as a stand-alone preamp for stereo recording.

**SUMMARY:** Single RU mic pre with the basics: continuously variable gain control, 5-segment LED level indicator, phantom power and polarity reverse switches. Transformerless balanced input and output circuitry.

**STRENGTHS:** Reasonable price; very honest sound; full schematics included. (Hooray!)

**WEAKNESSES:** Lack of true front-panel calibration marks on gain settings makes repeating a previous setting difficult.

**PRICE:** \$799 **EQ FREE LIT. #:** 145



## HEADPHONE MIX BREAKTHROUGH

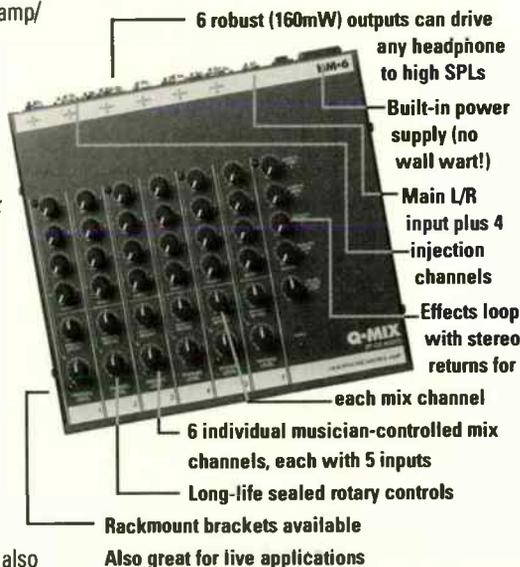
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own effects. And you can concentrate on engineering instead of dealing with constant cries of "More vocals!", "More Effects!" or that old standby "More ME!"

# Mic Pre MAINTA

seems to amplify what you put into it without a lot of fuss or excuses.

I do wish Studio Technologies would put some real markings on the gain controls. All you get is Min, Max, and some dots in between. I've learned a lot about mic sensitivity and pads over the last few years by having preamp channels with decibel markings on the gain controls. For instance, if one channel had to be set 10 dB higher than the other to center the stereo image, it usually indicated a mic pad, for example, had been engaged without your knowledge. With just dots, you never know what your gains are. And I worry about such stuff (really), and so should you. Getting a feel for how much gain each part of your signal path is providing is important to getting the best sound out of said path. And you can only learn it if you're constantly reinforced by the equipment you use. So

the output are available as an option). Internally, each channel of the MP-4 is on a completely independent circuit card with its own power supply regulation. This design prevents loading down of the power supply by condenser mics with high current requirements.

Each channel has the following controls: 48-volt phantom power On/Off, 15-dB pad On/Off, normal or reverse polarity, and a 24-position, gold-plated rotary switch for gain adjustment from 22 to 64 dB through the mic input. When using the front-panel, high-impedance instrument input gain may be adjusted over a range of 8 to 50 dB. Interestingly, the gain control does not have "stops" at the minimum and maximum settings. Instead, the control rotates through 360 degrees. Most of the adjustment range is clearly marked for the amount of gain; at the two bottom (unmarked) positions, gain is set at 14

(All too often, we see mic pres with the instrument input on the rear panel, which makes permanent installation of the unit in a rack a bit of a pain.) Rear-panel XLR mic input and line-level outputs (pin 2 hot) are gold plated, and although the outputs are unbalanced, this was never an issue in actual use.

One of our first tryouts with the MP-4 was with some RCA microphones. Owning a bunch of vintage mics can be a beautiful thing, but it doesn't come without a price. In the case of our RCA 77DX's and 44BX, that price is noise. Since these mics have low output, they require a mic preamp with plenty of gain. The MP-4 has enough gain, and yet is quiet enough that you can hear the mic, not the noise created by the preamp. Using the MP-4 with the 44BX, you could really hear the character of the mic — the fast transient response and fat "1940's radio announcer" timbre. In all of our trials, the MP-4 basically got out of the way of the microphone signal and became a transparent part of the signal chain. Bottom end was tight and extended, while the top end was smoooooth.

In addition to the RCA ribbon mics, we also used the MP-4 with a variety of other dynamic and condenser mics including a Neumann U87, Lawson L-47MP, Shure SM57, beyerdynamic M88, and Audio-Technica AT3525 and AT3527's to mic drums, guitars, and vocals. Results were similar: the MP-4 delivered transparent gain and allowed the sound of these mics to come through uncolored.

During operation, we noticed that the MP-4 became quite warm, so you might want to allow an empty space

how about putting some decibel markings on the gain controls?

If you really need an honest preamp that won't add any extra sound of its own, one that won't change your sonic creation with its own flavor, check out the Mic-PreEminence. It could be your vanilla.

## Great River Electronics MP-4

BY STEVE LA CERRA

Great River Electronics' MP-4 four-channel mic preamp employs Class A FET circuitry and Jensen transformers on the inputs (Jensen transformers on

dB. A red LED for each channel indicates that the output stage is 3 dB below clipping. Though some sound engineers might like to see more comprehensive metering, this LED served our purpose just fine.

Our initial impressions of the MP-4 were favorable: quality workmanship, tight controls with solid feel (particularly the gain adjustment), and intelligent location of the high-impedance input.

**MANUFACTURER:** Great River Electronics, 3056 East 65th Street, Inver Grove Heights, MN 55076. Tel: 612-455-1846. Web: [www.greatriverelectronics.com](http://www.greatriverelectronics.com).

**SUMMARY:** Four-channel, solid-state microphone preamp for studio and live sound applications.

**STRENGTHS:** Well-constructed, provides four channels in one rack space, high-impedance input is located on front panel.

**WEAKNESSES:** Minimal signal metering; pad switch is not clearly labeled.

**PRICE:** \$1900; MP-2 two-channel version, \$1200; Jensen transformer output option, \$150 per channel.

**EQ FREE LIT. #:** 146

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# Mic Pre MAINTA

directly above it for ventilation. Speaking of rack spaces, we liked the fact that you get four channels in a single space. One thing that we felt could be improved — and we are nitpicking here — is the label on the pad switch. The Off position is labeled “PAD” and the “15 dB” position switches the pad into the circuit. This might throw you for a loop when using the MP-4 for the first time, but it’s certainly easy to get over. That aside, the MP-4 is an excellent mic pre that you can easily use with a variety of mics — high or low output — without worrying about the preamp adding noise to the signal. Definitely recommended.

**MANUFACTURER:** SPL. Distributed by beyerdynamic, 56 Central Avenue, Farmingdale, NY 11735. Tel: 516-293-3200.

**APPLICATION:** High-performance stereo mic preamp with high- and low-pass filters and PPM meters that can be used instead of your console mic preamps or as a stand-alone preamp for field recording.

**SUMMARY:** Very high-quality mic pre with user friendly features.

**STRENGTHS:** Two channels of world-class sound in a 1 RU chassis; high-pass and low-pass filters can be switched out of the signal path; bold right-side-up and up-side-down lettering on the back panel.

**WEAKNESSES:** Poorly translated manual needs to be proofread by an English-speaking editor. For instance, I don’t think they really meant to indicate “...6.81 kW (kilo-watt) resistors for bridging from the phantom supply...” It should read, “...6.81 kohms (meaning 6810 ohms)...”

**PRICE:** \$1299 **EQ FREE LIT. #:** 147

## SPL ProMike

BY MIKE SOKOL

This is the second piece of SPL gear I’ve reviewed, and in both instances, the equipment just reeked of quality. This is German engineering at its very best: every control has an almost sensuous feel that makes you want to push the buttons and turn the knobs. Stepped controls are included for both gain and high-pass/low-pass filters, which makes repeatability a reality. There are back-lighted switches for polarity, 35-dB pad, phantom power, and filter enable, which allows you to see the settings from across the room. And a very bright 20-segment LED PPM meter let’s you keep tabs on what’s happening even under bright lighting conditions. As shipped, it came without the optional input-output transformers, but these can be easily added by the end user in the field without sending the unit back to the factory.

When I pulled the ProMike out of the box, I got the same feeling I got my first time behind the wheel of a Mercedes 450 SL. Did I mention sensuous engineering? I quickly stuck it in my studio rack, and revved up the engine (I mean, cued up the tape decks).

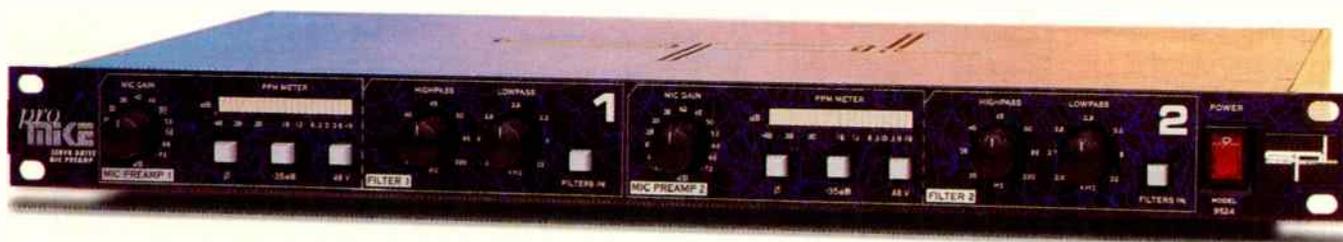
Overall, the sound was excellent — with a very defined bass on male vocals and the ability to process sibilance without any strain. The unit was able to handle everything I threw at it with nary a complaint. The noise floor seemed very low even with my low-output RCA 77DX ribbon mic,

and the CMR (Common Mode Rejection) was reasonable for an electronically balanced input stage.

My studio can get very noisy electrically, since I not only have a veritable potpourri of antique, modern, analog, and digital gear interconnected, but also because it’s located 1/2 mile from both the WARX and WQCM radio towers. All grounding and CMR has to be perfect in the studio or a smorgasbord of hums, buzzes, and radio personalities will get into the mix. The ProMike did fine in my personal RF Hell, since it includes not only a ground lift for the chassis from the line, it also has separate pin 1 lifts from each XLR output. A very nice touch.

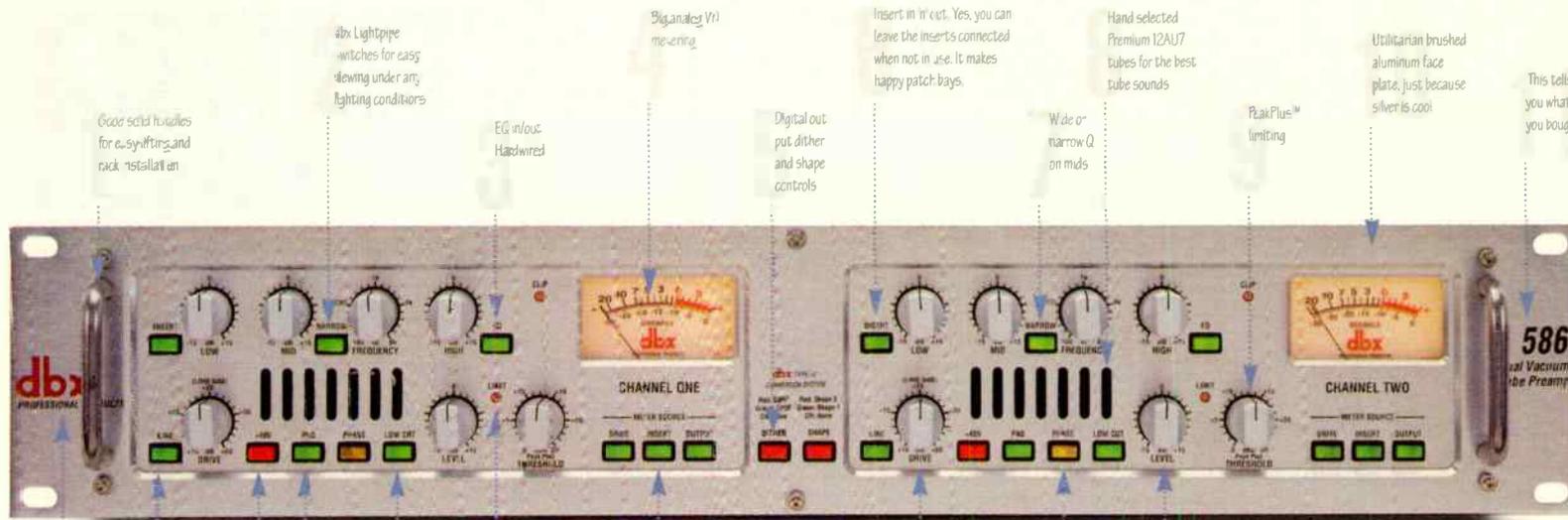
The PPM (Peak Program Meter) takes a little getting used to if you’ve been fed a steady diet of VU ballistics, but it’s how they do it in Europe and it’s better for digital recording downstream of the preamp. I’ve used both PPM and VU meters for the last ten years, and tend to use PPM Mic metering for cutting digital tracks (to avoid digital splatter) and VU metering for final mixing (to judge density of the mix). There’s also a Euro 7-pin connector for direct hookup of a stereo mic. And a final touch is gold-plated 1/4-inch phone and RCA unbalanced outputs for hookup to consumer and prosumer gear. No more adapter cables.

The only problem I had was a very slight increase in 60 Hz hum (probably from a ground loop in my hookup) when the polarity reverse switch was engaged. I don’t like it when the unexplained happens, but I suspect that adding the optional input transformers would make it go away. Otherwise it was a great ride. Way to go, SPL. **EQ**

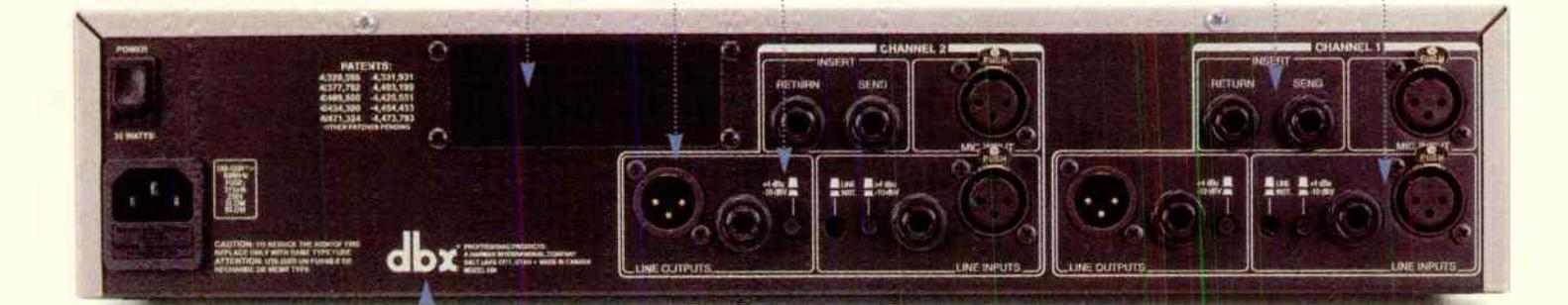
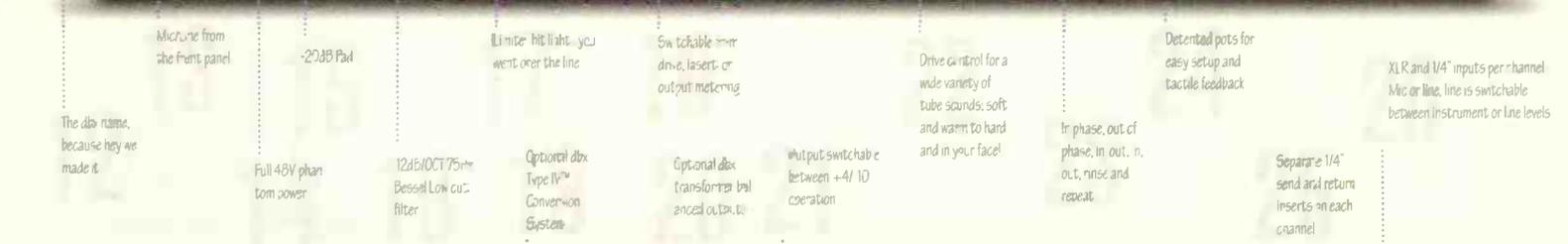


# This should put an end to that "beauty is only skin deep" nonsense!

## SILVER SERIES



dbx has long been known as the leader in signal processing technology, and mic preamps have always been a strong part of that reputation. Our 586 Dual Vacuum Tube Preamp carries the heritage of those past products into the vacuum tube arena. As usual we have left no stone unturned to bring to the 586 all the standard features one could possibly want in a preamp, including custom designed analog VU meters that monitor tube level, insert path or output levels, +48V Phantom Power, 20dB pad, phase invert, and low cut filter. Line/Instrument and mic inputs make the 586 versatile enough to use with virtually any source device. Add to this impressive list of standard features extras like a three band EQ with sweepable mids and adjustable mid Q (with hardware bypass switch), insert loop, and the new patent-pending PeakPlus™ limiting topology and you've got a winner.



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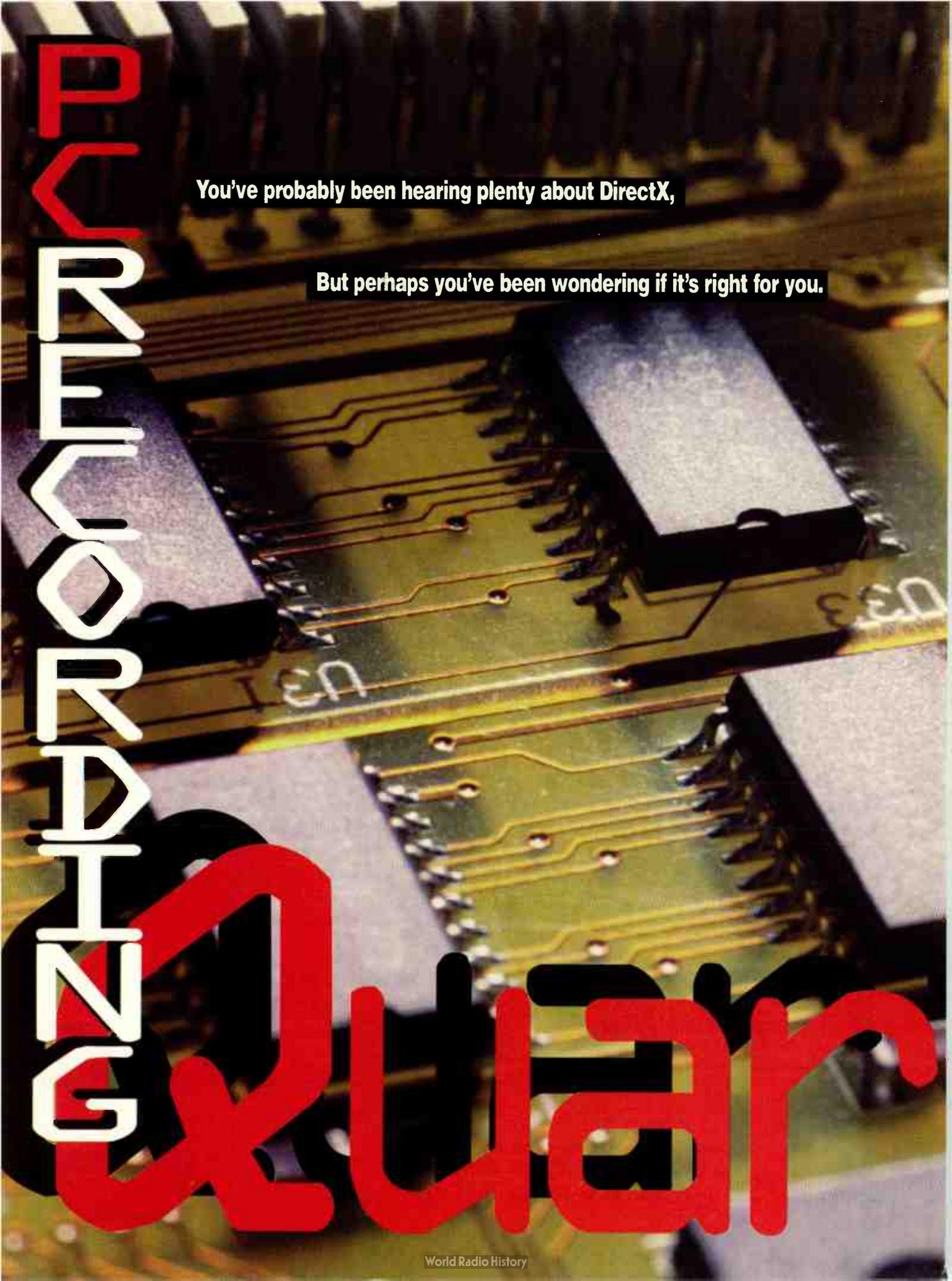
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CIRCLE 32 ON FREE INFO CARD

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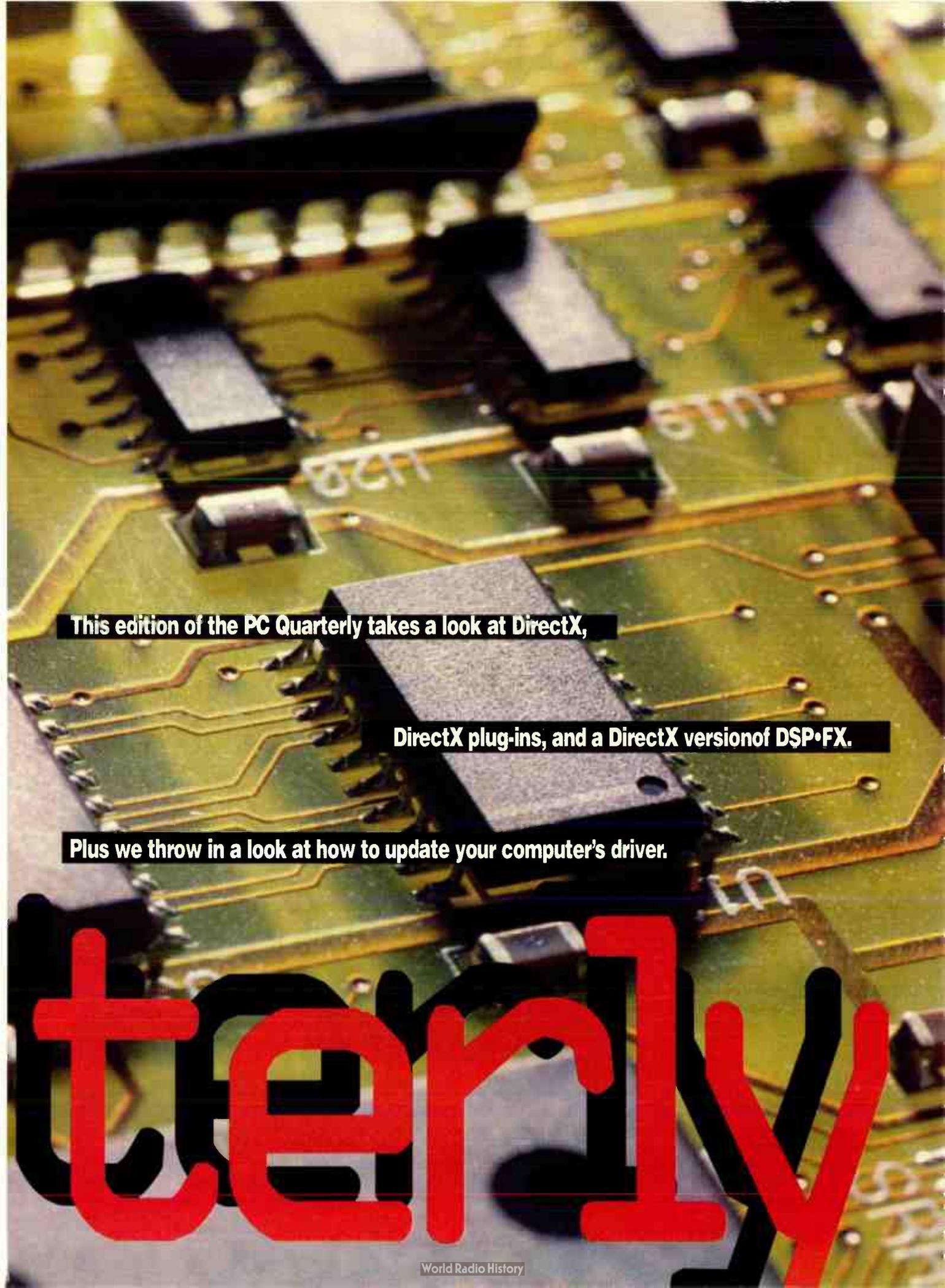


You've probably been hearing plenty about DirectX,

But perhaps you've been wondering if it's right for you.

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Quar



**This edition of the PC Quarterly takes a look at DirectX,**

**DirectX plug-ins, and a DirectX version of DSP•FX.**

**Plus we throw in a look at how to update your computer's driver.**

# terly

Track presentation. The emphasis this time was on Direct Music — a stand-alone product that's intended to change and improve the ways synthesized music will interact with CD-ROM games, media development, and the Web. Under the MS slogan "Revolutionizing Music for the Digital Age," Direct Music seeks to change the way MIDI is generated by a media application, video game, or Web site. Plus, introduce interactive scoring that makes it possible for the music to be constantly and interactively changed to fit the media's current involvement level. As an example, they pulled up Space Doughnuts, a 3D version of Asteroids, and began to play the game on a huge screen. Using a set of algorithmic composition parameters (such as key, tempo, arpeggios, etc.), the game played a funky little score that escalated as you moved through the various levels of spaceball wizardry.

I should also note that Direct Music has a time stamp imbedded into its media. This means that music events can be synchronized with graphics and digital audio in a way that previously was very difficult to pull off in simple media

presentations. Also, in addition to supporting MIDI files, Wave files, music composition style format (music type, motifs, key and signature, etc.), AVI (video), and graphics, Direct Music is said to have an overall file size that's smaller than MIDI files.

### DLS

One of the biggest developments that will almost assuredly affect the music industry is the concept of downloadable samples (DLS). In its current incarnation, DLS acts as a software synthesizer, whereby the data can be downloaded into the PC's own RAM memory and made available as a virtual MIDI port for playback through the system's soundcard. This innovation (which was ratified at the last NAMM show by the MIDI Manufacturers Association) has a lot of folks very excited, both in the PC and in the music industry markets.

Microsoft has decided to include samples from the standard Roland GM set with Direct Music. An open architecture also lets other developers create their own specialized sound sets

that can be downloaded from a CD-ROM or over the Web. Of course, the resolutions are kept low, so as to allow for fast downloads and reasonable throughput with almost no PC overhead requirements. DLS also lets you download actual audio samples into memory for access by a score. As with the synth set, the resolutions are low (most likely 22.05k/16-bit) and may be compressed for further data reductions.

On a final note, Microsoft, being the giant they are, decided to revamp the way Direct Music looks at MIDI channel management by incorporating "P Channels." P Channels are based upon a 32-wordbit number of channels (versus the 4 bits of MIDI), meaning that the PC could handle up to 65,536 channel groups with 16 channels per group (literally making it capable of handling millions of channels over thousands of ports.)

The folks at Microsoft say that Direct Music will ship with DirectX6 and won't be bundled into Win 98 — although NT5 and Win 98 will both fully support it. By the way, this article's was written on a Win 98 PC, but that's a whole other story! **EQ**

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Richard Dodd, Grammy Award Engineer  
Wildflowers, Tom Petty

Other users of the PreQ<sup>3</sup>: Celine Dion, David Foster, Eric Clapton, Gorla Estefan, Garth Brooks, Whitney Houston, Paul Worley, David Yewdall-film, Natalie Cole, Tim McGraw, Martina McBride, Babyface, Sidney Barker, Denny Purcell, NBC Tonight Show, American Country Countdown, ABC International Sports & Monday Night Football

See Electronic Musician, Jan. 1998, "Coolist Products of the Year" NightPro page 46.

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CIRCLE 155 ON FREE INFO CARD

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Minimum system requirements: Windows 95, NT 4.0 or higher, Pentium 90MHz processor or better for the realtime engine. Some plug ins require a 133MHz processor or better.  
To download a demo program, visit our website at <http://www.steinberg-na.com> or call Steinberg for a free CD ROM demo. (\$5 shipping and handling charge.)

CIRCLE 66 ON FREE INFO CARD

## Plug-Ins: Are We There Yet?

DirectX offers new opportunities for plug-in processing

BY CRAIG ANDERTON

There's a big buzz about DirectX (once called ActiveMovie) plug-ins, which are pieces of software that work within a "host" Windows program to add functionality. For example, one plug-in might provide a great reverb as a processing option within a digital audio editing program; another might specialize in emulating tube guitar amp timbres.

With early microprocessor-based audio processing, you couldn't hear the results of any editing until the computer had finished crunching a bunch of numbers, which took a while due to the slow computational speed. The usual workaround was using dedicated, high-speed hardware just to handle the audio. These days, computers are getting so fast that they require hardly any time to perform the calculations that used to take (seemingly) forever. DirectX is based on the premise that with fast enough processing, changing parameters can feel like it's happening in real time. You can even string together several DirectX plug-ins in "series" to create the computer equivalent of a multiple effects systems.

Best of all, DirectX plug-ins are not manufacturer-specific and work in any program that can accept them. They don't even have to be in the same directory as the host program; upon installation, the plug-in "registers" itself with Windows and becomes available to all DirectX-savvy programs.

Or at least that's the hype.

The reality sometimes falls short of these lofty goals, but there's no denying that DirectX delivers much of what it sets out to do, and will be doing a lot more in the future (see David Huber's article on page 92 of this issue). So let's plug in, turn on, and check it out.

### DIRECTX BASICS

A DirectX program's immediacy (i.e., changing a parameter produces a quick, and obvious, response) is directly proportional to your computer's processing speed. With slow machines, the computer is so busy calculating that it can't deal with getting the information to a sound card on time. This produces ugly discontinuities in the sound called "stuttering," "gapping," or "drop outs." It's sort of like reading a sentence wher som l t t rs j st dr p out — pretty annoying. As you add more effects, any problems become even more pronounced.

A 486 is simply not up to the task. A midrange Pentium (100–200 MHz) with 32 MB of RAM does a decent job, but will choke on resource-intensive plug-ins, or overly long plug-in chains. A Pentium Pro is roughly twice as powerful as a standard Pentium with the same clock speed, and a dual Pentium Pro system is even better. (Then again, being independently wealthy and having your Dad occupy a management position at Intel is probably the best op-

tion of all...but that's another story.)

However, remember that high speed is necessary only for *real-time* previewing, which is usually a checkbox-selectable option in the program. If all else fails, you can always take the old school approach — turn off real-time previewing, apply the effect to a digital audio file, and wait for the computer to do its thing. It's less convenient, but the final sonic result is the same.

### TRADEOFF TIME

Your program may allow adjusting various system-oriented parameters to trade off responsiveness vs. stuttering. For example, you can often choose between rapidly processing small "packets" of sound (these packets are stored in memory buffers), or working more slowly with larger packets. Processing the smaller packets, as determined by buffer size preference settings, allows more responsive real-time control, but you're stressing out the processor more. Processing larger packets reduces the chance of stuttering, but makes the controls feel like molasses.

It's generally best to use any default buffer settings, but if you want to experiment, first write down the original settings so you can return to them if needed. Start with a small number of large buffers, and if all is well, increase the number of buffers and decrease the

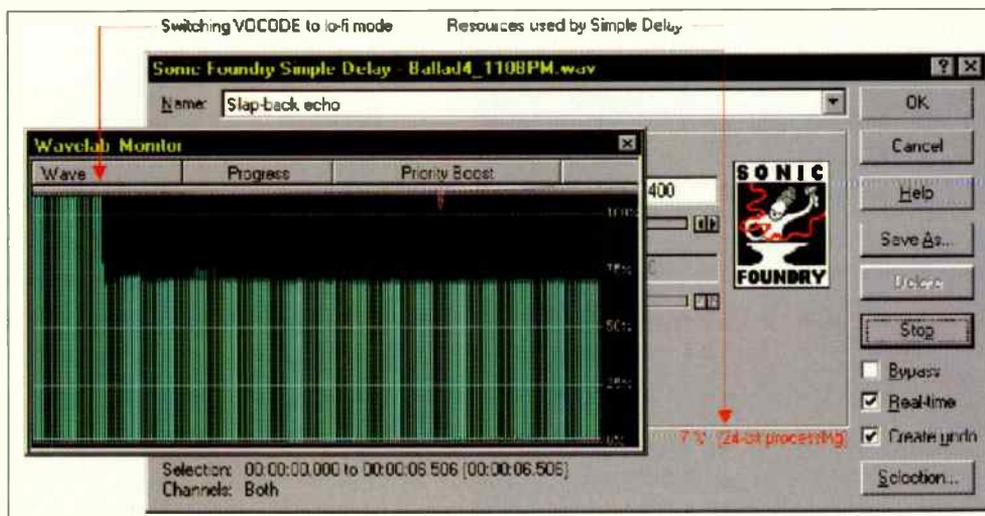


FIGURE 1: Sound Forge and WaveLab both provide info on system resource consumption.

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## GENERAL INFORMATION

### LOCATION

SPARS Biz/Tech '98 will be held at the Loew's Vanderbilt Hotel located just a few blocks from Nashville's famed Music Row. Parking is available at, and adjacent to, the hotel.

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### HOTEL ACCOMMODATIONS

Attendees are eligible for a special conference rate at the Loew's Vanderbilt of only \$149.00 for single or double occupancy. Simply call the hotel at (800) 336-3335 and ask for your SPARS rate and reservation. For alternate hotel information, contact the SPARS office at (800) 771-7727.

### NAMM CONVENTION

A limited number of complimentary exhibit passes will be made available to early registrants through the courtesy of SPARS and NAMM. These will be provided on a first-come, first-served basis to paid registrants. So sign up early and see the NAMM show on July 9<sup>th</sup> for free!

### AIRPORT AND SHUTTLE INFO

Nashville's modern airport is located 20 minutes south of Music Row and is serviced by all major airlines. Car rentals are available as are cabs and shuttle bus provided by Grey Line for \$9 per person each way.

### NETWORKING

In addition to the panels and presentations, there will be a gala reception and party in the evening as a wrap-up to the conference. This, along with lunch, is the perfect opportunity to meet and network with the participants, SPARS Board of Directors and Nashville recording industry luminaries. So bring a stack of your business cards and get ready to network!

### SPARS MISSION STATEMENT

"To foster the success of our members in a changing audio industry through the sharing of ideas and innovative business practices, education and technical applications."

For more information,  
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Or visit the SPARS Web site:  
[www.spars.com/spars/](http://www.spars.com/spars/)

SPARS will begin its 20<sup>th</sup> Anniversary year with a gala ship-borne event to be held on September 26, 1998 in San Francisco. For more details, contact the SPARS offices.

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*To maximize your travel time, the conference has been scheduled to precede summer NAMM by one day. So mark your calendar for Thursday, July 9, to attend Biz/Tech '98, and then take the next day to visit NAMM and see the latest recording and music technologies.*

**BIZ/TECH '98**

**PROFITING IN THE STUDIO BUSINESS**

**8:00 AM  
REGISTRATION AND COFFEE**

**8:30 AM  
MANAGING THE CHAOS: THE CRUISE  
MISSILE APPROACH TO DOING BUSINESS  
IN THE 21<sup>ST</sup> CENTURY**



Navigating your course through the increasingly complex world of production requires new thinking, new skills and new ways of viewing your business. And that's in addition to adapting to a host of new technologies. Murray Allen, Director of Audio Video Services for Electronic Arts, will look at what it will take to succeed in the future filled with the promise of DVD, 5.1, Direct delivery, HDTV, and ever more powerful yet less expensive tools to practice our craft.

**10:30 AM  
COFFEE BREAK**

**11:00 AM  
DOING BUSINESS WITH THE PRODUCER**

In today's record business, producers control the record-making process. Find out what top producers look for when they choose a studio. Whether it's a pre-production rehearsal or the tracking and mixing of a multimillion dollar album, listen to what makes for a win-win relationship with the producer. Making – and keeping – that connection with the producer will be vital to the success of your business in an increasingly crowded studio landscape. Presented in association with NARAS®.

Scheduled to participate, as of press time: Tony Brown, Quincy Jones, David Foster, and others. (Please note that due to session commitments, alternate producer(s) may appear.)

**1:00 PM  
LUNCHEON**

**1:45 PM  
INTERNET MUSIC DELIVERY:  
A NEW MARKETING APPROACH**



Find out who's making money on the Internet – and how – in this stimulating presentation by industry leaders N2K and Liquid Audio. Consumers are browsing, previewing and purchasing recordings via the Internet in increasing numbers. What are the ramifications for the studio recording industry and your business? Do you need to get involved today? If so, how and why? Join J.J. Rosen from N2K and Gerry Kearby from Liquid Audio and get wired into this new business.

**3:00 PM  
BREAK**

**3:15 PM  
SELLING AND RELATIONSHIP BUILDING  
IN THE 21<sup>ST</sup> CENTURY**



Jeffery Gitomer, well-known business strategist, syndicated columnist and author of *The Sales Bible*, will offer the closing presentation that is certain to re-orient your business focus and give you an edge over your competition. Gitomer delivers ready-to-use, breakthrough ideas that will allow you to profit from a new view of your customer and your business. Be prepared to take extensive notes and put his ideas to use immediately to improve your bottom line.

**5:15 PM  
CLOSING REMARKS – ROUND UP AND  
DIRECTIONS FOR EVENING GALA**

**7:00 PM  
EVENING GALA AND NETWORKING**

Visit and network with conference attendees, SPARS Board members, the press and Nashville cats at a Nashville-style party at MasterFonics Studios, one of Nashville's premier recording facilities.

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size. If dropouts start to occur with a typical plug-in setup, revert to the last buffer settings that worked satisfactorily.

## CHAINING EFFECTS

Although there are no stated limitations for the number of DirectX effects that can be chained serially, there are practical limitations based on processor speed. Reflecting those realities, some programs limit the number of plug-ins that can be added, whereas others let you add plug-ins until your processor begs for mercy. This is one reason why it's important to know how many resources a plug-in consumes, as one resource-intensive plug-in might use up all the available processing power and allow for no chaining at all. So how do you find this out? Well...

## MONITORING SYSTEM RESOURCES

There are several ways to check how heavily your system resources are being taxed; the host program itself often provides an indication. Fig. 1 shows two examples from WaveLab and Sound Forge. In addition to displaying the power needed to get sound in and out of the program, WaveLab's monitor window has purple lines (shown here in blue for legibility) to indicate the processing power required by all effects running in the Master Section. This includes effects bundled with the program (which are not DirectX format and are somewhat more efficient) as well as DirectX. In this example, Opcode's VOCODE — a pretty resource-hungry plug-in — was orig-

inally set to hi-fi mode and maxed out the available processor resources. Switching to lo-fi mode brought resource usage down to a more manageable 75 percent or so. (WaveLab has an option to monitor/process only one channel of a stereo pair, which cuts the resources needed by 50 percent.)

With Sound Forge, the individual effect's window shows how much processing power it consumes. In fig. 1, Sound Forge is using a very simple, and therefore processor-friendly, delay effect. This consumes only 7 percent or so of the available resources.

Windows also has built-in system monitoring program called SYSMON.EXE, located in the Windows folder. To make sure it's available to your computer, do the following:

1. Go *Start > Settings > Control Panel*.
2. Double-click on *Add/Remove Programs*.
3. Click on the *Windows Setup* tab, and locate the check box next to *Accessories*. If it's gray, not all accessories have been installed.
4. Click on the word *Accessories* (not the checkbox next to it).
5. Click on *Details*.
6. Find *System Resources Meter* and make sure its checkbox is checked.
7. Click on OK; this takes you back to the Windows Setup window. Click on *Apply* (you may then be asked to insert the original Windows 95 distribution CD-ROM). Click on OK to install the System Resources Meter.

*continued on page 136*

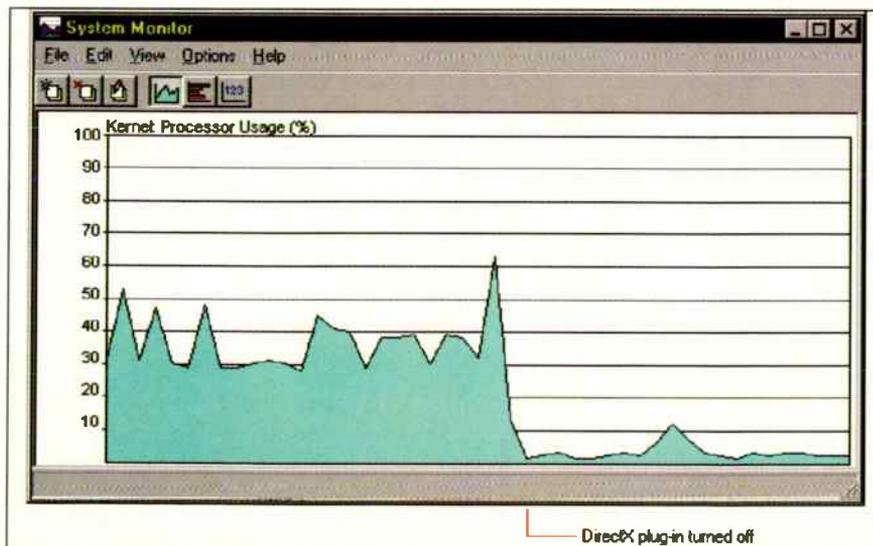


FIGURE 2: The Windows System Resources Meter shows how hard the processor is working.



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## DSP•FX: Virtual Pack Plug-Ins

The noted hardware system now offered in DirectX-ready plug-ins

BY CRAIG ANDERTON

**MANUFACTURER:** DSP•FX, Inc., 100 Northhill Dr., Bldg. 24, Brisbane, CA 94005. Tel: 415-467-7886. Web: www.dspfx.com.

**APPLICATION:** Process audio files digitally to create a variety of special effects.

**SUMMARY:** The effects parameters are nothing you haven't seen before, but the graphic interface is helpful and, most importantly, the sound quality is extremely high despite relatively low CPU loading.

**STRENGTHS:** High ratio of sound quality to resource usage; above-average use of graphics; dramatic and useful effects, with particularly good reverb and flanging; MIDI control possible with sequencer running concurrently.

**WEAKNESSES:** No ability to sync modulation sources to envelopes or MIDI clocks; functional aspects of interface could use a tweak; pitch shifting is not significantly better than other programs.

**SYSTEM REQUIREMENTS:** Pentium or better processor, Windows 95/98 or NT, 16 MB RAM (32 MB recommended), 10 MB hard disk space, and VGA display with at least 680 X 480 resolution.

**PRICE:** \$299  
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Power Technology made a splash with its hardware DSP•FX board, which provided excellent reverb and other effects in Windows machines without loading down the host processor. But times have changed, processors

have gotten faster, and now these same effects have been translated into DirectX format. However, that's not the only news: Power Technology has also changed its name to DSP•FX, Inc., and is now affiliated with Event Electronics, which distributes and markets the product line.

This review will concentrate on the DirectX performance, as contributing editor Wade McGregor already reviewed the hardware versions in the October '96 issue of *EQ*, and the sound quality is identical. The complete FX package consists of tremolo, autopan, delay, pitch shift, reverb, and equalizer. I tested it with Sound Forge 4.0 and WaveLab 1.6.

### POWER TO THE PLUG-INS

With a 200 MHz Pentium MMX, 32 MB RAM, and stereo files, when first initiating playback in Sound Forge, the resource consumption appears to be relatively high — in the 30-50 percent range. However, this seems to be a problem with the measuring process, as other plug-ins exhibit the same kind of

behavior, and WaveLab's monitor shows no similar upward spike.

A few seconds later, each effect settles down to a more miserly (and presumably accurate) average amount (Delay 9 percent, Autopan 13 percent, Flanger 16 percent, Chorus 21 percent, Pitch Shifter 17 percent, Reverb 18 percent, Tremolo 16 percent). Parametric Equalizer is a special case; if a band's boost/cut parameter equals 0, it's effectively taken out of the CPU load. With all 16 bands (each band is stereo) doing something and the hi/lo shelves turned on, it used 22 percent of the available CPU resources. Of course, with faster processors, the CPU load goes down substantially — according to the company, with a 300 MHz Pentium II, the reverb uses only 7 percent of the processor resources.

Those who love the sound of the DSP•FX hardware ISA board are naturally concerned that something may have gotten lost in the translation to DirectX. According to the manufacturer (and my own listening tests confirm this), both versions use the identical al-



FIGURE 1: The DSP•FX Chorus screen. Note how the graphics indicate relative delays and extent of modulation.

gorithm. I can see where some would prefer to continue using the hardware version because of the way it frees up system resources for other tasks, but the convenience and low cost of DirectX plug-ins is pretty compelling too, particularly if your machine has a shortage of vacant ISA slots.

#### SOUND & VISION

All of the interface graphics, while definitely not "streamlined," offer graphic feedback on parameter settings beyond the usual string of numbers. Although this may seem a little "mad scientist" at first, after a while you start to depend on the graphic representations, and after a while longer, you wonder why everyone doesn't do this. The 4-voice chorus interface is particularly good, as you can easily visualize how the various parameters affect the sound (fig. 1).

Sound-wise, the flanger is outstanding, with a bold, thick sheen. Delay allows up to eight taps, and is very flexible. The reverb is wonderful; once you discover the "more" page so you can tame the early reflections. With drums, too high an early reflections value causes a metallic ringing, although this can be great with voice. In any event, tweak the controls enough, and you'll find plenty of useful, high-quality sounds. Significantly, the ratio of sound quality to system resources consumed is very high.

Although you cannot sync the periodic waveforms in the tremolo, flanger, chorus, and autopan modules to MIDI clocks, you can trigger the "reset" button with a MIDI control change sent by a sequencer running concurrently with the program. (In fact, the sequencer could control any combination of the effect parameters; you can even use MIDI to trigger "one-shot" panning and tremolo events using a combination of the "reset" and "hold" functions.) The MIDI control change settings default to the JL Cooper CS-10's buttons, knobs, and faders. You can either map the settings on other MIDI controllers (e.g., Peavey PC-1600) to the defaults, or edit the configuration file (located at C:\Program Files\Dspfx32\System\Midi\midi1.cfg) to match the controller.

One gripe is that the pitch shifter isn't really useable on percussion, owing to flammings problems. It's best as a "fat-

*continued on page 146*

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## Driver's Ed: Free System Tune-Up

Update your drivers for better system performance

BY CRAIG ANDERTON

Lurking deep within your computer are drivers — small, but very important, software routines that help your system communicate with peripherals such as sound cards, printers, video boards, etc. Both Mac and Windows machines use drivers, but each operating system has its own way of installing, de-installing, and upgrading drivers. This article concentrates on Windows, but similar (and generally simpler) principles apply to Macs.

Updating a driver, which is usually free, is an easy way to improve system performance. For example, suppose your hard-disk recording program uses a standard Windows driver that can access only two channels of a multichannel sound card. If you install a driver that can access all of the sound card's channels independently, and the recording program knows how to talk to the driver, you'll end up with multichannel capability.

### DRIVER'S LICENSE

It's easy to determine a driver's version and whether it is correctly installed. Right-click on *My Computer*, select *Properties*, and then click on the *Device Manager* tab. You'll see a listing of all the hardware peripheral categories in your computer (fig. 1). Clicking the + symbol next to a category (e.g., *Sound, Video, and Game Controllers*, as highlighted in red) shows the devices installed within that category. If you see a circled exclamation mark over the icon, Windows recognizes the device, but something prevents proper operation — usually an incorrectly installed driver. If nothing shows up, either no devices exist or Windows doesn't recognize them because there is no installed driver (see sidebar).

Click on a device, and a window appears. Click on the *Driver* tab for more info (if there is no *Driver* tab, then a driver is not needed or not available).

The amount of driver info varies (fig. 2). Usually there will be a version number; compare it to whatever new driver you're installing to verify that the updated driver is indeed an update.

### FINDING UPDATED DRIVERS

Start your search on the Web. In addition to checking a specific company's site for software, there are also sites that provide links to sites with drivers (try [www.winfiles.com](http://www.winfiles.com)).

For example, to upgrade a sound card driver, go to the sound card company's Web site and look for a section that says "drivers," "software," "upgrades," or something similar. If you don't see anything obvious, use the site's search function to do a search on DRIVER (and possibly narrow it down by using AND, then specifying a product name).

Once you find the driver, look for any instructions regarding downloading and installation. Copy and paste these into Notepad or another text editor, create a folder on your C: drive's root level (such as "New Sound Card Driver"), save the instructions into this folder, then download the file into the same folder.

Drivers are often small enough to fit on a floppy disk, and Windows seems happiest looking for drivers from a floppy. If other software is bundled with the drivers, the files may be designed to fit on several floppies. Also, the driver may be compressed (generally using the Zip data compression/extraction protocol) to minimize download time. You need to unzip any zipped software before proceeding. If you don't have an unzipping program, there are several shareware versions

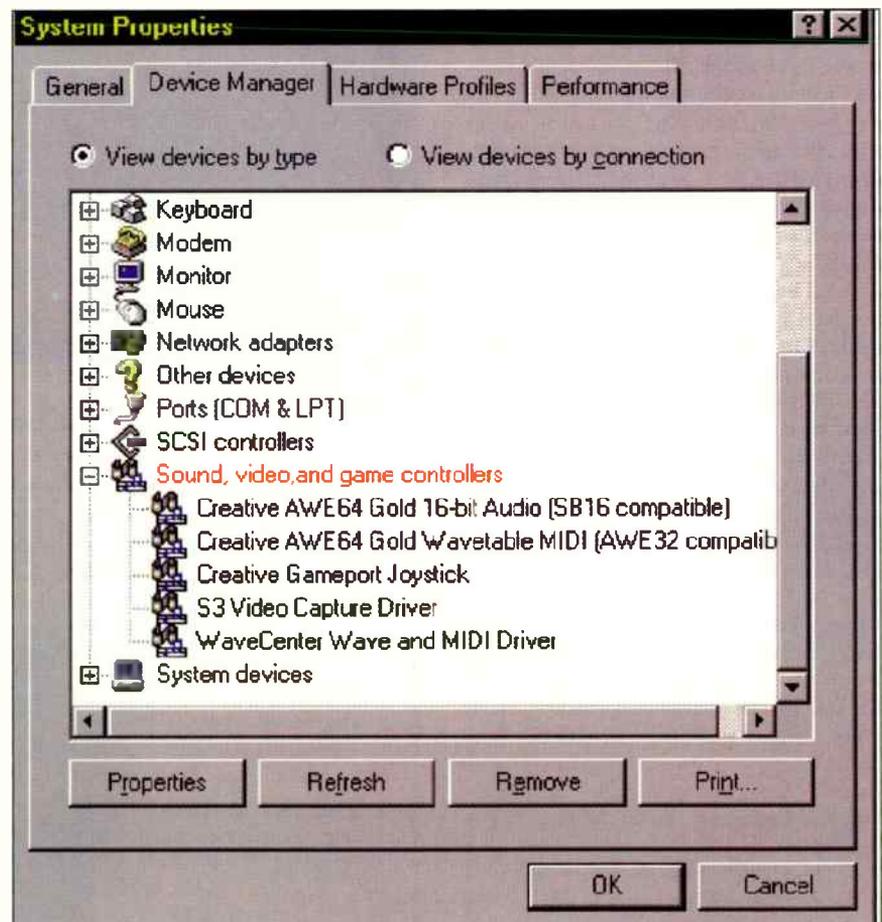


FIGURE 1: Device Manager provides info on various devices and their drivers.

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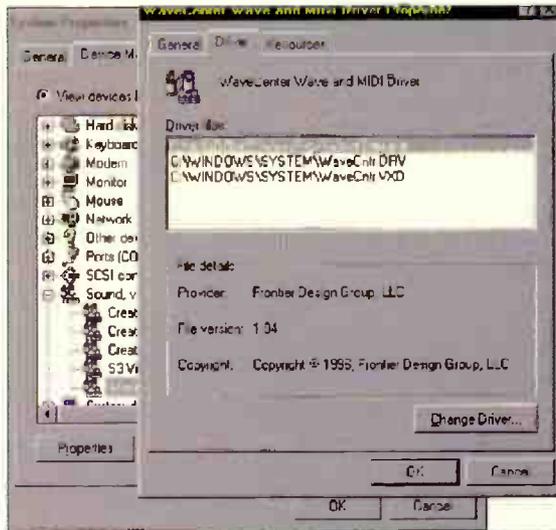


FIGURE 2: Each driver should include information about, at the very least, its version number.

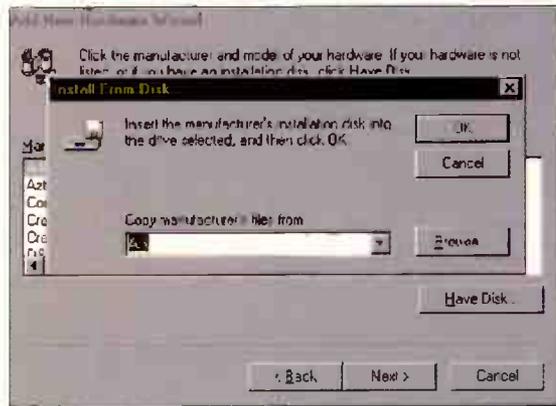


FIGURE 3: Telling Windows where to look for the driver.

(again, try winfiles.com for the latest).

If the file is self-extracting, simply double-click on it after downloading. After a few seconds the folder will contain the original self-extracting file along with the software extracted from it. *Important:* Save the original self-extracting file to floppy disk and put it in a safe place should you ever need to re-install the driver. Now delete the self-extracting file from the folder.

This driver software package can encompass anything from a single file to several files. Copy the contents from the "New Sound Card Driver" folder over to a floppy if it fits (don't just drag the folder to the floppy; open the folder and drag the files), otherwise just leave the files in the folder on your C: drive.

#### UPDATING YOUR SOFTWARE

Return to *Device Manager*. If there was a text file with instructions on how to update the driver, follow them to the let-

ter. Otherwise, the following default procedure works for most cases.

If you need to remove the previous driver, make sure you have the original driver distribution software disk. This lets you reinstall the older driver if there's a problem with the new one. To remove a driver, click on the device in the *Device Manager* (e.g., S3 Video Capture Driver in fig. 1), then click on *Remove*. After removing, it's probably a good idea to reboot the computer. If Windows notices that there's hardware without a driver, it will start its Add New Hardware wizard. Just follow the on-screen instructions, which take you through many of the steps given below.

If Windows doesn't recognize the hardware, go to *Start > Settings > Control Panel*, and double-click on *Add New Hardware*. Windows will then ask if you want it to search for the hardware. Say *No*, then, on the next screen, select the device category. Windows then builds a driver database, but ignore the list that pops up and just click on *Have Disk*.

The point of the next dialog box is to tell Windows where to look for the driver. Insert the floppy in the drive, enter A:\ in the drive field (fig. 3), and then click on *OK*. Windows searches for the driver on the disk, then installs it. If the driver is elsewhere, click on the *Browse* box and locate it.

At this point the process is pretty much menu-driven. Click on *OK*, and the computer will start copying the necessary files.

In many cases you don't need to remove the older driver; the new software will simply overwrite it. In that case, when you click on a particular device's *Driver* tab, check for an option to *Change Driver* (fig. 2, lower right). Click on this, click on *Have Disk*, then proceed as described in the previous paragraphs.

That's pretty much it! Restart the computer after installing the new driver and you're ready to enjoy (hopefully) more stable operation and maybe some new features too.



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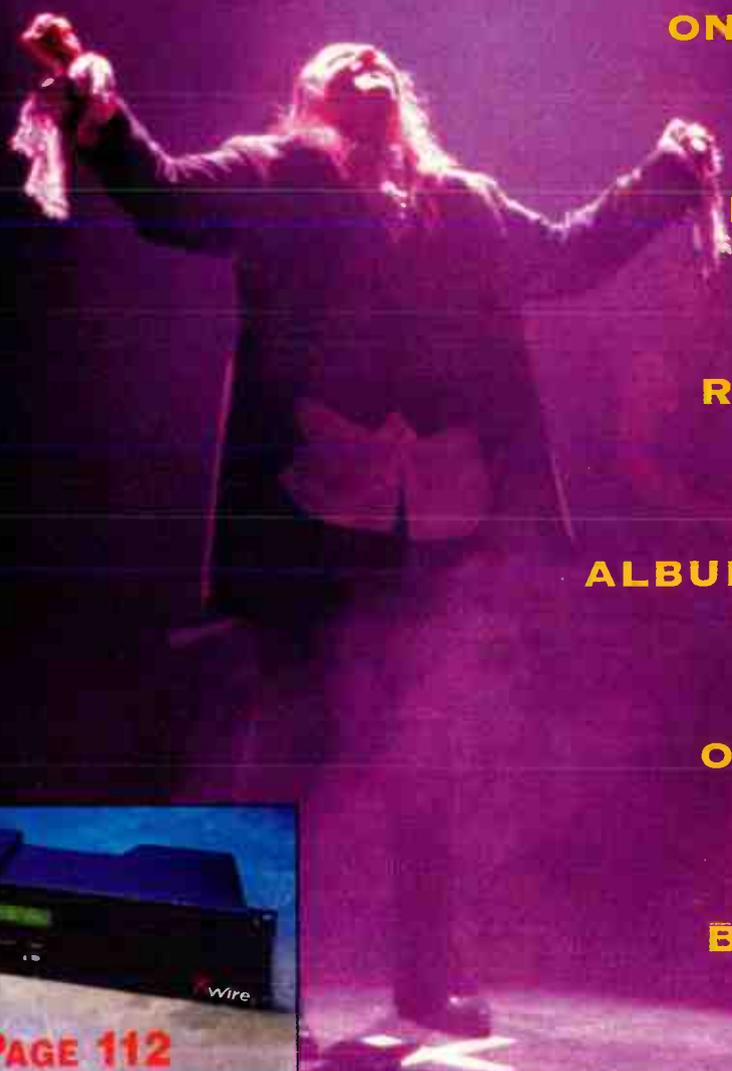


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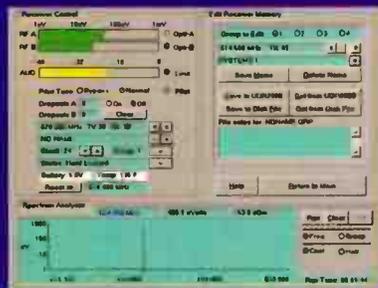
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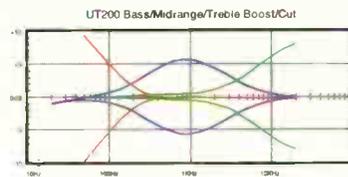


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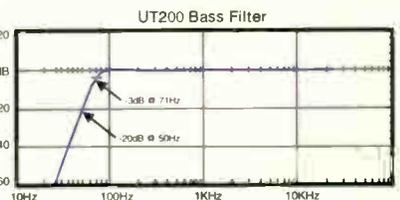


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# PEAVEY VC/L-2 COMPRESSOR/LIMITER



By **WADE MCGREGOR**

Hmm, what's missing in that track? A little warmth, perhaps? Maybe it needs more volume and less level? These problems can easily be fixed with Peavey's new valve compressor/limiter. The VC/L-2 makes it simple to smooth a vocal or restrain a guitar. It may be the fastest setup of any tube unit available. Two knobs and two switches for each of the two channels may be enough to get the job done.

The simplicity of the VC/L-2 is completed by the very retro design that includes two good-sized VU meters and a big bright power indicator. Connection is also simplified with a choice of high-impedance 1/4-inch phone jacks or low-impedance XLR connectors. The controls are designed for those who listen while adjusting the unit. No dB scales, ratios, or time constants are indicated on the controls.

The ballistics of the VU meters is a good match to the overall level changes that are produced by this compressor. The percussive peaks are passed but the sustained notes are caught and gently released by the optically coupled sidechain. The VC/L-2 uses a specially designed electro-luminescent panel as a gain control element in this UREI 1A2A-style compressor. Peavey claims their

electro-luminescent panel overcomes the hysteresis effects of other opto-coupled designs while maintaining a totally solid-state-device-free audio path. The midrange bias of the sidechain ensures that the unit does not pump on low-frequency sounds. The slower attack of this unit's opto-isolator will pass percussive transients without triggering. The result is well suited to vocals, guitars, and snare drums, but has far less effect on kick drums and other instruments with very low-frequency fundamentals.

This is a pure tube unit. No transistors or opamps in the audio path and big ol' transformers on the balanced XLR inputs. It doesn't have the range of control or subtle sheen of the high-end devices, such as those from Manley. However, it does provide very usable compression without any

fuss. Simply crank the threshold control up (clockwise) until you hear the amount of compression you want, then turn the output up until the level is back where it belongs, and you're done.

The front-panel switches are really big and solid. The switch on the left side of each channel selects either gain reduction or output level for the VU meter. The switch on the right side of each channel alternates between Compression and Limiting mode. I found the distinction between these two modes to be too subtle, although it is difficult to make this unit sound real bad with almost any setting. The way the sidechain is tuned to trigger the threshold based on mid-frequencies,

## ROAD TEST

**MANUFACTURER:** Peavey Electronics Corporation, 711 A Street, Meridian, MS 39301. Tel: 601-483-5365. Web: [www.peavey.com](http://www.peavey.com).

**APPLICATIONS:** Tube-based compression for individual instruments and vocals when tracking, mixing, or reinforcing live sound.

**SUMMARY:** A basic compressor that adds warmth but lacks user controls.

**STRENGTHS:** Solid construction; extremely easy to use; serious transformer I/O; very retro look.

**WEAKNESSES:** No stereo coupling; all parameters except threshold and output level are fixed.

**PRICE:** \$1249.99

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the unit doesn't even pump with considerable compression where more conventional VCA units might. The compression ratio increases (up to infinity:1) in proportion to the level that is above the threshold. The unit can deliver over 20 dB of gain reduction and handle balanced input levels up to +21 dBu (+18 dBV unbalanced) without clipping.

There are a couple of important switches missing from the unit. First, there is no Bypass switch. So you will have to find another monitoring route to compare the "before" audio. The alternative is to assume that any setting you end

up with is an improvement. Next, the 2-channel VC/L-2 does not include a stereo-coupling mode. Many people consider a tube compressor necessary to put that final polish on their digitally sourced stereo master tape, and, without that switch, louder sounds in one of the stereo channels can pan the whole mix toward that channel. A subtle effect in some mixes and dizzying in others, but probably unwanted in either case.

The unit is nicely constructed, with a clean internal layout. The upright tubes are not restrained, and the review unit arrived with these tubes still in the sock-

ets but needing to be firmly re-seated. The unit still worked, but this is worth checking when the unit is first unpacked. You will probably give the VC/L-2 a quiet life in your processing rack, but this unit's truck ride from Mississippi may have been more rigorous.

You have to forget those conventional compressors you've used before when adjusting the Threshold control. As the

## MANUFACTURER'S SPECIFICATIONS

- Compression:** >20 dB
- Frequency Response (-3 dB):** 10 Hz to 40 kHz
- Hum and Noise (unweighted):** 80 dB below +10 dBV with 10 dB of gain
- Total Harmonic Distortion (20 Hz to 20 kHz):** 0.04%
- Maximum Input Level:** +21 dBV (600 ohms, balanced); +21 dBV (200,000 ohms, unbalanced)
- Maximum Output Level:** +19 dBm (600 ohms, balanced); +20 dBV (2000 ohms, balanced); +18 dBV (10,000 ohms, unbalanced)
- Physical Size:** 3.875" (H) X 19" (W) X 10.75" (D) or 89 mm (H) X 483 mm (W) X 278 mm (D)
- Weight:** 17 lbs. (7.7 kg)

control is rotated from 0 to 10, the threshold level is actually decreasing. In effect, this is a "Amount of Compression" control, as only very high input levels would reach threshold at the 0 setting and low level audio will trigger compression when set to 10. If this was your first compression tool, you might not even notice this quirk.

The Peavey VC/L-2 provides a practical tube-based compressor for those who are looking for that classic sound but do not need esoteric audio performance and comprehensive parameter control. This unit provides practical compression with a minimum of controls and a smooth quality that definitely enhances vocals, guitars, and other individual instruments. This is a compressor you must listen to before deciding if it suits your taste and processing style. If you already have a workhorse compressor/limiter, then the VC/L-2 may be a good alternative to add new flavors to your mix.

*Wade McGregor is a sound system design consultant for MC Squared System Design Group based in North Vancouver, BC. Visit their Web site at [www.mcsquared.com](http://www.mcsquared.com) for more info.*

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# AES GOES GOLD

## The AES: Yesterday, Today & Tomorrow

It is unlikely that group of resolute people gathered in the RCA Victor Studios in Manhattan 50 years ago spent too much time thinking about a long-term future for what they were about to form. The effort of just trying to make the next meeting happen was probably about as much as most could consider. However, they must have had a vision for what the organization could become because it set this Society off on a path that has brought us through 50 successful years to where we are today.

Let's look at precisely where we came from

in that half decade. From that meeting of 150 people in New York, the Society now has nearly 12,000 members. From a single section there are now 110 sections, including



by Roger K. Furness,  
AES Executive Director

39 student sections in eight regions throughout the world. The first annual convention took place in October 1949 in a New York hotel with 22 technical presentations and 45 exhibitors. The last convention, the 103rd, in New York, attracted over 20,500 visitors and 370 exhibitors, had over 150 technical papers, numerous workshops covering

*(continued on page 120)*

## SPRING 1998



**RON GODWYN:  
THEN HEAD OF  
TECHNICAL  
DEPT, PHILIPS  
RECORDS  
NOW EDITOR  
OF IBS  
JOURNAL,  
LINE UP**

Asked for a significant event in audio I'd say, almost without thinking, transistors, closely followed by the arrival of Rupert Neve.

Our studio had a tube console with channel correction amounting to  $\pm 6$  dB at 60 Hz and 10 kHz. That was it. Then along comes Rupert offering a transistorized box with a selection of switched frequencies for us to play with. A revelation! We marveled at the sounds that could be produced.

We ordered a free-standing case containing a set of six equalizer modules with six chosen HF and LF turnover frequencies and hi-pass filters. The improvement in general sound was astounding as we could now reach musical areas that had been previously denied to us. It was so successful that we ordered a much needed transistorized portable console from Rupert for outside recording work—a 16-channel, modular setup, in two units.

The low noise, low distortion and general transparency attracted much attention. Rupert was then commissioned to make a replacement console for the studio in about 1964, the very first of his hundreds of studio consoles. The rest, as they say, is history!

he designed for church and cathedral organs became increasingly popular, with Sanders almost singlehandedly building and installing them worldwide. In 1969, Solid State Logic was formed to handle this control system of which there are now tens of thousands in use.

Those that knew him at the time describe Sanders as a "little dynamo into everything" but the whole operation was still run out of a bedroom in his parents' house. A move in 1971 to their own premises allowed Sanders to return to his interest in music and recording, building a small studio that doubled as a laboratory during the daytime. Increasing space allowed the studio to develop and become successful in a small way. With the need to go multitrack, he set out to research, design and build his own console.

He brought to the project an understanding of automation control systems and several years studio experience, an in-depth knowledge of what other designers had done, plus a fresh way of looking at multitrack recording. Paul Bamborough, an old school friend, was recruited to bring the necessary computer and software skills.

The resulting console was first shown at the 1977 Paris AES Convention, gaining much praise and four orders. Development, research and feedback continued leading to the unveiling of the 4000E Master Studio System in 1979, triggering the start of a major change in the recording studio industry. It was very different from other consoles, but its functionality had a natural appeal to engineers and producers.

Today, many of the innovations that this console introduced are found even in low-cost products. Ignoring the detailed features, his approach allowed the operators to pay more attention to their creative roles rather than just running the console. As users became familiar with it, recordings emerged that were totally the result of the creative use of its features. Stimulated by these possibilities and the increased mixing capabilities, we have seen the rise of the "remixer" and a totally different approach to the "completion" of a recording.

Colin Sanders was a quiet man with a very sharp mind and a need to retain a hands-on approach to all aspects running his company and its products. With its rapid growth, this became less possible and from the late 1980s he took less interest in the business, severing his connections with SSL in 1991.

However having radically changed one industry, he threw himself into a host of other non-audio technologies in-

cluding inductive heating systems and water purification, applying the same creative enthusiasm and drive to these as he had to audio. Tragically, Colin Sanders was killed in a helicopter accident early this year, so we'll never know if he was to repeat his success in other fields.



**Willi Studer**

**W**hen I look back on my life, it really has been a series of lucky breaks...I don't even know whether I really deserved them."—the words of Dr. Willi Studer taken from an interview published in *Studio Sound* in 1991, shortly after retiring from active involvement in the company he'd founded 43 years earlier.

As with most technically creative people, Studer's interest in engineering began young. At 12 years old he built a simple telephone link but was ordered to take it down by the Swiss Post Office as it didn't meet official regulations! Aged 15, he took a two-year apprenticeship before starting to work in several shops servicing and installing domestic radios. There was little test equipment, and all repair work was by what Studer called "methodical troubleshooting."

This grounding saw Studer, just 19, designing and building radios for other companies. This continued with varying degrees of commercial success until 1948 when he found a company willing to distribute an oscilloscope he'd designed. These were to be the first products of the Willi Studer company.

A year later he was approached by an importer of American tape recorders to convert and test them for European use. This inspired Studer to develop his own design of domestic tape recorder. By year's end, the first models were on sale under the name of Dynavox.

Work then started on a professional recorder,

but there needed to be new arrangements for manufacture as recorder heads were still baked in the oven at home. Trials of the transportable Studer 27 Professional Recorder began in 1951 with Swiss Radio. In the same year, Studer acquired the rights to use the name "Revox" and a range of domestic radio/tape recorders was designed.

The Studer 27 proved successful, and the professional side quickly developed through the A37 to the C37 by 1960, which had farsightedly been mechanically designed to form the basis of future multitrack recorders. The first of these was the 4-track J37, one of which was supplied to Abbey Road Studios in 1967 to meet the demands of the Beatles recording, *Sgt. Pepper*.

1954 saw the introduction of the G36 domestic recorders which were already equipped with a 3-motor drive. The availability of stable silicon transistors triggered the development of the 77 series in 1967 which found a home in virtually any situation where a small recorder was required.

The professional tape recorder products developed through several generations and found homes in studios worldwide. Today Studer is one of the few remaining manufacturers still committed to analog tape recorders.

Dr. Studer's contributions to the development and refinement of the tape recorder were recognized in 1982 when he was awarded the Gold Medal of the AES during the Montreux Convention. This coincided with the early showings of Studer's first digital multitrack recorder, the product of a farsighted digital R&D program, directed by Studer, which resulted in Studer being the only European company capable of building a digital tape recorder of its own design.

Willi Studer died in 1996 at 83. His interests in the technology and development of his company never faltered even to the extent of still walking several miles to unlock the Studer building very early in the morning well into his 70s, something that few others would emulate.

## European AES: Historical Highlights

**1968:** Johan L. Ooms organized an "Audio Abroad" session at the New York Convention Center attracting 18 papers from Europe. This led to discussions about forming AES Sections in Europe.

**1970:** The Board of Governors meets with John C.G. Gilbert, John Maunder and Percy Wilson; approves formation of British Section, Central European Section, comprising Austria, Belgium, Germany, Luxemb-bourg, The Netherlands and Switzerland, formed in Frankfurt, Germany.

**1971:** First European Convention held in Cologne, Germany, with 250 registrants, 29 papers, 12 exhibitors. First Workshop ("A Workshop on Studio Tape Recorders") held at the 41st Convention in New York.

**1974:** Netherlands Section formed.

**1976:** AES Gold Medal is awarded to Georg Neumann and a Silver Medal to Dr. Willi Studer, at the 53rd Convention in Zurich.

**1977:** Centennial issue, "The Phonograph and Sound Recording After 100 Years," JAES volume 25, number 10/11, October/November. Exhibition of historic audio equipment at 56th Convention, Paris, to celebrate centenary.

**1982:** AES Gold Medal awarded to Dr. Willi Studer at 71st Convention, Munich.

**1985:** AESSC releases AES3, digital interface standard. Fifty years of Magnetic Recording celebrated at 77th Convention in Hamburg with session dedicated to early tape history and a display of historic equipment.

**1991:** Russian Section formed. St. Louis Section formed.

**1993:** Czech, Slovenia and Croatian Sections formed. Berlin Convention celebrates 50 Years since first stereo recording by awarding honorary membership to Helmut Kruger and issues CD of original recordings.

**1996:** The 100th Convention held in Copenhagen. Donald Plunkett's address singles out pioneering work of Joe Ooms of Philips that sparked AES activities in Europe, work carried on by Herman Wilms and Titia Bakker. Three anthologies published: "Sound Reinforcement 2," "Loudspeakers Vol.3: Systems Crossover Networks" and "Loudspeakers Vol. 4: Transducers, Measurement and Evaluation."

**1998:** Golden Anniversary celebration held in New York on March 11, the exact date of the first AES meeting in 1948, with 10 of the original members present.

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BY EDDIE CILETTI

timecode — even though it is not in any other way timecode equipped. You just have to know that, if present, the timecode will be copied. One of my last tests was to compare the absolute time of a clone against the original. For all of its features, the DA-302 is not able to start two machines at exactly the same place, but the absolute time does transfer.

“Cascade” outputs for connecting multiple machines. All connections are RCA jacks. XLR I/O is optional.

A front-panel headphone switch selects deck 1, deck 2, or a mix of both. For the review, I used this feature more than the individual outputs. Each deck has a cover that is easily removed, making the head al-



Anyone with a single DAT recorder soon realizes that one is not enough. Ya gotta be able to make clones! Owing two machines was the next logical step until TASCAM announced the DA-302. So appealing is the concept — two DAT decks in a standard rack package — that many people were asking my opinion well *before* the product was released!

## FEATURES

In terms of features, the DA-302 is more than the sum of its parts. The \$1999 list price alone translates to a street price of about one-and-a-half times that of a single DAT deck. In addition to the obvious — real-time and double-speed dubbing — several DA-302's can be daisy-chained together (via WR-7000 sync cable) to create a system either for duplication or for Continuous Recording with overlap.

The DA-302 also has the ability to copy sub-code information — a.k.a.

There are separate digital inputs for each deck, plus a stereo analog input that is common to both. In addition to individual deck outputs — analog and digital — there are also

most accessible for manual cleaning. I might opt to enlarge this opening after the warranty expires...

There are four dubbing options: High-Speed, Normal-Speed, Pro-

## EQ LAB REPORT

**MANUFACTURER:** TASCAM, TEAC Professional Division, 7733 Telegraph Road, Montebello, CA 90640. Tel: 213-726-0303. Fax-Back system: 1-800-827-2268.

**APPLICATION:** Digital audio tape recorder.

**SUMMARY:** Two DAT machines in a standard rack package with consumer digital (S/PDIF) and analog (–10 dBV) I/O. A professional interface is optional.

**STRENGTHS:** Front-loading mechanism; error-rate display; independent digital I/O; double-speed dubbing; programmable sequencing; copies timecode; relay record with user selected overlap.

**WEAKNESSES:** No cassette-well illumination; no direction arrows.

**PRICE:** \$1999 with wired remote; LA-D302 balanced amplifier kit, \$100; WR-7000 sync cable, \$15.

**EQ FREE LIT. #:** 142

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grammable (PGM), and Append. Contrary to how I would expect a dubbing deck to function, the 1-2 position of the Common Mode switch is not for making copies, but for Continuous Playback or Recording, on deck 1 and deck 2. The other two options on this switch are "1&2" (record or play at the same time) and "OFF" (independent operation of deck 1 and deck 2). These modes might be better grouped under the Menu so that this switch could have been left to a more obvious task. My choice would

have been: DUAL RECORD, 1-2, and INDEPENDENT.

The first copy job I threw at the DA-302 was an unusual case because the source tape had been recorded on an old Panasonic SV-250 portable. For some reason, the end of every take was seen as an "end of tape" or "end of recording," causing the DA-302 to stop. The solution was not to use Normal-Speed mode unattended, but rather to simply switch to Append mode. Then I baby-sat the process, restarting the

machine after each take. I bring this point up just in case you try to copy such an old tape and encounter a glitch. It's not the DA-302, it's the old tape. You won't have this hiccup with a newer tape, as all other tapes of a more recent vintage were copied with great success.

### REPEAT

The REPEAT function has two options: SINGLE, which repeats one selection between a pair of Start IDs, or ALL, which will repeat an entire tape. I selected SINGLE and pressed PLAY with great success. The REPEAT function is for playback operation. If you need to copy to deck 2 while repeating from deck 1, switch to the Programmable Dubbing mode.

### PROGRAMMING

Program mode allows the user to choose the order in which selections from the source tape are copied. All the user has to know is the program number, which assumes a tape with proper Start IDs. When in doubt, use the Renumber utility. Programming is accessed via the MENU button, which also "opens the door" to the Repeat function as well as the Dual Error-Rate Display, thank-you-very-much!

The Program display begins with "s01\_EE," where "s01" is the first selection and "EE" means, "end of program." Since I wanted ID 28 repeated 4 times, the program looked like this:

```
s01_28
s02_28
s03_28
s04_28
s05_EE
```

### TAKE 2

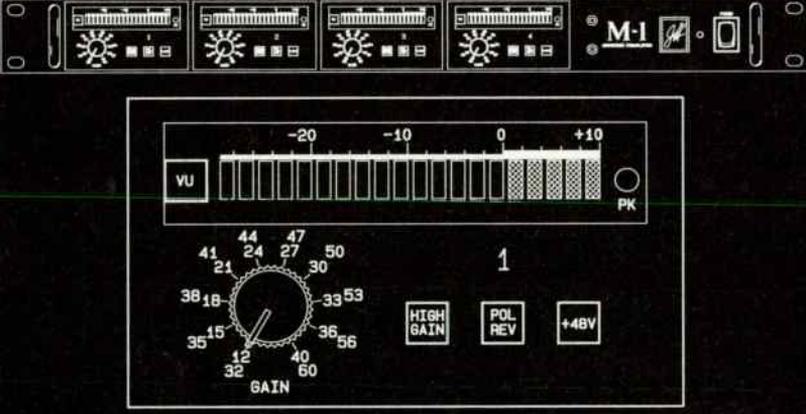
The next step is to select the PGM (Programmable) mode using the DUB MODE button. This causes the DUBBING LED to flash. Pressing the DUBBING button immediately below the LED initiates the record process. The Master tape then moves into the ready position while the "Slave" deck rewinds to the head of the tape (appending a previous recording is not possible in PGM mode). Recording begins when both decks are ready. Sonic performance in Record and Play is good.

### TAKE 3

Remember my goal was to repeat one song several times on deck 1 and copy that to deck 2. Take 2 was a success with

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**Options:** VU-1 meter (shown); PK-1 meter; Jensen JT-11-BM output transformer;







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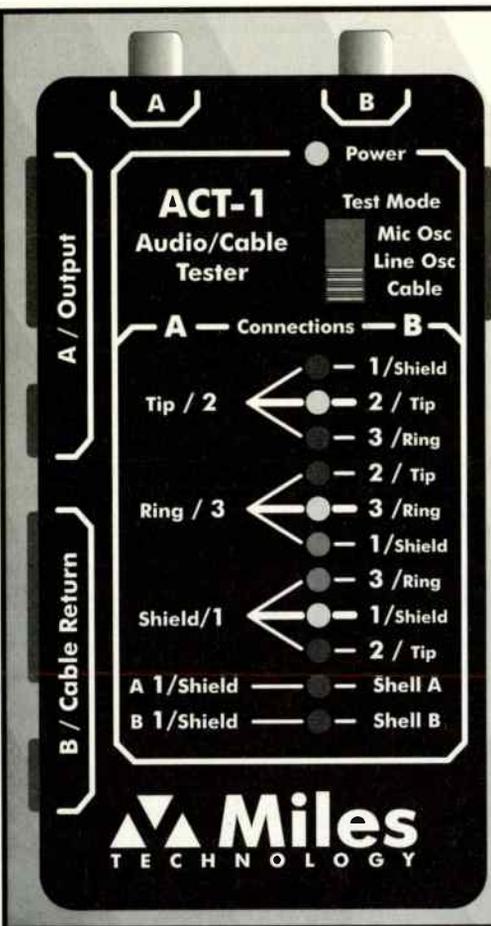
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one exception — no Start IDs! Arrgh! Pressing the AUTO ID button before selecting the DUB MODE resolved this problem.

### UNDER THE BONNET

Popping the lid on TASCAM's DA-302 will give you a major appreciation for technological downsizing. The first DAT machines were packed so full of circuit boards and wiring harnesses as to be nearly unserviceable. Quite often, the loading tray dwarfed the tape mechanism. By contrast, two transports fit quite comfortably *into the front panel* of the DA-302. The lack of a traditional loading tray means there is no trace of the tape transport *on the inside*, a most startling visual confirmation of how small this device really is.

The front-loading mechanism is a major plus because the window provides visual feedback — you can see tape moving. Missing, however, is any illumination to augment what can be seen of the cassette by existing room light. Arrows to indicate the tape's direction would also be helpful because it takes a moment to get used to the idea of the tape moving from right to left, but any feedback is better than none. The left and right transport doors are labeled DAT 1 and DAT 2, respectively.

### MEDITATION OEM

The DA-302's ALPS transport, while not as robust as the original DA-30 and DA-P20 transports, is the same as that found in the DA-30 MKII and the DA-P1 portable. Any mechanical problems encountered in early production runs of the MKII and P1 were resolved before the DA-302 came into existence. TASCAM, by the way, delivers excellent customer service.

### I DUB THEE...

The owner's manual is well written and details all of the available functions. This is good because the DA-302 could be a bit more user-friendly. More often than not, however, a box like this will get programmed for a specific purpose and get used that way over and over. That said, it would be a safe bet that every jingle and duplication house will have one, if not several, DA-302's by year's end. Project studios short on space and cash will also appreciate the DA-302. Now, all of us should thank TASCAM for finally putting a real Error Rate display on a DAT deck.

EQ

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# ART TUBE Equalizer

Tube equalization at a price that's hard to resist

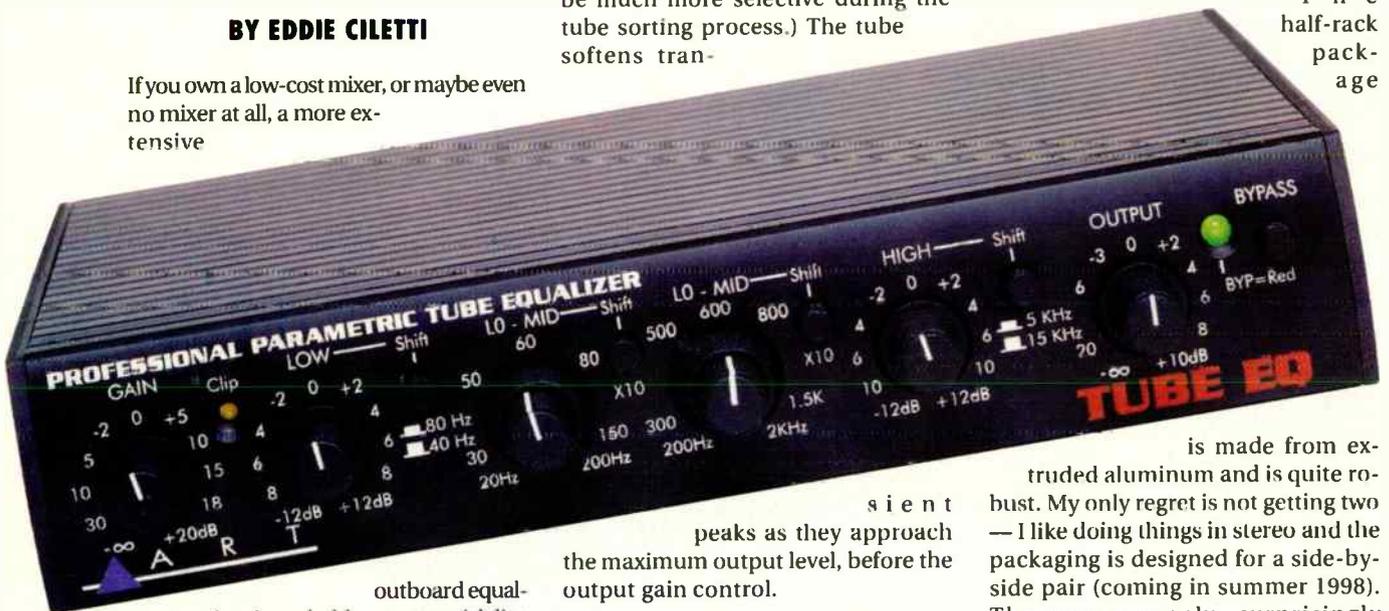
BY EDDIE CILETTI

If you own a low-cost mixer, or maybe even no mixer at all, a more expensive

cost down. The 12AX7 in the TUBE EQ does not run at anywhere near its rated voltage (45 volts rather than 250 volts). (ART has specifically chosen this lower voltage for what they feel is a smoother distortion curve. They also claim that this choice requires them to be much more selective during the tube sorting process.) The tube softens tran-

different frequencies, but the literature inside agreed with the physical unit.) The two mid bands sweep from 20 Hz–200 Hz and 200 Hz–2 kHz, also respectively. A switch for each band will multiply the range by ten so that it is possible to have overlapping bands.

The half-rack package



outboard equalizer is probably on your wish list. ART created the popular Tube MP, a single-channel, hybrid (IC/vacuum tube) mic preamp for under \$200. At \$249, chances are good that they will be equally successful with the TUBE EQ.

## DE TALE

Before detailing the features of the equalizer, a brief explanation of the role of the vacuum tube — relative to the other circuitry — is in order. *Sans* tube, this is a standard 4-band EQ circuit based on IC opamps. It is very similar to EQs found in mixers priced from \$3000 to \$20,000. Many under \$1000 mixers usually offer two or three fixed bands of EQ. It is simply a matter of economics — dual concentric pots cost more money along with all of the support circuitry necessary to make parametric happen.

A single vacuum tube could easily double the price — \$250 for a power supply alone would not be shocking! That is where ART and other manufacturers have been able to keep the

cient peaks as they approach the maximum output level, before the output gain control.

## OFF THE SHELF

The TUBE EQ has bass and treble shelving equalizers each with two switch-selected turnover frequencies. The unit I tested offered, according to the front panel, 40 Hz/120 Hz and 6 kHz/18 kHz, respectively. (The picture on the cover of the manual showed

is made from extruded aluminum and is quite robust. My only regret is not getting two — I like doing things in stereo and the packaging is designed for a side-by-side pair (coming in summer 1998). The power supply, surprisingly enough, is built-in. No wall wart! Balanced and unbalanced I/O are via XLR and 1/4-inch connectors on the rear panel, where the power switch can also be found. The TUBE EQ is designed and built in the USA and carries a one-year warranty.

You can use the TUBE EQ just like

## EQ LAB REPORT

**MANUFACTURER:** Applied Research and Technology, Inc., 215 Tremont Street, Rochester, NY 14608. Tel: 716-436-2720. Web: [www.artroch.com](http://www.artroch.com). E-mail: [artroch@aol.com](mailto:artroch@aol.com).

**APPLICATION:** Device for manipulating the audio frequency spectrum.

**SUMMARY:** Tube EQ providing 2-frequency, switched hi/lo shelving, two mid bands with Shift button for x1 or x10 selection allow overlap of default frequency ranges (continuous sweep from 20 Hz–200 Hz and 2 kHz–20 kHz). Adjustable Gain and Output controls.

**STRENGTHS:** Quarter-inch (unbalanced) and XLR (balanced) inputs and outputs; musically wide bandwidth.

**WEAKNESSES:** Clip LED could be more sensitive; no legend detailing the function of concentric knobs; no schematic in manual.

**PRICE:** \$249

**EQ FREE LIT. #:** 143

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150-153	B&H Photo	9	212-807-7474	83	Oz Audio	59	360-568-3636
41, 161	Behringer	5, 6	516-364-2244	15	Panasonic	XX	714-373-7277
149	Bell Electronics	8	903-784-3215	7, 109	Peavey	93, 156	601-483-5365
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37, 127	Event Electronics	22, 23	805-962-6926	25	Sony Electronics	XX	800-635-SONY
38-39	EVI Audio/Electro-Voice	24	616-695-6831	95	Steinberg North America	86	818-993-4161
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103	Hohner Midia	39	707-578-2023	126	The Jahn Hardy Company	92	847-864-8060
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4-5, 139	Mackie Designs	46, 38	206-487-4333	42	Zefira Acoustic	82	714-551-5833
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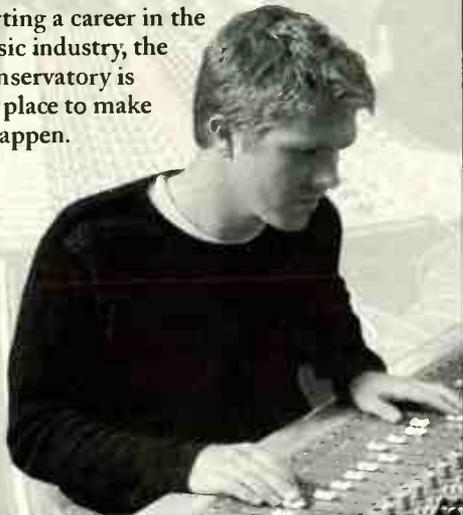
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EQ IN REVIEW

any other piece of outboard gear. The only difference is that, when overdriven, the sound is not in any way harsh or ratty like the sound typically associated with opamps "hitting the rails." Both Input Gain and Output Level controls are provided to optimize the transition into tubeland. To improve the consistency of this effect, insert a compressor/limiter ahead of the TUBE EQ.

I liked the sound of the EQ. My ears told me the bandwidth must be substantially more than 1/3 octave because sweeping the frequency knob at full boost (12 dB) did not make that wah-wah pedal sound. The manual gives no indication of the amount of bandwidth, but on the bench, it measured about 3 octaves (at the 3-dB-down points). To get the most transferable results — from speaker to speaker — "wider (bandwidth) is safer." While I would have liked to see a bandwidth control, I totally agree with the choice.

The unit's front-panel clip LED could be more sensitive. I heard the soft distortion before the LED ever came on. Otherwise, ART made good use of the front-panel real estate, choosing an easy-to-read combo of white silk screening on black anodized aluminum. There is no additional room for any "like-to-see mods," though a legend indicating which of the concentric knobs is Level and which is Sweep would be helpful.

The operator's manual is informal and easy-to-read. It lacks some detail (like bandwidth info) and at times gives [an] imprecise explanation when, for example, making comparisons between the application of parametric EQ versus graphic EQ. It does at least offer the "two schools" approach to equalization (use as much as is needed or use none at all). Of course, the rest is a very subjective art, and ART offers many helpful suggestions.

One could easily cop an attitude about this not being a real tube product. That fact is that a "real tube" parametric equalizer is about as rare as hens' teeth, and such a beast would probably take up more than a foot of rack space and turn your wallet into a black hole that devours green-colored paper.

The magic of the TUBE EQ is its choices of musical, wide-bandwidth EQ curves. The soft distortion curve of the vacuum tube occurs only when it is purposely driven into abuse mode.

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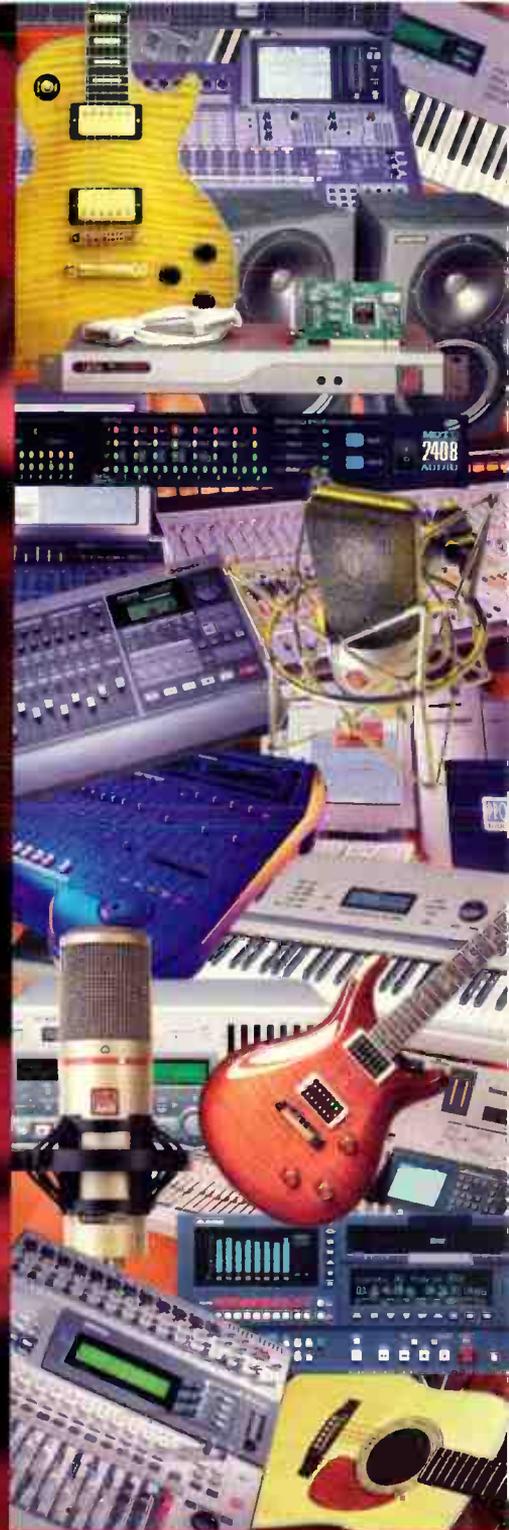
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# Audio-Technica AT3525 Microphone

A-T quality at just the right price

BY STEVE LA CERRA

At the winter NAMM show this past January, Audio-Technica announced the 30 Series — a new line of affordably-priced condenser microphones for stage and studio, each with a distinctly different character. The subject of this review is the AT3525, a small-diaphragm condenser supplied with a shock mount and a padded bag. (See the sidebar for notes on the AT3527 and AT3528).

Visually, the AT3525 looks sort of like a smaller version of A-T's hugely successful AT4033, though the AT3525's exterior finish is not quite as elegant as that of the AT4033 (which is fine with us — given the price differential). The pad and rolloff switches on the AT3525 feel the same as those on other A-T mics, and the XLR connector is gold-plated. In spite of its modest price tag, the AT3525 has a high-quality feel. It is intended for use with 48-volt phantom power.

Included with the microphone is a shock mount, which A-T's engineers have executed very nicely. It's entirely constructed of metal, has a simple but effective swivel yoke mount that stays put when you tighten it gently, and isolates the mic from mechanically transmitted noise. This shock mount is a lesson to other manufacturers who are providing crappy plastic cradles with far more expensive mics.

Our first trials for the AT3525 were with a male voice-over artist. Through this mic, the timbre of his voice was neutral and a bit on the lean side. Occasionally, strong P's and B's popped the diaphragm, but did not result in distortion. Moving the artist about 25 degrees off-axis remedied the popping. Although this reduced proximity effect a bit, reproduction was still natural. Placing a stocking-type windscreens in-between the VO artist and the mic also solved this problem. In general, off-axis response was pretty consistent, with a minimum of tonal variation as the source moved around the mic to about 30 degrees off-axis. As we'd expect, any further movement off-axis resulted in a decrease in level, but not a

major change in timbre (we liked this characteristic). Next we tried the AT3525 on a male tenor. His timbre sounded very natural and articulate through this mic, while his dramatic sense of dynamics was well-captured.

On an Ampeg SVT bass rig with a Spector bass, the AT3525 really captured the growl of the cones and the snap of the strings (it's worth noting that this rig was absolutely RAGING loud. The mic had no trouble with the SPL). However, we did

notice that the microphone was a bit shy in the bottom octave, and we have heard lower extension through other mics on this same bass rig. A similar characteristic was evident when miking toms, where the midrange was smooth but the lower-mids (in the area of 200 Hz) were a bit lacking. For a modern jazz or fusion session this quality was a plus, but in situations with distorted guitars, the toms didn't muscle through the mix quite the way we'd like. Interestingly, we didn't find the same tonal quality to be apparent when using the microphone on an acoustic guitar — the AT3525 captured plenty of the lower mids and tone from the body of the instrument.

In addition to being a microphone that's (generally) sonically neutral, it's affordable enough that studios can get a pair for use on drum overheads or other stereo applications — without breaking the bank.

## The AT3527 and AT3528 Mics

Both the AT3527 and the AT3528 mics are small-diaphragm condensers — the AT3527 has an omnidirectional pattern while the AT3528 is cardioid. Undoubtedly, the AT3528 will find its way into a lot of clubs and performance venues for miking hi-hat and cymbals. When we tried it in this type of situation, it did a nice job of capturing cymbal splash, and the low-frequency rolloff was effective at filtering out unwanted bass.

The AT3527 is one of a very few omnidirectional condenser mics available at this price point. We tried it on a snare drum for a session where the drummer was playing cross-stick and it sounded very clean. The lack of proximity allowed us to get really close without low-frequency buildup, thus improving isolation from other elements of the drum kit. MSRP for the AT3527 and AT3528 is \$299 each.

**MANUFACTURER:** Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, OH 44224. Tel: 330-686-2600. Circle EQ Free Lit. #148. **PRICE:** \$399 MSRP



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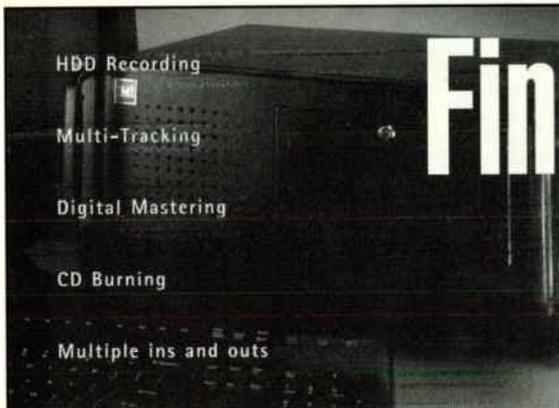
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## DIRECTX PLUG-INS

*continued from page 99*

I recommend opening the Windows folder, right-clicking on SYS-MON.EXE, creating a shortcut, and dragging it on top of the Start button. This lets you access the system monitor with a single mouse click and drag.

Fig. 2 shows a typical System Monitor display set to monitor processor usage. In this example, Sound Forge is processing a stereo signal with the DSP•FX Parametric EQ. Note how turning the effect off causes the system requirements to drop dramatically.

### OTHER TIPS

During processor-intensive operations, the entire graphical user interface slows down. As a result, most programs will respond more quickly if you use keyboard equivalent commands rather than click the mouse on the on-screen graphics.

One tip is specific to those who burn their own CDs: Before starting the burn, make sure any system resource meters are turned off. Like screen savers and other processes that run in the background, the resource meter itself consumes resources, and distracts the processor periodically.

The last tip is always have the latest DirectX drivers installed (if you don't know how to update drivers, or where to find updates, read the article "Driver's Ed" on page 102 of this issue). Because DirectX is still relatively new, the drivers are updated relatively frequently.

So indeed, are we there yet? Well, with a *really* fast system and efficient software, DirectX hits the target. For those without "computers of the gods," DirectX is still cool. Real-time previewing — even if a little rough around the edges — saves time compared to writing the file to disk, auditioning it, undoing/restoring when you find out it isn't quite right, making another tweak, writing to disk, auditioning, etc. Even better is the cross-manufacturer universality. Despite my "lowly" 200 MHz standard Pentium (gee, this was a hot computer just a few months ago!), I'm sold on the concept.

(Note: For more information on DirectX, go to [www.microsoft.com/imedia](http://www.microsoft.com/imedia).)

*Craig Anderton is the author of Home Recording for Musicians and Multi-effects for Musicians. In addition to being EQ's official propellerhead geek, he is also a columnist for Keyboard and Guitar Player magazines.*

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# Netcasting in *Hipboots*

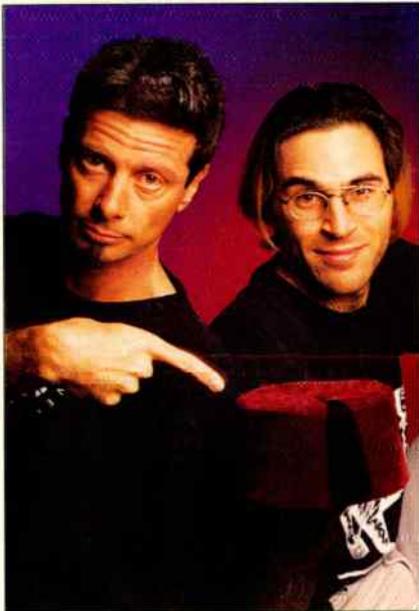


PHOTO BY STEVE JENNINGS

## The Dawn of Internet Radio and how to start broadcasting

BY JON LUINI & ALLEN WHITMAN

Most standard, for-profit radio programming sucks. So you switch to Web radio. You hear interesting, eclectic music. You have hundreds of stations to choose from, corporate to creative. You can hear any program as many times as you like. You can make requests, send praises, or hurl curses. Or you can switch the URL. It's available in a car stereo, too.

Internet Radio is available to all who are online. Scroll through your bookmarks and choose your content, live or archived. Or make some of your own (properly licensed, of course, or they will come and get you). All you need is an encoder, a server, and a domain. *Poof*— you're a station. In theory it's pretty simple.

Why would a studio or an independent musician want to broadcast music on the Web (a.k.a. "netcasting" or "Webcasting")? Don't you have anything better to do? What kind of person

creates a streaming-audio Internet Webcast for a potential audience of one-hundred million souls but accepts that their musical message is probably a solitary one? Who cares? That's not the point. The point is that there's a history-making window open here, and you've got a shot at getting some attention. In our pointed audacity, we're gonna give you some pointers on how to get started.

You remember that issue of *Popular Mechanics*? The one with the cover painting of a boy in a crewcut crouched over a microphone in the middle of the night? Wires lead from his home-built shortwave radio transmitter up to an antenna on the roof. Little jagged black lines denote his lonely signal snaking up through the sky and bouncing off the Heavyside Layer. Thousands of miles away someone else is listening. Remember the romance of radio before multinational conglomerates controlled the airwaves? Now we have netcasting. Here's how to reach out (without paying hundreds of thousands of dollars for a license) in the age of silicon.

To get started, we're going to ask you some quasi-rhetorical questions. We'll explain the relevance and how your answer may change the way you jump onto the bit-waves.

**Question #1: How many people do you want to reach, and how many do you expect to reach at the same time?**

Truly efficient "broadcasting" technology on the Internet ("multicasting"), has made leaps and bounds in popularity and support recently, but has yet to be deployed widely across the Internet. So, for now, the more users you wish to hear you simultaneously, the more Internet connectivity your server must have. That means more server hardware and maybe a software license or two. These resources can quickly add up to equal the mortgage on your house. Start small. Look into companies that specialize in providing a simple, all-in-one solution. AudioNet ([www.audionet.com](http://www.audionet.com)) and RealNetworks ([www.real.com](http://www.real.com)) have a proven track record.

Smaller homegrown programmers might want to network with local geek companies in their community. You might just find a sponsor. There are peo-

ple out there who think like you do! The choice of your netcast technology should also address what your potential listener is using to acquire audio streaming. Real Networks' RealPlayer has the largest share of the player market right now, though Netshow (which supports a variety of different codecs like MP3 and Voxware) is a contender with the release of v3.0. The Netshow server also comes free with WindowsNT. Of course, that means your server has to run WindowsNT.

**Question #2: Where is your programming coming from?**

If you are an existing radio station, your content is already swirling through the local airwaves. You may be able to partner with local companies that have Internet connectivity, maybe an ISP. Sit a computer on their network to send your signal to the appropriate server(s) in exchange for letting them place a promotional banner on your Web site, or audio ads in your broadcast. If you are an individual at home or a small studio, you will need to netcast directly from there.

**Question #3: Where are you encoding your signal from?**

A live encoding computer converts your analog signal into ones and zeros and sends it to a streaming audio server that redistributes that signal to your listeners. Arrange for this encoding machine (often a Pentium running Windows) to reside in your home or office. Give it a cute name and suitable Internet connectivity for netcasting. ISDN throughput, at the least, is preferable, though you may be able to squeak by with a 56k modem. If you are on a shared network, be sure to dedicate enough bandwidth to your broadcast so any other employees/users reading [alt.fetish.radio](mailto:alt.fetish.radio) don't degrade the quality of your signal.

**Question #4: Where are you sending it for redistribution?**

A streaming audio server is required to send each individual listener a copy of your broadcast. It's the spokes and wheel analogy. You can have your server onsite, but you'll need a lot of connectivity (a T1 or greater) and the startup cost is hefty. You can lease a computer offsite; paying a monthly fee to use an existing system. It's great if you

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  - 8 Insert** calls up DSP plug-ins.
  - 9 V-Pot™s and V-Pot function selectors** can act as pan pots or aux sends. Built-in LED display gives visual indication and displays recalled settings.
  - 10 Auto** toggles automation modes.



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- 19 Discrete mic preamps** with gain controls and switchable phantom power. Balanced XLR inputs.
- 20 Inserts** for your favorite NON-plug-in (hardware) signal processors.



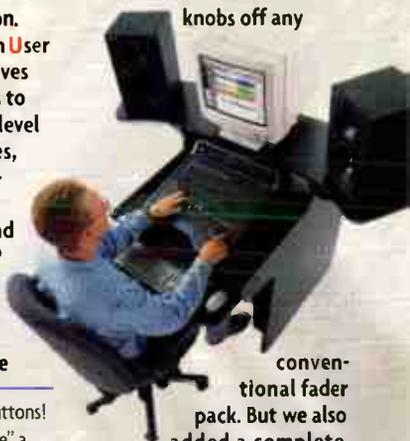
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<sup>1</sup> See number 17 to left

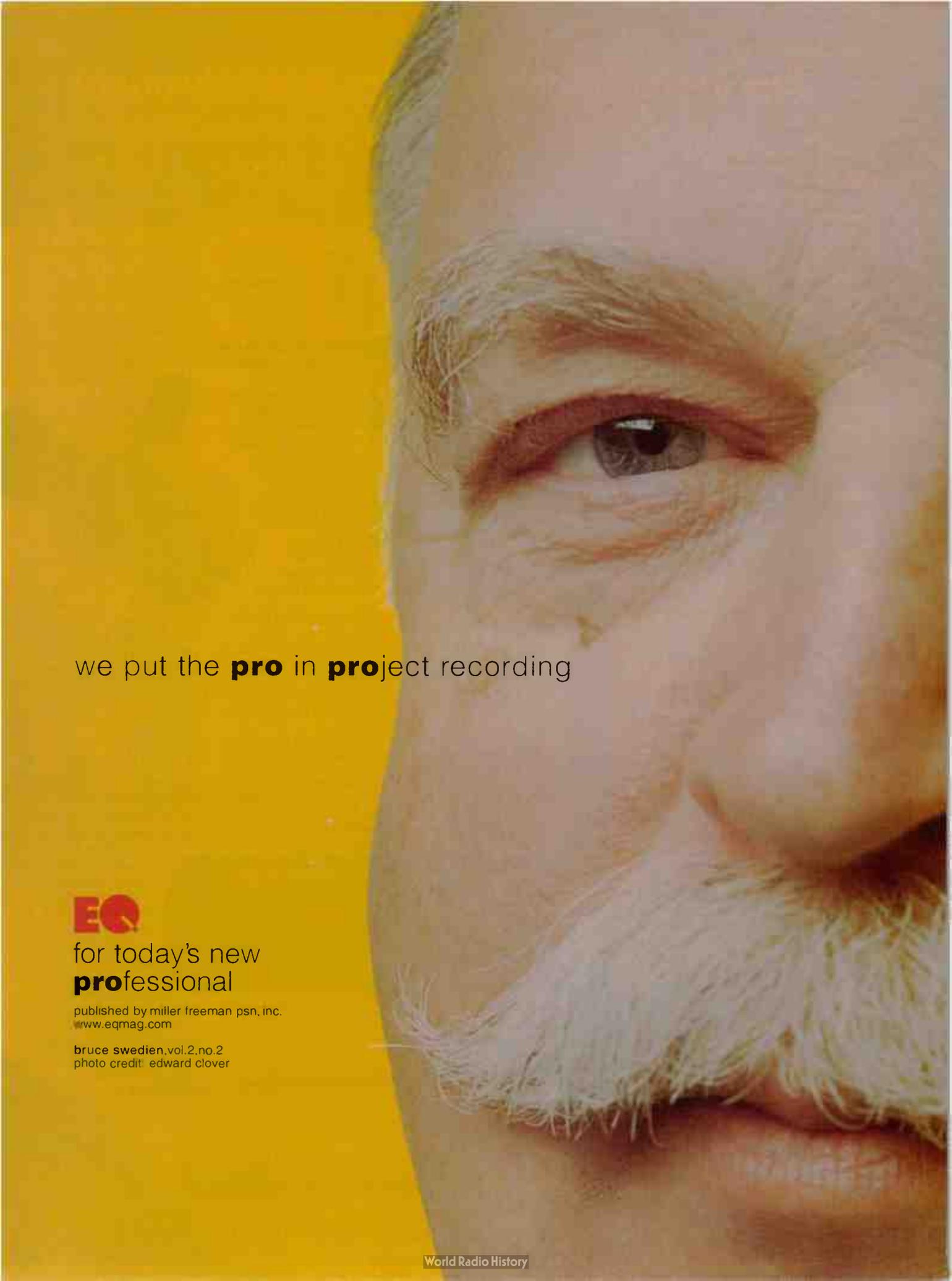
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already have your own server computer because the number of co-location providers has grown dramatically over the past few years. Co-location is placing your computer on someone else's network (i.e., putting a computer on a rack in their machine room) and leasing Internet connectivity on a monthly basis. They have more bandwidth than you could possibly use. You'll need passwords and filenames to stream data from your live encoder to your server. The server is your gateway to your Internet listeners.

**Question #5: What is your content?**

If you own the publishing rights to the content, no worries — you can start Webcasting right away. If your content includes material owned by other publishers, you'll want to arrange for permission to broadcast that material onto the Internet. Whether you have ASCAP/BMI/SESAC licenses (as well as other feeds such as AP, UPI, or Reuters) or not, you should check with those organizations to find out what licensing costs may be involved. ASCAP ([www.ascap.com](http://www.ascap.com)) and BMI ([www.bmi.com](http://www.bmi.com)) have Internet licensing forms on their Web sites, and some news feeds are giving away (for free!) Internet broadcast rights in an effort to develop the market.

These five questions might help get your brain in the right space to take your content online. Letting people know you're tossing out those jagged black lines of transmission into the ether is crucial. Advertise and promote! Research different companies that provide these services. Talk to other people who are already multicasting. Post queries on the FezGuys' Threaded Discussion Area. Good Luck!

**NAB CONVENTION**

This past April, an endless stream of dressed-for-success people in large neon-colored name tags headed into the maw of the Las Vegas Convention Center to attend the National Association of Broadcaster's 75th anniversary tradeshow. It was a giant stowpot containing 100,000 people from all over the world, hundreds of practical seminars and self-absorbed hype sessions, and 1200 exhibits of the latest and greatest broadcast technologies, some working, some promised. Many lapels sported buttons reading "Vaporware Alert" to point out the wilder fancies of marketing geniuses built on coffee-break musings of engineering coworkers.

Inside one of the endless halls the Web-related exhibitors crouched together in an Internet Ghetto. The FezGuys, improbably invited to be talk-show hosts on an Internet radio Webcast, did a familiar schtick wearing *South Park* attire and hurling (mostly) harmless mouse pads at the conventioners, interviewed helpless corporate employees. Our signal streamed out onto the Web and was monitored on speakers mounted near our heads, causing occasional feedback.

Our guests ran the gamut from the friendly — like the charming satellite guy participating in his first Internet radio experience — to the extremely odd — like the guy demonstrating a Barney doll with a chip in its head. The doll is supposed to sit next to your kids while they watch TV, receiving infrared wireless signals from the Barney program on the screen that cause the polyester fuzzy purple blob with the big grin to answer questions and move around. We weren't able to determine what that had to do with Internet radio.

Then there was the fellow who sat himself down in front of a microphone and just started talking. It didn't seem to matter to him that the mic wasn't on. He was ready to join the party. But we hadn't invited him. He was dragged around back by the black-shirts manning the booth. We think he may have actually ended up purchasing something. Tradeshow can be hell.

Overheard at the Sun booth: a representative describing the functionality of RealNetworks' RealSystem 5.0 beta for the Sparc with the phrase: "If it worked properly, it wouldn't be any fun."

The entrenched traditional broadcast community is up in arms about Internet radio. Deny it, legislate it, co-opt it, it's not going to go away. The Ghetto is growing. Maybe now we can get some interesting programming.

*We welcome your comments. Visit us online at [www.fezguys.com](http://www.fezguys.com).*

**ONLINE RADIO RESOURCES**

**BRS Web Radio's List of Online Stations:** [www.web-radio.com/st\\_list.html](http://www.web-radio.com/st_list.html)

**Yahoo's Guide to Internet Radio Broadcasting:** [www.yahoo.com/](http://www.yahoo.com/); search for "Internet Broadcasting: Radio"

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## MAINTENANCE

continued from page 62

My XT indicates "CAL brAC." What do I do? "CAL brAC" stands for "calibrate brakes," which — like an automobile — need to be adjusted from time to time. Brake calibration on the XT is accomplished through software and does not require a trip to a service center. "Over-shooting" is another indication that the brakes should be recalibrated. For example, the XT fast-winds and overshoots the locate point, winds back and overshoots again, then winds forward and overshoots — a shorter distance each time — until eventually reaching the locate point.

To calibrate the brakes on your XT, perform the following:

1. Obtain a standard ST-126 length that has been completely formatted from beginning to end. Use a nonessential tape. Do not use ST-180 or ST-60 lengths.

2. With the power OFF, press REWIND and FAST FORWARD during POWER-UP. The display will read "CAL-brAt."

3. Insert the formatted ST-126 tape into the transport. The XT will then FF the tape to the end, then begin its routine.

4. The XT will shuttle the tape back and forth for about five minutes. During this procedure, the tape will half-eject twice. This is normal.

5. Assuming the tape, the reel motor, and the brake solenoids are operational, the display should briefly read "PaSS" before fully ejecting the tape and returning to the "ADAT-XT" start up screen. If so, the brakes have now been recalibrated.

6. If the "CAL brAc" message re-appears, check operation with another tape. If the message persists, the unit must be professionally serviced.

*Brake calibration for the XT is recommended every 250 hours of head-drum operation.*

My XT indicates "CAL p9" when powering up. What do I do? Numeric displays aren't capable of accurately displaying all alpha characters. This particular message may look like "Cal P9," but it actually is "Cal PG." PG is the once-around pulse generated by a small magnet at the base of the head-drum motor. It is used to align timing signals between the head stack and the control track head. When the PG Delay is not set properly, odds are that your XT will indicate that it is performing error cor-

rection via the "flashing sunburst." You can reset the PG setting by performing the following tasks:

1. With no tape in the XT, lift the transport door and shine a flashlight into the unit. Notice the sticker on the back panel, to the right. Next to the field "PG" is a handwritten number — the PG value set by the factory technician. Write this number down.

2. Turn the XT on while holding down track buttons 1 and 7. The display will read "0 SHIP \*"

3. Press PITCH UP three times. The display will read "3 P9 dLY \*" Press PLAY, the \* will disappear, indicating that the PG Delay diagnostic has been initiated.

4. Press and hold PITCH UP or PITCH DOWN until the PG value agrees with the number written on the sticker inside the unit.

5. Once that value has been reached, press and hold the EJECT button, then press REC to save the PG value. The display will then read "3 P9 dLY \*"

6. Press the EJECT button once more, and the XT will enter its normal operation mode.

7. Tapes recorded during the time when PG was improperly set should be backed up onto a new tape, *after* the PG is reset, in order to preserve the audio without errors.

### KNOW IT ALL

- Keep all operator manuals together and *up to date*. The latter requires that you call the manufacturer to confirm the latest version of manual and software (if applicable).

- Create a list of manufacturers. Include the main number as well as customer support phone numbers, plus Web and e-mail addresses.

- E-mail may not be immediate, but it is a way to report problems *and* eventually get answers.

- Manufacturers with a Web presence often include a list of Frequently Asked Questions (FAQ). If so, save a copy on your hard drive. If they're really good, print 'em out.

- However and whomever you contact, be sure to get a name and say, "Thank you!"

*Thanks to Adam Brisben and Jim Mack at Alesis for their help.*

*You can pay a virtual visit to Eddie at [www.tangible-technology.com](http://www.tangible-technology.com) where you will find this plus many more articles and pictures.*



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CIRCLE 35 ON FREE INFO CARD

# Buying And Selling *A Used DA-88*

Plus other really useful  
DTRS tips



BY EDDIE CILETTI

TASCAM has three Hi-8 digital (DTRS format) 8-track recorders to choose from. The DA-38, at \$3499 list, is the most affordable. It slaves to another DA-38 or to either a DA-88 or DA-98, but does not have built-in SMPTE. You can purchase an MMC-38 (\$499), which

converts absolute time to MIDI or SMPTE, playback only. SMPTE is standard on the DA-98 (\$5999 list) with access to all user-parameters via display window plus “confidence” monitoring — a.k.a. read-after-write. The RC-848 remote control can address up to six DTRS machines. (FYI, the MMR-8, listed below, is a hard-disk, 8-channel recorder with a 24-bit digital interface and 20-bit converters, list priced at \$12999.)

As a product, the DA-88 (\$4799 list) is a mature five years old. The SY-88 card (\$650 list) provides SMPTE and MIDI capability. There are two “firmware” options: V3.10 is for typical music-oriented projects, while V4.01 expands the option horizon for audio post-specific tasks. The SY-88 sync card has two firmware options — Version 3.19 and 4.01 — each respectively mated to the main operating firmware. You can find out more about features and options via TASCAM’S Fax Back service at: 800-827-2268. Up to three documents can be requested during each “session.” (See Table 1.)

### PROJECT VS. POST CONFIGURATION

In the project environment, specifically when more than eight tracks are required, any combination of machines — DA-38, DA-88 or DA-98 — can be used.

To chase a MIDI sequencer, for example, only the master machine needs to be SMPTE capable. The DB-15 connector on the rear panel provides machine-to-machine sync and remote control via RC-848.

If you’re planning to do serious audio postproduction, don’t try to save money by skimping on the slave machines. Sure, audio slaves typically chase the video master, so a DA-88 (with SY-88 card) or DA-98 will happily be the audio boss. But post houses require that *all* tapes have SMPTE on a dedicated track, not on audio tracks 1-8, a job only a DA-88 or a DA-98 can handle. In addition, a video edit controller via Sony 9-pin (RS-422) can also access both the DA-88 and DA-98.

### WHAT TO LOOK FOR

Start with the serial number. It is on both the left side, by the ventilation holes, and on the rear by the power connector. TASCAM has not yet provided me with a correlation between serial numbers and manufacturing dates, so the information in Table 2 is for reference purposes only. *Optional Info:* The first digit (of five-figures) or two digits (of six-figures) is called the Lot number, as indicated by a space for demonstration purposes only.

Total head hours can be queried by pressing Stop and Play during power up. Press Stop and Fast Forward for Total Search Hours. (Subtracting the two yields Total Play Hours.) The DA-88 also keeps track of the number of times the cleaning tape has been used. Press the Up/Down buttons during power-up. Wait for the text to scroll by on the level meters, then press Up/Down. Total number of cleanings should be no more than once for every 50 hours. Therefore, a machine with 500 hours should have ten cleanings. (To query the Error Rate, see my maintenance techniques on page 58 of this issue.)

*Note:* On an older DA-

TABLE 1

Detail of TASCAM DTRS products and Fax Back documents relative to this article.

Model	List Price (if applicable)	Description	Document
The Fax Back Index	800-827-2268	List of <i>all</i> documents	Press “1”
DA-88/SY-88/RC-848		Version 3.xx	1120
DA-88/SY-88/RC-848		Version 4.xx	1130
SY-88	\$650	SMPTE & MIDI I/O	
DA-88		Error messages	1140
DA-38		Operation basics	1150
RC-848		Remote control	
IF-88AE		TDIF to AES interface	
IF-88SD		S/PDIF to AES interface	
MMC-38	\$499	MMC interface unit	9140
MMC-88	\$499	MMC interface unit	9150
DA-38	\$3499	Digital 8-track	2530
DA-88	\$4799	8-track w/optional TC	2550
DA-98	\$5999	8-track w/confidence	2570
MMR-8	\$12,999	Digital 8-track hard disk	5080

**TABLE 2**

Approximate correlation between serial number, manufacturing date, and production changes.

Serial Number Range	Approximate Manuf. Date	Notes
1 0000 ~ 9 9999	1993	
10 0000 ~ 19 9999	1994	Self-cleaning kit added; servo board modified to reduce noise.
20 0000 ~ 29 9999	Early 1995	New head design.
30 0000 ~ 39 9999	1995 ~ 1996	New slant block on take-up side of head.
40 0000 ~ 49 9999	1996 ~ 1997	New slide cam and sector gear spec.

88, if no hours are indicated, it is less likely that the machine has never been used and quite possible that the back-up battery has failed.

#### ABSOLUTE NECESSITIES

The only "design flaw" of the DA-88 is that its fan draws dirt in through the tape insertion hole. No matter how low the mileage, if the machine was powered for a year, the transport should be thoroughly cleaned. In addition, I recommend reversing the fan direction and installing a filter. The clean up and modification is easily an hour-long project for an experienced technician. Complete details of the fan mod can be found at [www.tangible-technology.com](http://www.tangible-technology.com) along with many other tape- and audio-related topics.

#### THIS IS THE LIFE

Head life for a machine in a project environment is approximately 1000 hours. You can avoid Dr. Kevorkian by doing the fan modification and checking tension. The preferred supply tension is 8 gram-centimeters (g-cm) — no more than 10 g-cm. Take-up tension can be slightly higher, falling between 10 g-cm and 15 g-cm. The tension gauge is TEAC part number MTT-86131 (213-726-0303, ext. 840); price is \$235. A controlled environment such as a dedicated machine room (as found in better video and post houses) will extend the life expectancy of a DA-88 head assembly to approximately 2500 hours.

#### TYPICAL SERVICE CHARGES

Routine service for the DA-88 is about \$325; a head replacement/major overhaul, \$825. Both include parts and labor. These are major metro-area prices. You might find a better deal out-of-town, in which case these prices may include shipping. There is almost no such thing as "just a head cleaning." By the time the heads need to be manually cleaned, there is always some additional house-keeping to do.

When preparing for shipping, always tape a detailed account of the machine to the top cover. Include your name, address, and phone number. Always insure for the full list price, wrap the machine in a plastic bag (to keep packing material out), and make sure there is no room for movement (rattle is not OK).

#### HOW MUCH IS FAIR?

List prices are posted earlier in this article. To be realistic, however, the street price of new and used gear will be how people make decisions. A new DA-88 alone (or with SY-88 sync card) "walks the street" for about \$3500 (\$4125). A new DA-38 is being competitively priced with its S-VHS alternative at somewhere between \$2000 and \$2400. With those two products as competition, a used DA-88 would fall into a similar price range. (A new DA-98 walks for about \$4500.)

#### TERMS OF ENDEARMENT

Of course wear and age are major negotiating factors. Sometimes people buy gear for [just] one project. Such a DA-88, with a recent serial number and less than 150 hours [of use], will obviously command a higher price. Whenever buying used gear, the point is to always consider the worst case. If all sales are final, try to get such a good deal that a premature repair doesn't put you too close to the street price of a new machine. Considering the cost of a major overhaul, an old machine with close to 1000 hours would be appropriately priced at \$1200.

*Eddie Ciletti swabs decks at Manhattan Sound Technicians in the port of New York City. He may soon relocate to St. Paul, Minnesota, where instead of being on an island surrounded by water, he'll be in a state filled with pockets of lakes. Send e-mail to [edaudio@interport.net](mailto:edaudio@interport.net).*



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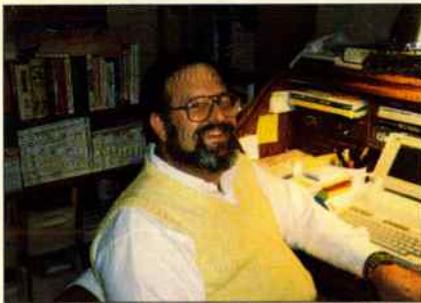
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# A Tip to *Foreign Shores*

European travel tips for both you and your gear



BY MARTIN POLON

One question that is asked more and more is about taking a portable recording package to Europe to record American groups performing or to record a specific European orchestra or choir or both. It has become almost commonplace for award-winning high school and college orchestral and choral groups to perform in European venues during various school vacations. It has also become more common for recording specialists to accompany such groups [in order] to produce a release product of the group's activities — once home in the United States.

Smaller European classical performances are also frequently targeted for electronic capture for American public broadcasting and/or smaller classical labels in the U.S. Some recordists are hired to capture the sound of a band playing a club venue in Europe or elsewhere for the same reasons.

There are problems that occur for portable recordists out of the country that do not occur in the United States, or, if they do, they are of much lessened consequences.

1. At this point in time, nothing other than cables and microphone stands should be in checked baggage. The process of X-raying checked luggage may have entered a new era, with high power machines capable of virtually destroying photographic film and potentially threatening to any form of magnetic storage media and perhaps even semiconductor devices (due to high level electromagnetic fields). This holds true even in the United States, although airline industry experts

suggest that foreign machines are even more potent.

2. Checked luggage is not a good place for any electronic or electroacoustic device due to the unknown potential for damage from the X-ray process, as well as the vagaries of baggage handling — where the old television luggage commercial showing a gorilla moving bags might not be so far off the mark!

3. Consider taking less desirable cables with you and less expensive microphone stands so they can be left — like old clothes — at your last point prior to departure back to the United States. The presence of such cables in your bag is much more likely a problem returning to the U.S. from a foreign airport than it is in leaving the country.

4. Work very hard to take your completed media and transfer to a CD-ROM and/or audio CD prior to your return to the United States. That way you will not have to worry about your recording being impacted by the X-ray process as you enter the departure areas. Again, foreign X-ray levels have been reported to be much higher than domestic U.S. machines provide for inspection. And, unlike the U.S., you cannot take your magnetic media, film and/or videotape, place them in a plastic bag, and ask for hand inspection.

5. The next topic is a judgment call and *EQ* does not condone any behavior that is improper! That being said, it is far better to indicate on your "landing card" that you are a tourist. It is unlikely that your carry-on bags with your equipment will be searched on landing (they almost never are), but if you are asked about your equipment, it generally suffices to say that you are an amateur recordist.

Most foreign countries strongly regulate business activities conducted within their borders by foreign nationals (you!). They prefer to have the work done by their own citizens. The amount of paperwork you will have to do both prior to flying and after landing and the time that bored and insensitive customs and

immigration officials will spend with you will truly amaze you. Even then the answer is frequently "No" to your request to provide recording services — despite the fact that the bottom line is that ultimately you are probably legal in the strictest sense of the laws of the countries you will visit.

6. Beware that international and even domestic carry-on baggage regulations are being changed as we speak (or at least as I write), and the size and number of carry-on bags allowed is being significantly reduced by most carriers.

7. Consider renting your equipment at your destination or at the port of entry. A veritable plethora of reliable and relatively affordable rental firms exist in such foreign capitals as London, Paris, and Berlin, with smaller cities also having such facilities. This eliminates the issues of equipment damage in and via flight, customs problems going to and returning from foreign shores, 90 to 95 percent of the illegality issues in your recording in a foreign country, and insurance problems for your own gear (many companies only cover you in the U.S.).

8. If you still decide to carry your own portable gear to do this foreign gig, be sure and bring your equipment to the nearest U.S. Customs facility prior to departure. You will be asked to indicate on a specific form each item, its serial number, and other relevant information. The form will be stamped and signed by a Customs official and returned to you. You carry it with you and it becomes your proof upon return to the United States that you did not buy the gear abroad. Do not carry old receipts in lieu of this Customs form since they may not have the serial number and/or Customs refuses to honor them. Also, do not try to do this on the date of departure because you or Customs may not have the time! You do not want to pay duty at 27 percent of the retail value of your gear upon returning to the U.S. 

*Work very hard to take your completed media and transfer to a CD-ROM and/or audio CD prior to your return to the United States.*

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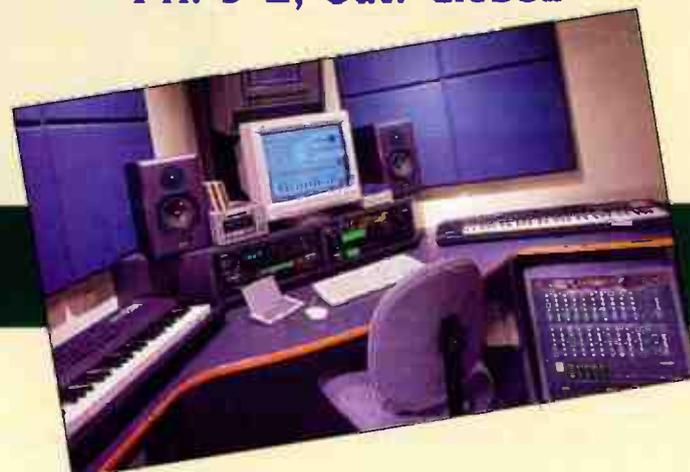
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## DIGITAL MIXERS

# MACKIE

## Digital 8 Bus Mixing Console



Well, it's finally here and just like the analog 8 bus a few years back, it's everything you've anticipated! Great sound quality, full recording and mixdown capabilities, motorized faders and an array of digital features geared to take you flying into the next century.

### FEATURES-

- 48 channels of automated compression, gating, EQ and delay
- Built-in 3-way meter display keeps you on top of your mix.
- Built-in meter bridge.
- Ultramix II automation for complete control, hook up an S-VGA monitor and you'll feel like you spent a lot more money.
- All functions can be automated, not just levels and mutes. Store EQ, reverb, compression, gating and even Aux send information.
- Fast SCENE automation allows you to change parameter snapshots on every beat.
- Reads Standard MIDI tempo maps, displaying clock info on the built-in position counter.
- Truly the cutting edge of mixing technology.



# Panasonic

## WR-DA7 Digital Mixing Console



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

### FEATURES-

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



# TASCAM

## TMD1000 Digital Mixing Console



You want to see what all the digital mixing buzz is about? The NEW TMD1000 from Tascam will have you smilin' & automatin' in no time. It features fully automated EQ, levels, muting, panning and more in an attractive digital board with an analog 'feel'. Your digital future never looked, or sounded, so clear.

### FEATURES-

- 4 XLR mic inputs, 8 1/4" balanced TRS inputs.
- 20-bit A/D D/A conversion. 64x oversampling on input, 128x on output.
- Store all settings, fully MIDI compatible.
- Optional IF-TD1000 adds another 8 channels of TDIF and a 2-channel sample rate converter.
- Optional FX-1000 Fx board adds another 4 dynamic processors and another pair of stereo effects.



## MIC PREAMPS

# Focusrite

## Green 3 "Voicebox MKII"



The Voicebox MKII provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice, and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications.

### FEATURES-

- Same mic pre section as found on the Green Dual Mic Pre includes +48V phantom power, phase reverse, and a 75Hz high-pass filter. Mute control and a true VU response LED bargraph are also provided.
- EQ section includes a mu parametric band with frequency and gain control as well as a gentle bell shape to bring out the character of the voice.
- Dynamics section offers important voice processing functions of compression and de-essing combined with a noise reducing expander
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu



## EFFECTS PROCESSING

# t.c. electronic

## Finalizer Plus



Improving on the multi-award winning Finalizer platform, The Finalizer Plus delivers an unprecedented level of clarity, warmth and punch to your mix. Inserted between the stereo output of your mixer or workstation and your master recording media, the Finalizer Plus dramatically rounds out your material, creating that "radio ready" sound.

### FEATURES-

- Balanced Analog as well as Digital outputs including AES/EBU, S/PDIF, & TOS.
- 24-bit precision A/d & D/A Converters
- 5-band 24-bit stereo EQ
- Enhance - De-essing, stereo adjust or digital radiance
- Real-time gain maximizer
- Variable slope multi-band expander
- Multi-band compressor
- Word Clock Sync
- MIDI control useful for controlling sequencer fades or any of the Finalizer's parameters from a remote MIDI controller.

# Lexicon

## PCM81 Multi-Effects Processor



The PCM-81 has everything that made the PCM80 the top choice among studio effects processors, and more. More effects, more algorithms, longer delay and full AES/EBU I/O.

### FEATURES-

- 300 Presets include pitch, reverb, ambience, sophisticated modulators, 20 second stereo delays, and dynamic spatialization effects for 2-channel or surround sound applications
- 2 digital processors including Lexicon's Lexchip for the reverb and a second DSP engine for the other effects.
- 24-bit internal processing
- Dynamic patching matrix for maximum effects control.
- PCM card slot

## EQUALIZERS

# Focusrite

## Green 2 "Focus EQ"



The Green 2 Focus EQ is suitable for a variety of applications combining a Focusrite equalizer section with a multi-source input section. Use it as a high-quality front end for recording applications or patch it into the send/return loop to upgrade a single channel of console eq, either way, it sounds great.

### FEATURES-

- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
- EQ section derived from the Red and Blue range processors for superb audio quality.

## COMPRESSORS

# JOE MEEK

## VC1 Studio Channel



### FEATURES-

- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- Mono photo-optical compressor
- High pass filter for large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out and VU/compression meter switches
- Twin balanced XLR outputs with one DI XLR output for stage use
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC



# dbx

## Blue Series 160S Stereo Compressor

The dbx 160S combines the best features of all the great dbx compressors in a well-built unit where the craftsmanship is as stunning as the engineering is innovative. This is truly a desirable compressor.

### FEATURES-

- 127dB dynamic range • Program dependent "Auto", or fully variable attack and release
- Hard knee/OverEasy switchable.



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## HARD DISK RECORDERS



### VS1680 Digital Production Studio

The new VS-1680 Digital Studio Workstation is a complete 16 track, 24-bit recording, editing, mixing and effects processing system in a compact tabletop workstation. With its advanced features, amazing sound quality and intuitive new user interface, the VS-1680 can satisfy your wanderlust.

#### FEATURES-

- 16 tracks of hard disk recording, 256 virtual tracks.
- 24 bit MT Pro Recording Mode for massive nearroom and dynamic range
- Large 320 x 240 dot graphic LCD provides simultaneous level meters, playlist, EQ curves, EFX settings, waveforms and more.
- 20-bit A/D D/A converters
- 2 optional 24-bit stereo effects processors (VS8F-2) provide up to 8 channels of independent effects processing.
- 12 audio outs: 8x RCA, 2x stereo digital & phones.



- New EZ routing function allows users to create and save various recording, mixing, track bouncing, and other comprehensive mixer templates for instant recall.
- 10 audio inputs: 2 balanced XLR-type inputs w/ phantom power, 6 balanced 1/4" inputs, and 1 stereo digital input (optical/coaxial)
- Direct audio CD recording and data backup using optional VS-CDR-16 CD recorder.

New

## CD RECORDERS



### CDR-800 Compact Disc Recorder

The new CDR-800 Compact Disc Recorder from HHB is built rock-steady for the best recording on this widely accepted format. You can record direct from either analog or digital sources and it comes loaded with features, making it ideal for professional studios looking to output quality CDs.

#### FEATURES-

- Built-in Sample rate converter
- Analog and digital inputs and outputs



- 1-bit A/D converters for lowest possible distortion
- Synchronized recording and editing
- Digital fader for natural fade-in and fade-out.

## STUDIO DAT-RECORDERS



### SV-3800 & SV-4100

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The SV-4100 adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more. Panasonic DATs are found in studios throughout the world and are widely recognized as the most reliable DAT machines available on the market today.

#### FEATURES-

- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number
- Single program play, handy for post.



- Adjustable analog input attenuation, +4/-10dBu
- L/R independent record levels
- Front panel hour meter display
- 8-pin parallel remote terminal
- 250x normal speed search



### D8 Digital Recording Studio

The new D8 Digital Recording Studio features an 8-track recorder, a 12-channel mixer, onboard effects, and basically everything else you'll need to record and mix your music, you supply the talent.

#### FEATURES-

- 8-track recorder, 12-channel mixer.
- 1.4GB hard disk for up to 4.5 hours of recording on a single track.
- High and low EQ on each channel
- 130 high-quality stereo digital effects for complete recording in the digital domain.
- MIDI clock sync, SCSI port and S/PDIF digital interfaces all standard.



New

## DIGITAL MULTI-TRACK RECORDERS

### TASCAM DA-98 Digital Audio Recorder

The DA-98 takes all the advantages offered by the DTRS format and significantly ups the ante for the professional and post-production professional alike. With enhanced A/D and D/A converters, a comprehensive LCD display and full compatibility with the DA-88 and DA-38, the DA-98 delivers the absolute best in digital multitrack functionality.

#### FEATURES-

- Confidence monitoring for playback and metering
- Individual input monitor select switch facilitates easier checking of Source/Tape levels
- Switchable reference levels for integration into a variety of recording environments with internal tone generator
- Digital track copy/electronic patch bay functionality
- Comprehensive LCD display for easy system navigation



- Dedicated function/numeric keys make operation easier
- Built-in sync with support for MMC and Sony P2
- D-sub connector (37-pin) for parallel interface with external controller
- Optional RM-98 rack-mount ear for use with Accuride 200 system

**DA-88** A standard digital multitrack for post-production and winner of the Emmy award for technical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise cueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.

**DA-38** The DA-38 was designed for musicians. Using the same Hi-8 format as the highly acclaimed DA-88, the DA-38 is an 8 track modular design that sounds great. It features an extremely fast transport, compatibility with Hi-8 tapes recorded on other machines, rugged construction, ergonomic design and sync compatibility with DA-88s.

### ALESIS ADAT XT20 Digital Audio Recorder

The New ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence. It could change the world.

#### FEATURES-

- 10-point autofloat system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
- Remote control
- Servo-balanced 56-pin ELCO connector.



- Built-in electronic patchbay
- Copy/paste digital edits between machines or even within a single unit. Track Copy feature makes a digital clone of any track (or group of tracks) and copies it to any other track (or group) on the same recorder.

New

## TASCAM DA-30mkII

A great sounding DAT, the DA-30MKII is a standard mastering deck used in post-production houses around the world. Among many other pro features, its DATA/SHUTTLE wheel allows for high-speed cueing, quick program entry and fast locating.

#### FEATURES-

- Multiple sampling rates (48, 44.1, and 32kHz).
- Extended (4-hour) play at 32kHz.
- Digital I/O featuring both AES/EBU and S/PDIF.
- XLR balanced and RCA unbalanced connections.



- Full function wireless remote.
- Variable speed shuttle wheel.
- SCMS-free recording with selectable ID.
- Parallel port for control I/O from external equipment.

## Fostex D-15

The new Fostex D-15 features built in 8Mbit of RAM for instant start and scrubbing as well as a host of new features aimed at audio post production and recording studio environments. Optional expansion boards can be added to include SMPTE and RS-422 compatibility, allowing the D-15 to grow as you do.

#### FEATURES-

- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
- Set cue levels and cue times
- Supports all frame rates including 30df
- Newly designed, 4-motor transport is faster and more efficient (120 minute tape shuttles in about 60 sec.)
- Parallel interface • Front panel trim pots in addition to the level inputs



### D-15TC & D-15TCR

The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)

## SONY PCM-R500

Incorporating Sony's legendary high-reliability 4D.D. Mechanism, the PCM-R500 sets a new standard for professional DAT recorders. The Jog/Shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.

#### FEATURES-

- Set-up menu for preference selection. Use this menu for setting ID6, level sync threshold, date & more. Also selects error indicator.
- Includes 8-pin parallel & wireless remote controls



- SBM recording for improved S/N (Sounds like 20bit)
- Independent L/R recording levels
- Equipped with auto head cleaning for improved sound quality.

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The MTP AV takes the world renowned MTP II and adds synchronization that you really need like video genlock, ADAT sync, word clock sync, and even Digidesign superclock!

- FEATURES-**
- Same unit works on both Mac & PC platforms.
  - 8x8 MIDI merge matrix, 128 MIDI channels.
  - Fully programmable from the front panel.
  - 128 scene, battery-backed memory.
  - Fast 1x mode for high-speed MIDI data transfer.

### **Digital Time Piece™** Digital Interface



Think of it as the digital synchronization hub for your recording studio. The Digital Timepiece provides stable, centralized sync for most analog, digital audio, and video equipment. Lock together ADATS, DA-88's, ProTools, word clock, S/PDIF, video, SMPTE, and MMC computers and devices flawlessly. It ships with "Clockworks" software which gives you access to its many advanced features and remote control of some equipment settings such as record arm.



### **Studio 64XTC** Mac/PC MIDI Interface



The Studio 64XTC takes the assorted, individual pieces of your studio-your computer, MIDI devices, digital and analog multitracks and even pro video decks, and puts them all in sync.

- FEATURES-**
- 4 In / 4 Out, 64 channel MIDI/SMPTE interface/patchbay with powerful multitrack & video sync features
  - ADAT sync with MIDI machine control
  - Simultaneous wordclock and Superclock output, 44.1kHz or 48kHz for perfect sync with ADAT, DA-88 and ProTools
  - Video and Blackburst in (NTSC and PAL)
  - Cross-platform Mac and Windows compatibility

## SAMPLING

### **AKAI S-Series** Rack Mount Samplers



Starting with 64X oversampling, Akai's S-Series Samplers use 28-bit internal processing to preserve every nuance of your sound and the outputs are 18- and 20-bit to ensure reproduction of your sounds entire dynamic range. These three new samplers add powerful capabilities, ease-of-use, expandability and affordability to set the standard for professional samplers.

## KEYBOARDS & SOUND MODULES



### **XP60 & XP80** Music Workstations



The XP-90 delivers everything you've ever wanted in a music workstation. An unprecedented collection of carefully integrated features provide instant response, maximum realtime control and incredible user expandability. The XP-80 features a pro-quality 76-note weighted action keyboard while the NEW XP-60 features the same sound engine in a 61-note keyboard.

- XP80 FEATURES-**
- 64-voice polyphony and 16-part multitimbral capability
  - 16 Mbytes of internal waveform memory; 80 Mbytes when fully expanded (16-bit linear format)
  - 16-track MRC-pro sequencer with direct from disk playback. Sequencer holds approx. 60,000 notes
  - New sequencer functions like "non-stop" loop recording and refined Groove Quantize template
  - Enhanced realtime performance capability with advanced Arpeggiator including MIDI sync and guitar strum mode and Realtime Phrase Sequence (RPS) for on-the-fly triggering of patterns
  - 40 insert effects in addition to reverb and chorus
  - 2 pairs of independent stereo outputs; click output jack with volume knob
  - Large backlit LCD display

### **SR-JV80 Series** Expansion Boards

Roland's SR-JV80-Series wave expansion boards provide JV and XP instrument owners a great-sounding, cost-effective way to customize their instruments. Each board holds approx. 8Mb of entirely new waveforms, ready to be played or programmed as you desire.

- Boards Include-**
- Pop, *Orchestral, Piano, Vintage Synths, World, Super Sound Set, Keys of the 60's & 70's, Session, Bass & Drums, Techno & Hip-Hop Collection.*



## KURZWEIL

### **K2500 Series** Music Workstations

The K2500 series from Kurzweil utilizes the acclaimed V.A.S.T. technology for top-quality professional sound. Available in Rack mount, 76-key, and 88 weighted key keyboard configurations, these keyboards combine RDM based samples, on-board effects, V.A.S.T. synthesis technology and full sampling capabilities on some units.

- FEATURES-**
- True 48-voice polyphony
  - Fluorescent 64 x 241 backlit display
  - Up to 128MB sample memory
  - Full MIDI controller capabilities
  - 32-track sequencer
  - Sampling option available
  - Dual SCSI ports
  - DMIT: Digital Multitrack interface option for data format and sample rate conversion (Interfaces with ADATS or DA-88s)



### **Trinity Series** Music Workstations DRS

Korg's Trinity Series represents a breakthrough in sound synthesis and an incredible user interface. It's touch-screen display is like nothing else in the industry, allowing you to select and program patches with the touch of a finger. The 24MB of internal RDM are sampled using ACCESS which fully digitizes sound production from source to filter to effects. Korg's DSP based Multi Oscillator Synthesis System (MDSS) is capable of reproducing 5 different synthesis methods like Analog synthesis, Physical Modeling, and variable Phase Modulation (VPM).

- FEATURES-**
- 16 track, 80,000 note MIDI sequencer
  - Flexible, assignable controllers
  - **DRS (Digital Recording System)** features a hard disk recorder and various digital interfaces for networking a digital recording system configured with ADAT, DAT recorder and hard disk.
  - 256 programs, 256 combinations
  - Reads KORG sample DATA library and AKAI sample library using optional 8MB Flash RDM board



88 Weighted-key/Solo Synth

76-key/Solo Synth

61-key/Solo Synth

61-key

*(Digital IF, SCSI, Hard Disk Recorder, and sample Playback/Flash RDM functions are supplied by optional upgrade boards)*

## MONITORS

### **Hafler TRM-8**

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### **TANNOY Reveal**

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- FEATURES-**
- 1" soft dome high frequency unit
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  - Magnetic shielding for close use to video monitors
  - Hard-wired, low-loss crossover
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  - Gold plated 5-way binding post connectors



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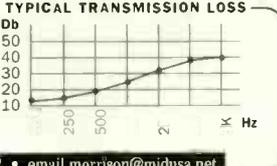
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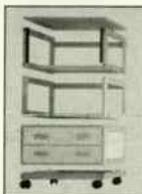


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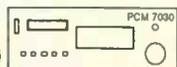
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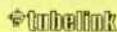
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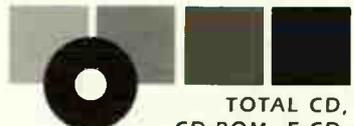
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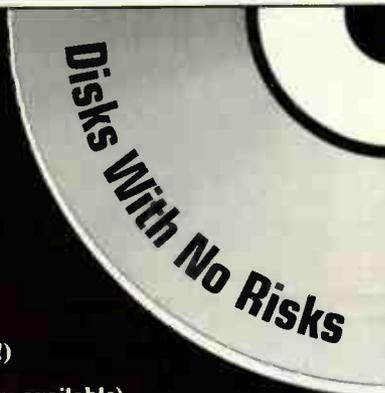
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## ACROSS THE BOARD

continued from page 162

room at Circuit City.

A few times I have recorded in rooms like this, but only because of some weird schedule conflicts. The artist is on his way to Europe for a 375-week tour, but for three days he will be at his mother's house in Elephant's Breath, Montana. Find a studio, because he needs to re-cut the vocals on three of the songs you just mixed and the CD plant is holding the presses waiting for the new master. Fine — if you have enough experience in the studio, you can deal with it. You can tell if something is broken, and work around it. You know what the mix is supposed to sound like, and you can compensate for the weird reflections you hear in the control room and the sound of the traffic going by outside. You can get done what you need to get done.

Woe is the unsuspecting artist or songwriter who is new to the recording process and stumbles into one of these places. You have heard the phrase "you get what you pay for." Well, the artist calls around and finds a studio that sounds like it is what he needs. The stu-

dio is not cheap, but they are not charging a house payment a day, either. He has found studios for less money, but he is willing to spend a little more because of the name-brand recognition, "I cut my album on a Neve."

Even if he goes down to the studio and looks around, the wood panels and giant speakers in the wall convince him that everything will be fine. When he brings in his band and starts recording, he wonders why the drums sound like a cardboard box being hit with a cat. The engineer, who came with the studio because it probably is the engineer's studio, says, "Drums are fine, you're just not used to a 'Pro' studio." The bass has no low end because that module is not working quite right. The vocal sounds so nasal that the singer makes an appointment for reconstructive surgery. When the artist mentions the other studios that he thought about, the engineer/owner will always tell horror stories about how he had to personally fix everything that ever came from there.

Some of these studios used to be "Name-Brand" studios 30 years ago. It has the same tape machines and the same console, and they haven't been maintained since. See that module with the paint worn off the EQ knob? That is

because you have to hit it there with your shoe to get the EQ to cut in, or sometimes it goes on or off when loud audio goes through that module.

### BOTTOM LINE

I could have told you the bottom line sooner, but then my column would have been too short.

The bottom line is this: Ask someone else who has worked there. If you don't know anybody, ask the studio for a referral list or a list of CDs that were recorded or mixed there recently. If they can't give you one because their client list is confidential, then you can't give them your business. If the studio is good, other clients will be glad to brag about what they did there.

Any studio will allow serious potential clients to come by before a session and listen to a CD or DAT so you can hear the control room. If you can't get in to listen, it is probably because they don't want you to hear it.

If you get stuck and have to work in a substandard studio, make sure you hire an overqualified independent engineer. He will know if someone is trying to pull the wool over your eyes, or in this case, the packing blanket over your ears. **EQ**

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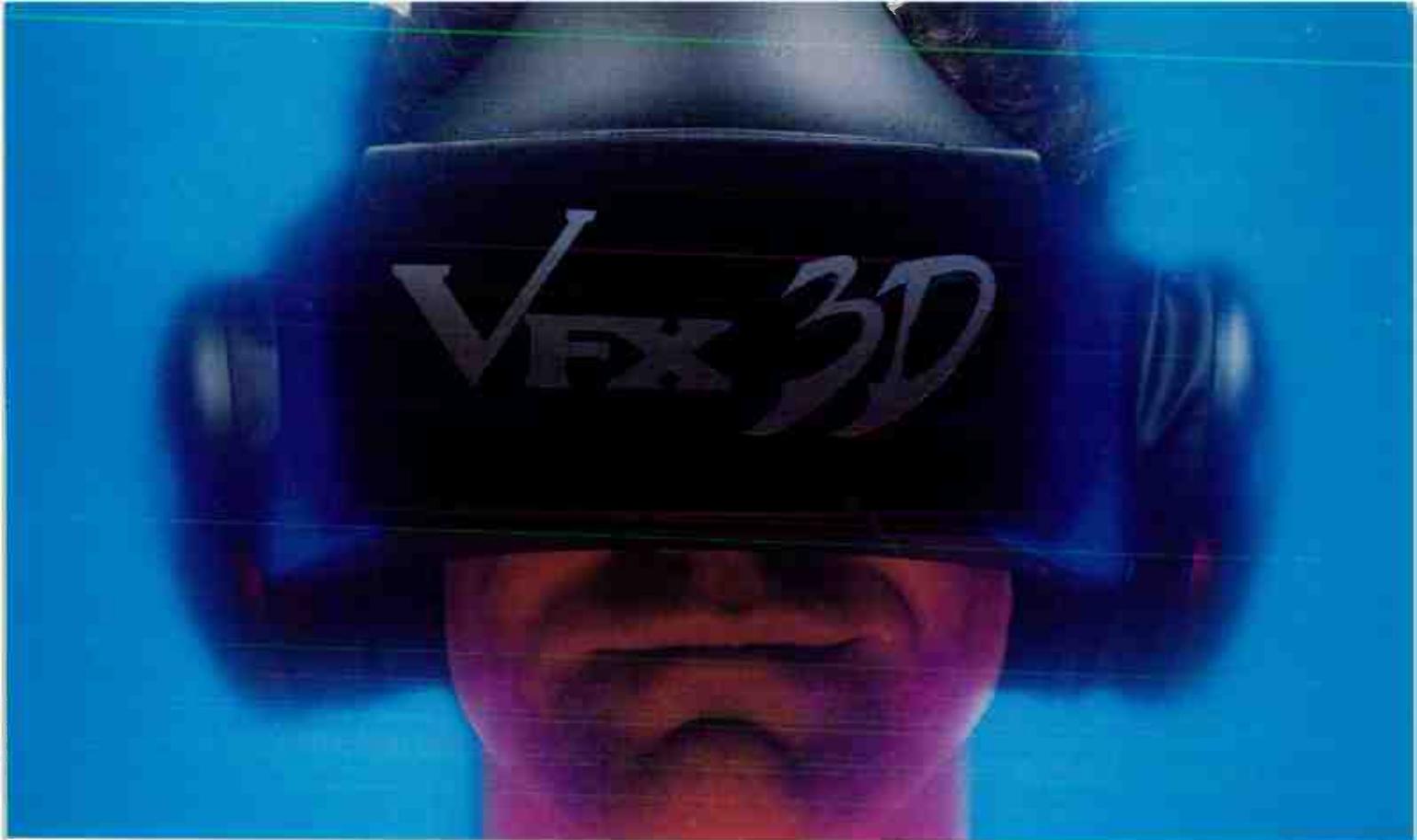
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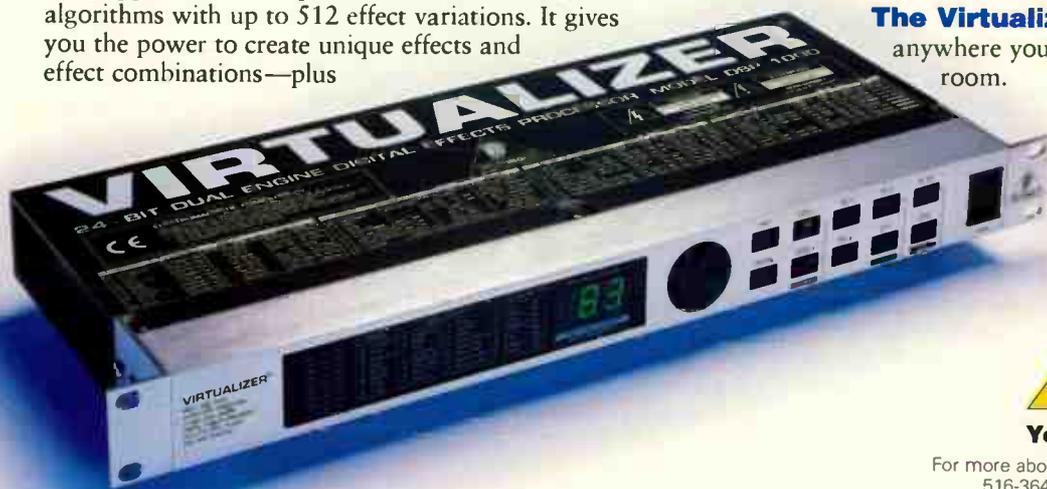
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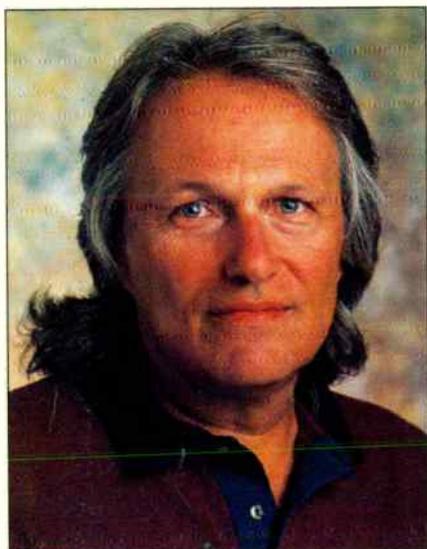
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World Radio History

# The Good, The Bad, The Ugly



Beware of all three when choosing a studio for your project or even for a quick fix

BY ROGER NICHOLS

There are good studios, there are bad studios, and there are ugly studios. Choice is good, but make sure that what you want is really what you are going to get.

The "cream of the crop" studios cater to your every need. They record your music, cook your dinner, detail your car, cut your hair, massage your aches, and make you CDs at the end of the night so you can listen in your car on the way home. Some of these studio names will ring a bell: StarStruck Nashville, Record Plant L.A., Emerald Nashville, Chung King New York, Hit Factory New York, Masterfonics Nashville, Capitol L.A., Ocean Way L.A. and Nashville, Criteria Miami, Fantasy

Berkeley, Crescent Moon Miami, Sound Kitchen Nashville, and others that I apologize for not remembering during this spur of the moment rant. This is where everyone wants to record and mix, if they could afford it.

On the project studio side, we have the guy with a few Alesis ADATs or Digidesign Pro Tools and a Yamaha 02R or two, trying to make his own record for a few pennies on the dollar. These studios are OK, too. Sometimes I am involved in projects that are done in these studios. Bela Fleck and Take 6 are two examples. In these studio environments you can usually work your own schedule because nobody else is coming in after you, and the pressure is a lot lower because you don't have anyone standing over you with a stopwatch, charging you by the hour.

If there are acoustical anomalies in a project studio, you figure out what they are and work around them. You don't mind turning off the air conditioning or unplugging the refrigerator before you record an acoustic guitar. If the guitar doesn't sound right, you try recording in the bathroom, or the laundry room, or in the garage. You are paying next to nothing for the recording time, and you add a few hassles. No big deal.

The problem is the studios in between these two book ends. In the middle range there are three categories:

First, you have the project studios where the owner needs to make some money to help pay for his equipment, so he makes the studio available to his friends. On one level, this is OK — if everyone knows the parameters. If the friend knows not to expect a commercial facility, and is willing to put up with the hassles. The friendship will end real quick, though, if the mixes your friend

did go on to the mastering stage and sound like they were mixed in a sewer pipe. The other aspects to watch out for is zoning and businesses in your house. Some communities will allow you to have a business in your house and one employee. Other communities allow no more than a desk for a home office and won't let you have more than two phone lines. You can't have more than three cars in front of your house without a "party permit."

The second level is the studio that consists of a Mackie or 02R and three ADAT or DA-88 machines located in an office space somewhere. I would classify these more as demo studios than actual commercial recording studios.

There are tons of these around the country, especially in Nashville. You can't expect to go into one of these studios and crank out the same quality of album that you can in a commercial studio. The recording acoustics are marginal, the control room sounds iffy, and, mostly, the engineer has usually not had enough experience hearing what good recordings sound like to be able to compensate for the studio's shortcomings. These studios work out well for demos, because they are just demos. You get your ideas on tape for a producer or artist to hear the song — not to hear how great the guitar sounds.

The third group consists of studios who think they are in the league with the big boys. They usually try to charge rates that are about half of what the big studios charge, but you usually get about 10 percent of the quality. Sometimes you see the ads that say "2-inch 24-track (or 24-track digital), Neve console (or SSL), automated mixing. We beat all competitors prices!" These are the places you have to watch out for. I'd rather record in the back

*continued on page 160*

*Sometimes you see the ads that say "2-inch 24-track Neve console, automated mixing. We beat all competitors prices!" These are the places you have to watch out for. I'd rather record in the back room at Circuit City.*

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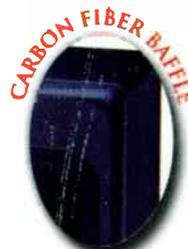
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