

# AL Schmitt Reviews **Neumann M147**

# E

PROFESSIONAL  
PROJECT  
RECORDING  
& SOUND

MARCH • 1999

**REVIEWS:**  
**Calwalk Pro**  
**Audio 8 Software**  
**TC Electronic**  
**DBMax Processor**  
**HHB Circle 5**  
**Studio Monitor**

**WEBSOUNDS:**  
**Weir & Hart Live**  
**and on the 'Net**  
**Cutting Edge**  
**Omnia.net Review**

**Doug Beck**  
**Goes Digital:**

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CIRCLE 65 ON FREE INFO CARD

World Radio History

# EQ

PROFESSIONAL PROJECT  
RECORDING & SOUND  
VOLUME 10, ISSUE 3  
MARCH 1999



**ON THE COVER:**  
Doug Beck (seated) sits with Cy Curnin of The Fixx in his Spirit 328-equipped project studio. Photo by Wes Bender.

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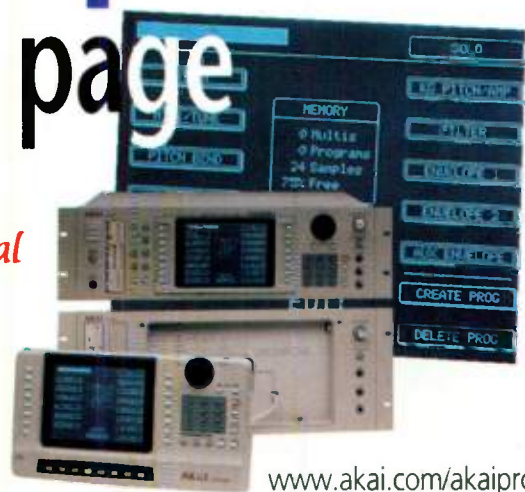


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# The DNA of EQ

As one of the "fielders of mail" for EQ magazine, I often get to read very interesting questions or comments about gear or techniques. Recently, I received a different sort of letter that really made me *think*. It came from a gentleman who is in a regionally successful band that performs live and has a CD out. He didn't mention the name of the band, or how many copies of the CD had been sold. He was wondering why — in all his years of reading EQ — he has never once seen an article speaking about the financial success an individual has achieved in a year. He felt that those looking at the full-time, professional recording industry from the outside don't ever hear about the money, and he wondered if anyone is actually *making* any money. While I certainly couldn't answer for an entire industry, I think it's fair to say that, yes, there are many folks out there earning money as producers and engineers. I'm sure the annual "take" varies with factors such as location, reputation, and clientele, but we do earn a living at it.

This letter-writer raised many valid questions: "What is the industry paying and who is succeeding? What did they do to get their career to a professional level, and how long did it take? How many jobs do they do per year? Are they charging by the hour or flat rate?" He recognized the fact that — as in any profession — the cream rises to the top, and surely someone like Bruce Swedien or Bob Clearmountain earns more than the average engineer.

The letter-writer said he'd like to see an article showing the lows, the highs, and the averages. It's a touchy subject that many people don't like to discuss. The "low" is easy. Just ask your average intern: \$0.00 and maybe a slice of rum cake around the holidays. As for the highs and the in-betweens, we welcome your comments, and promise that no names shall be mentioned.

In spite of the fact that his musical endeavors are successful, this person still works his non-music-related day gig. He summed up his point in one comment that certainly made a light bulb go off in my head: "Why would I leave my \$50,000-per-year job and gamble on a full-time recording gig when I have never met or read about anyone making more than myself?" It's a very good question, but the answer is simple: *because you have to*.

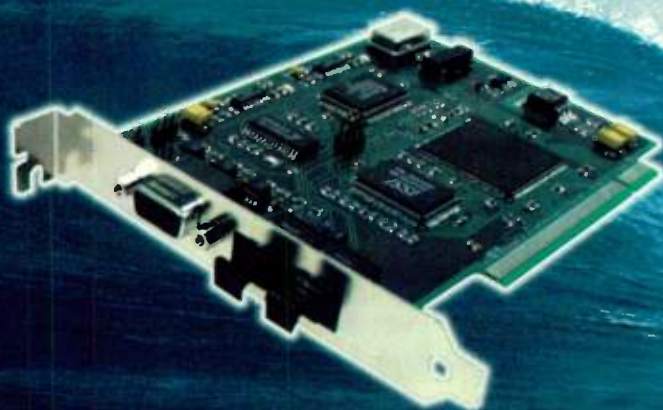
While I totally respect this person's perspective, I feel he's missing the point. A point with which I wrestle every ##@#!%\$ day of my life, with every overnighter, with every romantic-relationship-gone-wrong, and with every missed family birthday (Dad's 70th and Nephew's 1st this past year). I'm willing to bet I'm not alone. I'm willing to bet that a lot of us have the same annoying voice floating out of the Large Hall program from a Lexicon PCM90. You know the one. It says, "Maybe you should get a normal day gig. You have experience doing (whatever), you could get a full-time gig. Then you could be home more often and maintain a normal life. You'd have food in the 'fridge. You could actually sleep seven hours a night for weeks and be home on weekends." Sometimes the voice says things like, "You could make plans in March to take your girlfriend (or boyfriend) on a summer vacation. You could repossess your own car from your parent's house. You could get a gig with paid vacation, paid medical, and maybe even paid sick days."

In six months, I'd be in serious trouble — possibly locked in a white, padded iso booth. *Can't do it*. You see, I've got that Godforsaken gene that makes me abnormal — the same one which makes you buy a \$2000 microphone instead of putting your cash into a better car. I suppose it's easy to say this now because, financially speaking, I struggle less these days, but this gene designates that I'd rather have an OK-paying gig making music than a great-paying gig doing something else. And let's be realistic: I'm not star-struck here. I haven't done any records with Bruce Springsteen lately (though I'd love to get the call). I mostly do meat-and-potatoes Rock-'n'-Roll. But it's just like one of my buds who made a lot of serious cash working on the NY Stock Exchange and who gave it up to go on the road as a guitar tech. Why? He has the gene.

It is my belief that the gentleman who wrote this letter doesn't have the gene. That's why he'll keep the day gig — which is totally cool and you must respect this, especially if there's a spouse and children involved. I am *not* at all putting down people who have a day gig and do music in the off-hours. But he might find that if he didn't spend 40 hours per week doing his day gig, he'd have more time to earn money making music. When you have the gene, there's no other choice. Yeah it's scary. How *will* you pay that mortgage or health insurance bill? By taking *what* you can, *when* you can. Work all night and sleep six hours for the entire week. The *conditions suck*, but, somehow, when you hear the results of your efforts, you get that warm, fuzzy feeling all over. And the bills get paid — if you have the gene.

—Steve "Woody" La Cerra

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## EQ SELLS OUT

Let me start out by saying that I benefit from your magazine tremendously. All the product reviews and updates are very helpful. The interviews with engineers and producers about their techniques are very insightful and sometimes useful. Also, articles such as Al Kooper's "Defining of Terms" are priceless reading material for those who need some eye opening. But why a cover story on David Lynch [February '99]?

I know it would be hard for any magazine to turn down a cover story with David Lynch on it for sheer sales value, but after reading the article, I was seriously disappointed in the content. Though he may be very talented as a director, and I do enjoy his work, the fact that he bought himself a fancy project studio shouldn't entitle him to a multiple page layout in a respected magazine of your sort. *EQ* is read by people looking for serious information/tips on recording and recording products. I found that what he had to say was completely absurd and, to be frank, boring. I don't see how anyone could have benefited from the article at all. Yeah, I also could plug in a ton of effects and scratch a couple of strings on a guitar while blowing spitballs at tuned glasses of water. Does that make me a musician? I don't think so.

Hey, I have a lot of money, I think I'll buy an Avid home system, start writing my own scripts, and direct my own films as well. Does that make me a film director worthy of a five-page spread in a magazine geared for movie industry professionals? I don't mean to sound so harsh, but that article should have been saved for magazines like *Musician*, which are more interested in the propagation of celebrities than the content they provide! I would have benefited more from an article on his studio partner's thoughts.

Matt Fusello  
Chicago, IL

## STRANGER THAN FICTION

This story is too bizarre to be made up!

After sitting down yesterday to read Mike Sokol's article on press mults ["A Quick Press Mult," January '99], I encountered my first situation where the audio feed (what I always called it) could not be line level but had to be mic level. Whoa, no problem: balanced out in control room to balanced side of passive

DI in the 5th row, 1/4-inch out of passive DI (those things work backwards, you know) into 1/4-inch in of second passive DI (with pad engaged). Also for the first time, a news guy showed up at our event. He showed up 10 minutes late (I'm not kidding) and demanded a mult. OK, 1/4-inch out of first DI into a 3rd DI with pad. Cake!

Now, chances are I could have thought this one up, but it would have taken some time to reason it out. Not to mention it was already 10 minutes into the event and the mayor of Miami is about to speak!

Thanks Mike and *EQ* for a seemingly simple but very practical and helpful article. I always enjoy your magazine.

Paul Griffith  
via Internet

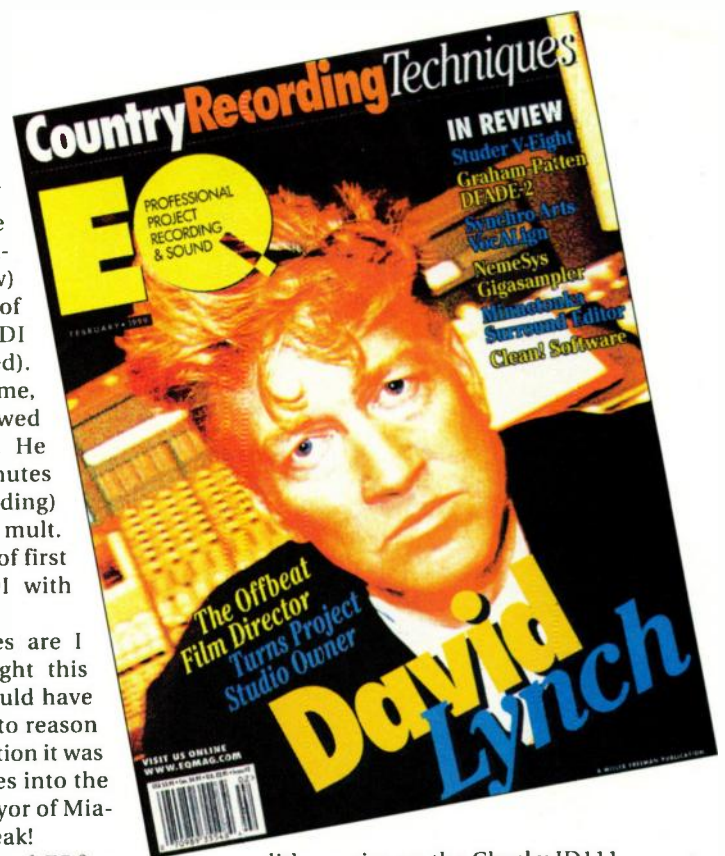
## MORE THAN A FEELING

Roger Nichols has just exposed the naked emperor ["More Side Effects of Technology," January '99]. My job is to write songs and demo them. I have been doing it since 1962 and feel this is the best time to be creative. However, has all this capability led to better music? I deal with the balance every day, and there are times when the perfect take leaves me cold. By the time it has been edited, corrected, cut and pasted, and effected, there is no passion left. I want to see a multieffects box that has setting for Sensual, Passionate, and Erotic. Get that one built, and you will make a fortune.

Darryl Saffer  
Studio Ray Productions  
via Internet

## ONLY A TEST

In Eddie Ciletti's review of the Graham-Patten digital fader [February '99], he uses a custom CD-R with a 40-Hz fade to zero. A similar test is available on commercial CDs, e.g., the CBS CD-1, and the best is probably the fade to shaped



dither noise on the Chesky JD111.

In the Boston Audio Society CD player clinic we tested 25 CD players for D-to-A accuracy and found that the "composite" tone test was more revealing than the fade to zero. It is on Denon CO 75046.

David Hadaway  
DB Systems  
via Internet

## CORRECTIONS

The price of the MIDIMAN BiPort 2x4 was listed incorrectly in the January issue's NAMM Preview section. The correct price is \$179. Also, in the February issue's Microphile section, the incorrect phone number was given for Korby Audio. The correct number is 412-937-1349.

## WRITE TO US

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**CONVERSION QUESTION**

**Q** *If I go from my analog 8-track tape returns through my mixer's stereo outs via XLR into a DAT deck (like the Sony A-7), would it make any sonic difference if I inserted an external A-D, say the MIDIMAN Flying Cow, before going to the DAT? If I intend to keep my 1/2-inch TEAC 80-8 analog 8-track, should I just bail on this external converter idea and get a CD recorder like the Marantz CDR-880 or HHB? The manual on my DAT deck says the A/D on the (RCA) analog input is a "1-bit converter." The Flying Cow says it has 24-bit in and 20-bit out. So, if every bit equals 6 dB of dynamic range, does that mean when recording analog into something digital with a 1-bit converter that what is on the DAT tape only represents 6 dB of dynamic range?*

*Also, is there any [sonic] difference between routing a tape to a 24-bit external converter rather than going directly into the DAT deck?*

*Steve via Internet*

**A** The Flying Cow, though very cost effective (as I understand it), is still probably better than the converters in the A-7. But isn't this comparing apples and elephants? Beware the cheap CD recorder. Many require that you use expensive (\$6) blanks. I prefer the HHB/Fostex/Pioneer over any present Marantz unit. No! A 1-bit converter does its task very fast by way of oversampling. The signal is saved on tape at 44.1/48 kHz with 16-bit resolution. Oversampling solves many of the anti-aliasing filter problems caused by sampling at 44.1/48 kHz. (Note: According to Flying Cow's specs via the Web, their 1-bit sigma-delta converters are 128x oversampling with a dynamic range of nearly 100 dB, A-weighted.)

As for your last question, the Sony converters are pretty horrible, so I'd use external converters and take advantage of getting 16 reasonable bits. Normally, you might worry whether the Flying Cow truncates the 8 bits on the way to 16 or dithers them, but tape has its own "dither" because of the inherently high noise floor.

Only in theory can 20-bit or 24-bit converters potentially deliver their full dynamic range (6x20=120 dB or 6x24=144 dB). In reality, these converters can deliver as low as 98 dB, typically 110 dB,

both being "weighted," which is pre-filtered to eliminate out-of-the-audio-band noise (which shouldn't be there). However, if you've got \$7520 (list), the Prism AD-2 96 kHz/24-bit converter delivers 130-dB dynamic range — *unweighted!*

Eddie Ciletti  
Contributing Editor  
EQ Magazine

**ERROR HELP**

**Q** *Please help! I have a Fostex CX-8 (Fostex's version of the ADAT-XT) with only 450 hours on it. Last week, this unit was put into full-time use at a new studio in town. Within days of being installed, upon power-up, it reads "CAL P9" error. The machine also thinks it has 9999 hours. I can't get a straight answer out of anybody on what the error message is, much less how to repair it. My questions are:*

*A. What does the error mean?*

*B. What could have caused it?*

*C. Is this something I can fix myself?*

*I have been repairing PC boards of all types for several years now, so I have no problem digging into this one if I can get the correct technical specs. I do realize that it takes certified training to truly repair these units, so I won't tear it apart unless you think it is something I can repair based on my background. Also, where can I get certified in ADAT diagnostics and repair?*

*Brett Lengacher via Internet*

**A** The "CAL P9" message really means, "Calibrate the PG phase." This is a head-locating pulse — the value was somehow lost, perhaps because of static electricity. This gremlin has long plagued the XT; even mine has done it. There is a procedure on my Web site for restoring the hours. Go to: [www.users.interport.net/~edaudio/adat/hr\\_adat.html#CAL p9](http://www.users.interport.net/~edaudio/adat/hr_adat.html#CAL p9)

The head hour problem is also quite common, but it requires a trip to any Alesis- or Fostex-authorized service center. Alesis made your Fostex machine. Contact Alesis directly regarding any information on certification.

Eddie Ciletti  
Contributing Editor  
EQ Magazine

*I am researching techniques that will guarantee a wider surround sound sweet spot, but we can't expect the listener to be stuck in the middle, especially not after buying additional speakers.*

**WHAT'S THE RANGE?**

**Q** *What is the dynamic range of non-Dolby'd 15 ips tape recorded as hot as possible?*

*Rick Thomas via Internet*

**A** On your 8-track 1/2-inch machine, the signal-to-noise is between 55 dB and 60 dB, unweighted, with 3-percent distortion. You may get a little more signal and distortion by burying the meters!

Eddie Ciletti  
Contributing Editor  
EQ Magazine

**ON HIS MIND**

**Q** *If monitor (speakers) have a nominal input of 8 ohms, what would happen if they were connected to a power amp rated at 4-ohm output (like the Alesis RA-100 or the Samson Servo 170)? Is the load presented to a 4-ohm amp from two 8-ohm speakers (in parallel) going to fry the speakers?*

*Steven J. via Internet*

**A** Nothing changes. The inverse would make a difference. An amp that can deliver 10 watts into an 8-ohm load will most likely deliver more power into a 4-ohm load. Theoretically, the power should double, but this is design dependent. No. The amp will deliver its rated power into the two 8-ohm speakers, which present the equivalent of a 4-ohm load.

Eddie Ciletti  
Contributing Editor  
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## SURROUND SITUATION

**Q** I just got out of your Surround Sound clinic at Middle Tennessee State University, and one question kept repeating in my mind: "Will consumers seriously be interested in listening to just music in 5.1?" I think perhaps not. Music-only 5.1 is a great idea, but I firmly believe that it will find the most use only when integrated with a movie or video image. The attention span of most audiences is short, and I feel few people will pay a lot of money just to listen (not watch) to a CD in 5.1.

Also, people like to move around — do the dishes, clean house, dance, etc. — when they hear music. If they are constantly moving in and out of the sweet spot, the surround effect will obviously not sound as good. Perhaps if there were a way to broaden the sweet spot so more people in the same room could share it, then 5.1 would most likely become more popular. There might even be an upswing in music videos if we could watch and listen in 5.1.

Another place where a good majority of listening is done is in our cars. And unless there is a drastic design change for automobiles, it will be hard to get a center channel. The sweet spot in cars is also different due to the console and transmission placement.

Thank you for coming to MTSU for the EQ Surround Sound seminar.

T.S. Mattingly  
MTSU  
Murfreesboro, TN

**A** Thanks for the response. Your first point about consumers needing to have video with the audio so there's something to watch is probably not accurate. If it were, then MTV, VH1, etc. would already have replaced the compact disc, and that hasn't happened. Consumers will decide what they want. A real problem is that there's simply not enough music out there yet in 5.1. But consider that lots of DTS decoders and discs have been sold — and there's no video on them.

Your point about the sweet spot is right on the mark. I am still researching additional techniques that will guarantee a wider spot, but we can't expect the listener to be stuck in the middle, especially not after buying additional speakers! Really good engineering should help make the listening room less critical to having a good musical experience. Still, that's how it's always been. It will be even more so with 5.1 mixes.

A car could be the perfect 5.1 envi-

ronment. Lots of aftermarket installers are already putting center speakers in cars, so an inexpensive decoder in the amp/rack would make sense. And Dolby Digital [format] allows for active dynamic reduction, so the player will initiate a preplanned playback compressor for a car or noisy home.

The consumer, as always, will be the final critic in this whole thing and, as usual, will do the voting with their wallets.

Mike Sokol  
EQ's "Mr. Surround"  
EQ Magazine

## TURN IT DOWN

**Q** I am amazed at how poor the sound is at local live music clubs. What factors contribute to getting good sound in small clubs?

Jeff Harmon  
via Internet

**A** The major contributing factor to getting good sound in small clubs is to have the on-stage instrument amplifiers (and drums) turned down. That out-of-control loud level alone prevents the house engineer from doing anything except try to keep the vocals loud enough to compete with the roar of the instruments coming from the stage. In essence, there's no real mixing going on — other than the one actively happening in the room. Ergo, if you have a 100-watt guitar amplifier on stage, it never gets put in the main speakers and most listeners get a poor mix. (For more details, check out the piece I wrote on stage isolation for EQ magazine last year.)

Mike Sokol  
JMS Productions  
Hagerstown, MD

## ASK US

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CIRCLE 46 ON FREE INFO CARD

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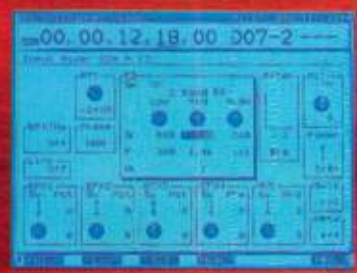


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\* With two optional VS8F-2 Dual Stereo Effect Expansion Boards  
Appearance and specifications subject to change.

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

CIRCLE 26 ON FREE INFO CARD

## MICHAEL DeLORENZO



Double threat **Michael DeLorenzo's** acting credits won him a role on "NY Undercover"... his musical gifts landed a recording deal. "The sound of this console is as good as any big analog console I've worked on," he says, adding "My producer **Peter Michael** and I were so surprised by the quality of the onboard dynamics and reverbs that we plan to mix the whole album without outboard gear."

## WHY GO DIGITAL?

Virtually everybody in this ad has worked on a Big Automated Analog Console. Motorized faders... instant recall of channel, aux, EQ and effects settings... the ability to polish every facet of a mix... It doesn't take long to get used to the fantastic creative benefits of automation. Now, at a tiny fraction of the cost of those Mega-Consoles, a whole new breed of affordable digital consoles promises the same automation convenience. Our Digital 8-Bus not only delivers better-than-big-console automation, but it's intuitively easy to use, and it has a warm natural sound—while maintaining the pristine sonics of 24-bit digital. **CALL OR E-MAIL FOR A FREE VIDEO AND THE NAME OF YOUR NEAREST DEALER... AND FIND OUT WHY YOU SHOULD GO DIGITAL WITH MACKIE.**

## LEE ROY PARNELL



**Lee Roy Parnell's** upcoming Arista album may start a new trend in artist-producer-label communication. At every stage of each song's progress, mixes get modemed between Parnell's studio, producer **Ed Cherney** in Los Angeles, and Arista-Nashville president **Tim Dubois'** Nashville office on Music Row. (This won't make the airline industry too happy.)

## POKE



**Poke** (above) and co-creator **Tone's** credits include "Allure," Will Smith's "Big Willie Style" album, and NAS' "It Was Written." Their opinion of our new digital mixer? "Making records on the D8B is for real. Tight mixes and we love not having to give up the bread it used to cost to get great sound."

## MAD JEF



**Mad Jef's** platinum credits include engineering and programming for the likes of Michael Jackson, Janet, Jam & Lewis, and Grammy winners **Sounds of Blackness**. Jef didn't expect much from the D8B's processing. His opinion after several mixes? "The onboard effects are so good I'm getting rid of a bunch of outboard gear."

## NAUGHTY BY NATURE



**Naughty By Nature** cut and mixed the platinum album "Next" on their analog 8-Bus, so buying a D8B to mix their new release "19 Naughty IX" was a no-brainer. NBN's **KG** says the band avoided other digital mixers because they "mess with your sound."

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# SUPERB SOUND

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CITY LIMIT

"Sounds as good as an expensive analog console." We hear it over and over. From seasoned recording veterans. From new, emerging talent. Though musically diverse, the folks in this ad all have one thing in common: highly-tuned BS filters. If the Digital 8•Bus didn't deliver, they wouldn't be using it. Call or e-mail for a free video and the name of your nearest Mackie Digital Systems dealer. Get an in-depth D8B demo and prove it to yourself: Mackie's Digital 8•Bus simply sounds superb.

WALTER AFANASIEFF



JIMMY JOHNSON



You'd think with more than 100 million album sales to his credit, we could have treated pop producer **Walter Afanasieff** better. But even his dazzling production credits and deposit at a local retailer couldn't land him a D8B until recently. Was the 9-month wait worth it? As Walter's engineer **David Gleason** says (in his inimitable British accent): "Walter and I both really love this desk."

Few know the evolution of recording better than Muscle Shoals legend **Jimmy Johnson**. He engineered hits for Otis Redding on a big-knob mono console, did the Stones' "Brown Sugar" on the first 8-track, produced Lynyrd Skynyrd on 24-track, and is now one of the first to own a Mackie D8B. Johnson says, "The sound I'm getting out of this console is phenomenal. Why did I have to wait so long to get it?"

ARROWHEAD STUDIOS



Virgin/Nashville President/CEO **Scott Hendricks** has produced over forty #1 records. His newest commercial recording facility is built around a pair of Mackie D8Bs. With a 48-track Sony, 24-track RADAR, oodles of outboard gear, and Pro Tools' 24 on hand, Arrowhead Studios' double-D8B 144-channel Mackie rig gets a serious digital workout.



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# Capps CM 2250

A look at this  
early American  
condenser classic

**MICROPHONE NAME:** Capps CM 2250  
**FROM THE COLLECTION OF:** Wally Knapp/Custom Recordings, Ellicott City, MD  
**PRICE WHEN NEW:** \$225 each  
**YEAR OF MANUFACTURE:** Circa mid-1950s  
**TYPE OF MIC:** Vacuum tube condenser  
**TUBE TYPE:** CK5703  
**POLAR PATTERN:** Omnidirectional  
**FREQUENCY RESPONSE:** 30 Hz to 15,000 Hz  
**RATED SOURCE IMPEDANCE:** 250 ohms  
**DIMENSIONS:** 8.25 inches long x 1.13 inches in diameter

**MIC NOTES:** Manufactured by Capps and Co, Inc. in Valley Stream, NY, the CM 2250 was one of the earliest American-made condenser microphones. In addition to the CM 2250, Capps also manufactured the CM 2030 (30-ohm impedance) and the CM 2011 (high-impedance) mics. The CM 2250 operates with an external power supply that uses a CK5703 tube in its circuit path. Owner Wally Knapp notes that he "purchased the pair in 1959 from a Baltimore-area studio who had bought them new several years previously. The complete setup includes two mics, two canvas covered mic cases (about 3 x 3 x 9 inches), two power supplies (about 4 x 6 x 8 inches), and two 25-foot mic cables with chrome swivels attached."

**USER TIPS:** Knapp continues, "The mics are omni's and, as tube condensers, provide a mellow and open sound for live choruses, orchestras, etc. I have used them in large auditoriums when ambient noise is not a problem, and the omni configuration does not add excessive noise to the recording. They seem to be nearly identical in frequency response, meaning that a stereo-spaced pair placed behind the conductor works well. I'm amazed that 40-year-old condenser mics perform this well, and the published 30 Hz to 15 kHz frequency response seems to accurately represent their capabilities." 

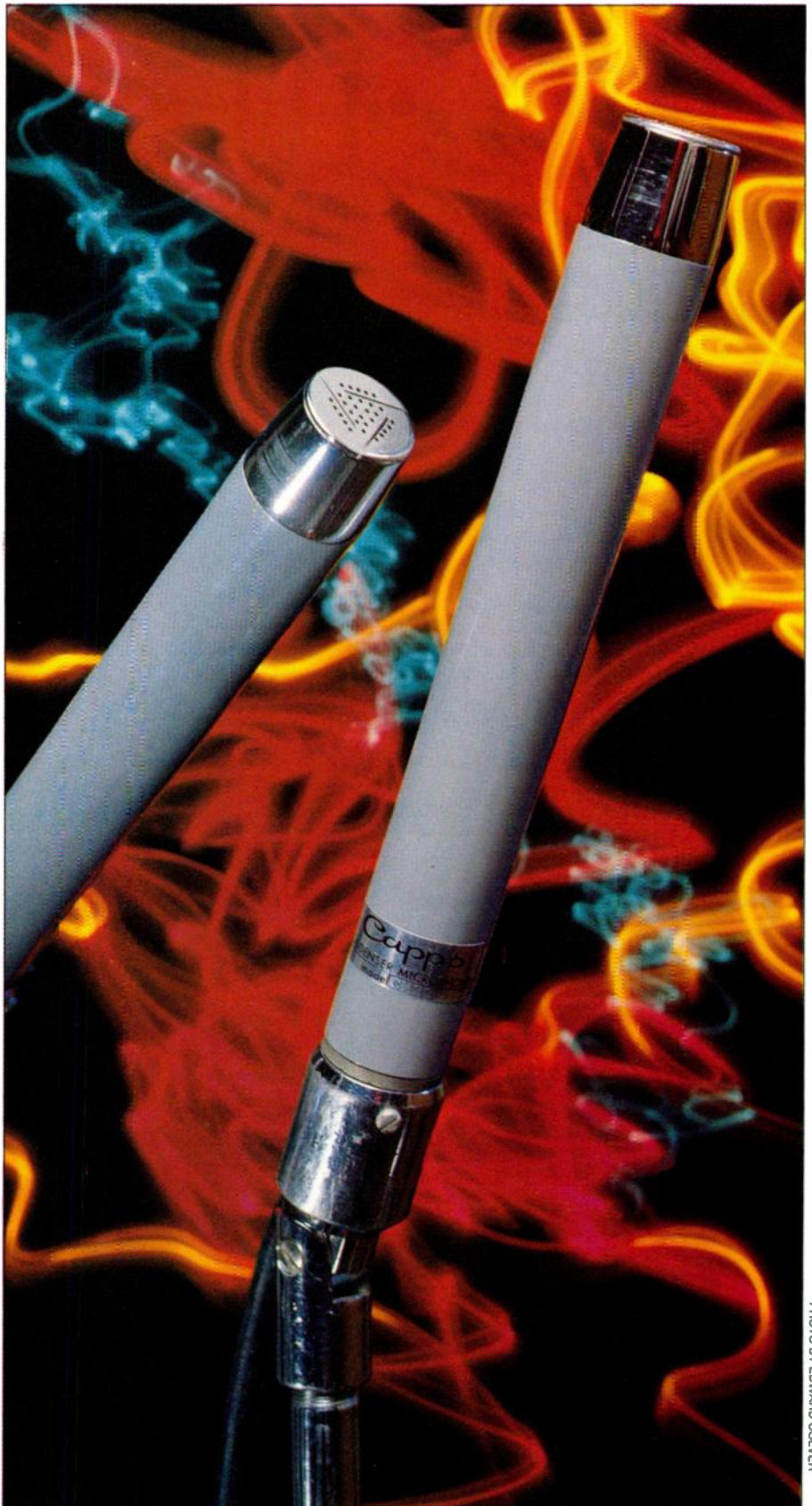


PHOTO BY EDWARD COLYER



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CIRCLE 20 ON FREE INFO CARD

# Switchcraft AAA and HPC Series Connectors

Keep your gear well-connected with these new accessories

BY ROGER MAYCOCK

Plugs! Connectors! Jacks! As audio professionals, this is the stuff we live by — literally. You can have the latest, greatest, whiz-bang recorder, mixer, or processor on the face of the earth, but one bad cable or connector and the whole system goes to hell in a heartbeat! The fact of the matter is that connectors are indeed the lifeblood of the recording studio, live stage rig, or even our home entertainment systems. So stop laughing — we're serious, and (fortunately) so is Switchcraft!

All kidding aside, connectors are among those items that we all take for granted — until one goes bad. Then, suddenly, they become the Rodney Dangerfield of the equipment arsenal. When you consider the abuse these items have to endure, particularly for touring acts and sound companies, it's amazing how well most of these connectors hold up. When it comes to endurance, few companies can top Switchcraft connectors — they've been making these things since 1946. And by the time you read this, Switchcraft expects to have their new HPC Series connectors ready for market, with the AAA Series released in June.

## THE AAA SERIES QWIKTWIST Q-G CONNECTOR

The QuickTwist Series connectors will be available in both male and female cord plugs, with 3 through 7 pin/contacts. Unique to this new series is the easy twist on combination handle/strain relief, and the reduced number of parts required for assembly. With the insert preloaded into the die-cast zinc front shell, and the thermoplastic 94V-0 rated strain relief built into the handle, there are only two parts to assemble. The connec-

tor's insert insulation is made from a molded thermoplastic and the internal spacer is made from polyurethane. The connector's latch release is made from nickel-plated, die-cast Zinc.

Assembly is as easy as it gets. You slide the handle onto the cable, solder the terminations, and then twist on the handle. *Voila!* The strain relief is designed to accommodate a wide variety of cable diameters. The QwikTwist connectors will ship with a standard nickel-plated finish with silver-plated contacts. If you prefer, black and gold will be available as options. Additionally, an optional metal handle will be available for increased shielding.

## THE HPC SERIES PANEL MOUNT CONNECTOR

For sound contractors, or those of you whose studios have separate control rooms, isolation booths, and performing areas, Switchcraft will also introduce the

HPC Series or High Power Connector panel-mount connectors. The HPC Series is a 20A-rated, touchproof connector series designed to meet IEC 529 and IEC 1010-1 safety requirements. The HPC Series is available in a wide variety of terminations and is completely compatible with the Neutrik Speakon cable connectors.

Available in four poles, the new HPC Series connectors incorporate a built-in gasket that offers additional protection from harsh environments and meets IPC26 ratings. As an option, a 0.200-inch deep flange allows the connector to be mounted from the rear of the panel and still allow proper mating of the cord plug. The HPC Series Panel Mount Connectors are available with screw terminals, faston terminals plus straight or RAPC terminals, and are available with or without countersink mounting holes.

If you're preparing to rewire your facility or traveling equipment rig, you owe it to yourself to give these Switchcraft connectors a good, hard look.

For more information, contact Switchcraft, Tel: 773-792-2700; Fax: 773-792-2129; Web: [www.switchcraft.com](http://www.switchcraft.com). Circle EQ free lit. #101.



PLUG IT IN: The Switchcraft AAA (left) and HPC Series connectors.

**digital**

three two eight

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Spirit's unique **E-Strip** avoids the need for tedious menus, so 328 is as easy to use as an analog desk

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with the  
Human  
Touch



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

**\$4,999.95 U.S. Retail**

### Main Features

- 16 Mic/Line Inputs
- 8 Group Outputs
- Up to 42 Inputs at Mixdown
- 2 ADAT Optical Interfaces
- 2 Tascam TDIF Interfaces
- 3-band Parametric EQ
- AES/EBU Interface
- UltraMic+ Preamps w/ 66dB of gain
- Instant Recall Capability Recording
- Analog Console "Feel"
- 2 Lexicon Effects Processors
- 16 Digital Tape Returns
- 5 Pairs of Stereo Inputs
- 24-bit A/D and D/A Converters
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CIRCLE 51 ON FREE INFO CARD

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# TASCAM Digital Products

## Some tips for the TM-D1000 digital mixer and IF-TAD digital format converter

BY PATRICK KILLIANEY,  
TASCAM PRODUCT SPECIALIST

Most digital mixers offer snapshot recall, but the TM-D1000 also includes a "transition time" with each scene. Transition time allows the user to define crossfade lengths between scenes of up to 10 seconds. Different mixes for the intro, verse, and chorus can be stored, then recalled during mixdown with smooth crossfades. The crossfades are also useful for creating the fade-out at the end of the song. (Recall the last scene, bring the master fader all the way down, and store that as a scene with a 4-second transition time.)

Scenes can be recalled from any standard MIDI sequencer by sending MIDI program change messages to the mixer. MIDI sequencers can also dynamically automate the TM-D1000. All mixing functions have been assigned to a MIDI parameter, so any time a function is changed on the console, it sends out a MIDI message that can be recorded and played back by the sequencer.

### DIGITAL STUDIO ROUTING

The TM-D1000 ships with one TDIF port for connection to a digital multitrack, plus two digital outputs and one digital input on

S/PDIF and AES/EBU. This makes the TM-D1000 a great router between digital devices. Tracks can be recorded on tape, digitally routed through the mixer into an audio sequencer or DAW, and sent back digitally through the mixer down to tape after editing. At the same time, a DAT or CD recorder can be connected to the other digital output for digitally linked mixdown.

Just as the digital I/O can be assigned to any output on the console, the analog inputs can be reassigned as well. For example, if a digital input is assigned to channels 7 and 8, the analog inputs on channels 7 and 8 could be routed directly to the Aux Return. This allows you to return signal from external effect processors that do not have a digital output.

To re-assign digital and analog I/O, go to the Setup menu in the Option screen. (Hit Shift and Param Sel, then scroll to Setup, and press Enter.)

### QUICK WORD CLOCK EXPLANATION

Many people who are getting into digital consoles used to have digital multitracks plugged into an analog console. Each digital device was its own domain, converting analog signal to digital, recording or processing it, and sending it back out analog to the next device.

However, once everything is connected digitally, the devices need to work together as one massive digital domain. This requires that all devices not only use the same sample rate, but also synchronize their sample-rate clocks. This is achieved by using a word clock. As with any synchronization chain, one device is deemed the master and the other devices will slave to that master.

### CONNECTING AN ADAT TO THE TM-D1000

Since an ADAT uses the Lightpipe digital format and the TM-D1000 utilizes the TDIF format, TASCAM's IF-TAD will be necessary to convert signal between the two formats. Simply connect optical cables between the IF-TAD and the ADAT, then run a TDIF cable between the IF-TAD and the TM-D1000. Also use a BNC-RCA cable to go from the IF-TAD Word Sync Out to the TM-D1000 Word Sync In.

Select the ADAT's digital input by pressing Digital In (or Dig In). Now, set your ADAT to be the word clock master. For an ADAT XT or newer, there is a button labeled "Clock Select" to toggle the settings. On blackface ADATs, toggle the settings by pressing Set Locate and Dig In. Stop when you see the display read "int."

To set the TM-D1000 to slave to the ADAT word clock, press Shift and Param Sel simultaneously. The display should read "Option" on the top line. Rotate the Data Entry dial to "System" and press Enter twice. Select Word Sync In [44.1 kHz] or Word Sync In [48 kHz] (depending on the sample rate of your multitrack) and press Enter. (Hint: Blackface ADATs only support 48 kHz.)

### OTHER IF-TAD APPLICATIONS

Since the IF-TAD was released at the same time as the TM-D1000, many musicians automatically associate it with our digital mixer. However, the IF-TAD is simply a two-way TDIF-to-Lightpipe converter. It can be used to link a DTRS machine to an ADAT for cross-format dubs, or even with Lightpipe computer cards for editing. **EQ**



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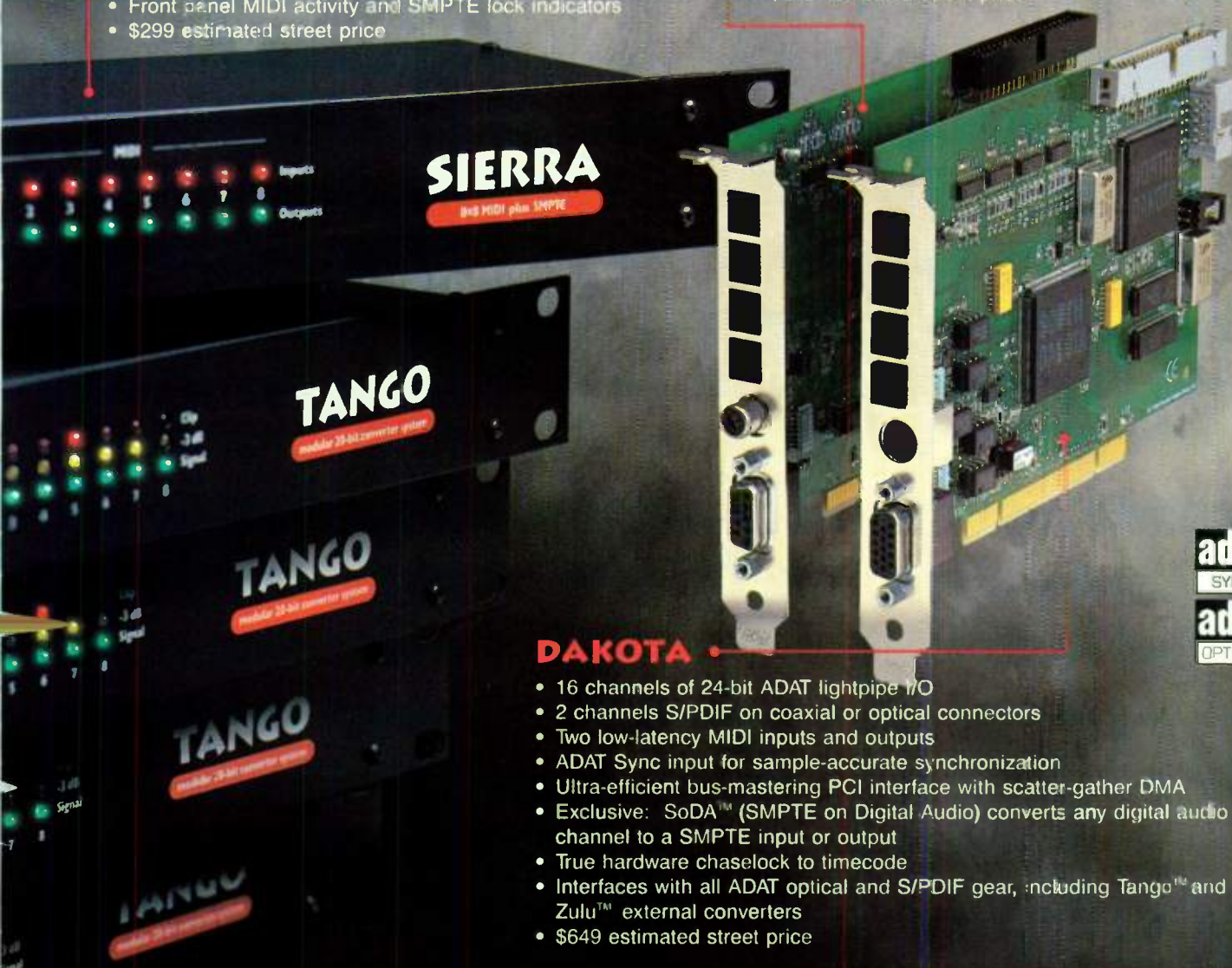
The superintegrated digital audio, MIDI, and sync solution  
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### SIERRA

- Expands Dakota's MIDI I/O to 8 inputs and outputs
- "Quick-patch" I/O ports on front of unit
- 19" rackmount enclosure
- SMPTE input and output on 1/4" jacks
- Front panel MIDI activity and SMPTE lock indicators
- \$299 estimated street price

### MONTANA

- Doubles Dakota's ADAT optical I/O to a full 32 in, 32 out
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- ADAT Sync output
- Plugs into either PCI or ISA slot
- \$249 estimated street price



### DAKOTA

- 16 channels of 24-bit ADAT lightpipe I/O
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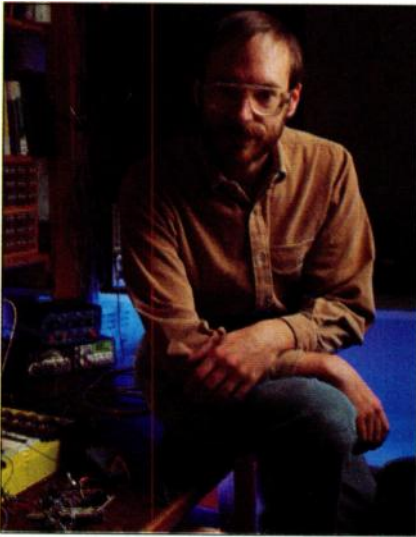


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# The Final Word on Winter NAMM

A look at the trends revealed at the 1999 Winter NAMM Convention



BY CRAIG ANDERTON

Another year, another NAMM show. Like last year, this one was held at the Los Angeles Convention Center instead of the more user-friendly (but overcrowded) Anaheim Convention Center.

So what was the mood? Subdued. After the last three explosive years of technological advances — the portable hard-disk studio à la VS-880, extended word lengths and sample rates, pro-level sound cards, low-cost yet precise monitor speakers, Windows' arrival as a viable platform for musicians, groove technology (both hardware and software, like Sonic Foundry's ACID), and affordable digital mixers — it's not surprising that, this year, the industry took a breather.

Well, I guess that just about wraps up the column, so...just kidding! Despite the lack of breakthroughs, some important trends were discernible in the cavernous halls of the L.A. Center. Let's take a look.

## 24/96: REVENGE OF THE HARD DRIVES

CDs are 16 bits, and we don't have a DVD-Audio standard yet. Nonetheless, the Gods of Marketing have proclaimed that if we

don't use 24 bits at 96 kHz, we're technological troglodytes. Never mind that this requires three times the hard-disk space compared to 16-bit/44.1 kHz, that the performance of 24-bit converters isn't significantly better than well-designed 20-bit converters, and that few people have hearing acute enough to detect the difference caused by a higher sample rate. The industry senses upgrade opportunities, and the recording public seems willing to oblige. Don't get me wrong — someday people will probably be glad they archived in 24 bits when "Remastered for DVD" becomes a major selling point. But for the average project studio, getting a really good mic or reverb should probably be a higher priority right now than going hi-rez.

## THE WORLD IS FLAT

Okay, so it wasn't a music industry thing, but the hit hardware product of the show was definitely flat-panel displays. When you're shipping a ton o' stuff out to L.A., every pound helps — and flat-panel displays certainly cut down on the UPS bills. But they're also flicker-free, have virtually no radiation, and the colors are pleasing to the eye. Now prices are falling below \$1000 for decent models, and all I can say is, "Sign me up!" I bet a lot of Mac owners are going to replace their big-screen CRTs with a pair of flat panels, and Windows users will upgrade to Windows 98 to take advantage of the dual-monitor option.

## APPLE'S COMEBACK CONTINUES

Those flirtatious little iMacs and the new G3's were plentiful and instant attention-getters. Companies seem a lot more serious about Mac drivers (e.g., Event Electronics finally has them for Gina, Darla, and Layla). It's no longer the kiss of death to write Mac-only software,

and there is definite techno-lust for G3 PowerBooks. Apple will probably never cause Windows to roll over and play dead; but, then again, it looks like Windows won't do the same thing to Apple, either.

## WHAT HAPPENED TO DIGITAL MIXERS?

Despite strong and cost-effective offerings from several companies, including Roland's announced new V-series products, digital mixers have failed to take off as expected. The problem is simple: lots of people have something like a Mackie 8•Bus that sounds just fine, is bought and paid for, and so they feel no need to upgrade. Maybe that's why more and more stores are trying the "borrow it for a few days and see what you think" approach; they're betting that once users have experienced what the better models can do, they won't go back to analog.

## MOVING FADERS

Before too long, mixing with a mouse is hopefully going to join sequencing with a QWERTY keyboard on the scrap heap of history. All the digital mixers have moving faders, and two buzzes of the show centered around the Samplitude/Motor Mix combo (\$1800 for motorized fader control surface and software) and the Peavey/Cakewalk StudioMix system, which for \$900 attaches a human interface with nine moving faders, plus knobs and switches, to

Cakewalk's software (I even did a real-time remix demo at their booth). Moving faders may not be a necessity per se, but they sure bring out the best in computer-based automation. And they look cool.

## THE DJ INVASION

While doing seminars around the country, I often ask music stores what's hot. The nearly unanimous answer: "DJ pack-

*While doing seminars*

*around the country, I*

*often ask music stores*

*what's hot. The nearly*

*unanimous answer:*

*"DJ packages." Yup, two*

*turntables and a*

*microphone are replac-*

*ing the imitation Strat*

*and combo amp in the*

*hearts of entertainers.*

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CIRCLE 92 ON FREE INFO CARD

World Radio History



FIGURE 1: Steinberg has opened up VST, ASIO, and Rewire protocols to other developers, but they've also expanded the VST spec to accommodate software synths.

ages." Yup, two turntables and a microphone are replacing the imitation Strat and combo amp in the hearts of up-and-coming entertainers. At this show, DJ gear was in full force. Love 'em or loathe 'em (I subscribe to the former), DJs are here to stay.

**SYNTHESIZERS GO SOFT**

While there are still plenty of hardware synths, software synthesizers are proliferating. Seer Systems' SurReal, Bitheadz AS-1 analog-sounding synth and DS-1 sampler, Native Instruments' Generator, Creamware's Pulsar, Koblo's nifty budget synths, and even a way to turn software synths into VST plug-ins (fig. 1) — more and more musicians seem to be favoring virtual oscillators. Thankfully, modern-day computers are now up to the task of providing wicked fast processing to minimize latency issues. For hardcore players, hardware is still the key (board), but software synths are becoming increasingly powerful, affordable, and plentiful.

**MORE TECHNO TOYS**

As feared, once record companies decided electronica was "the next big thing,"

people familiar with said companies' track records started running in the other direction. Not to worry, though. Although electronica remains an underground phenomenon, it's turning into a pretty big underground. Korg's Electribe A Synth and Electribe R Rhythm Synthesizer are feeding this trend, while Yamaha and Roland continue their hardware assault on the Beat Generation. This genre of music remains vital and innovative; although "groove boxes" pose the danger of homogenizing something special into a cliché, but so far that hasn't happened.

**VAPORWARE: UP IN SMOKE?**

Maybe companies are finally getting tired of killing off their current product lines with promises of better things to come in the future. In any event, the emphasis on vaporware was way down at the L.A. show — a good sign for the industry. Mitigating factor: lots of representatives said, "We've got a really cool new product for the Frankfurt Music Messe, which we didn't feel was ready to show here." And does this mean that Frankfurt is starting to get the edge over Winter NAMM when it

comes to product introductions? I guess we'll find out in a few weeks.

**R.I.P. SWAG**

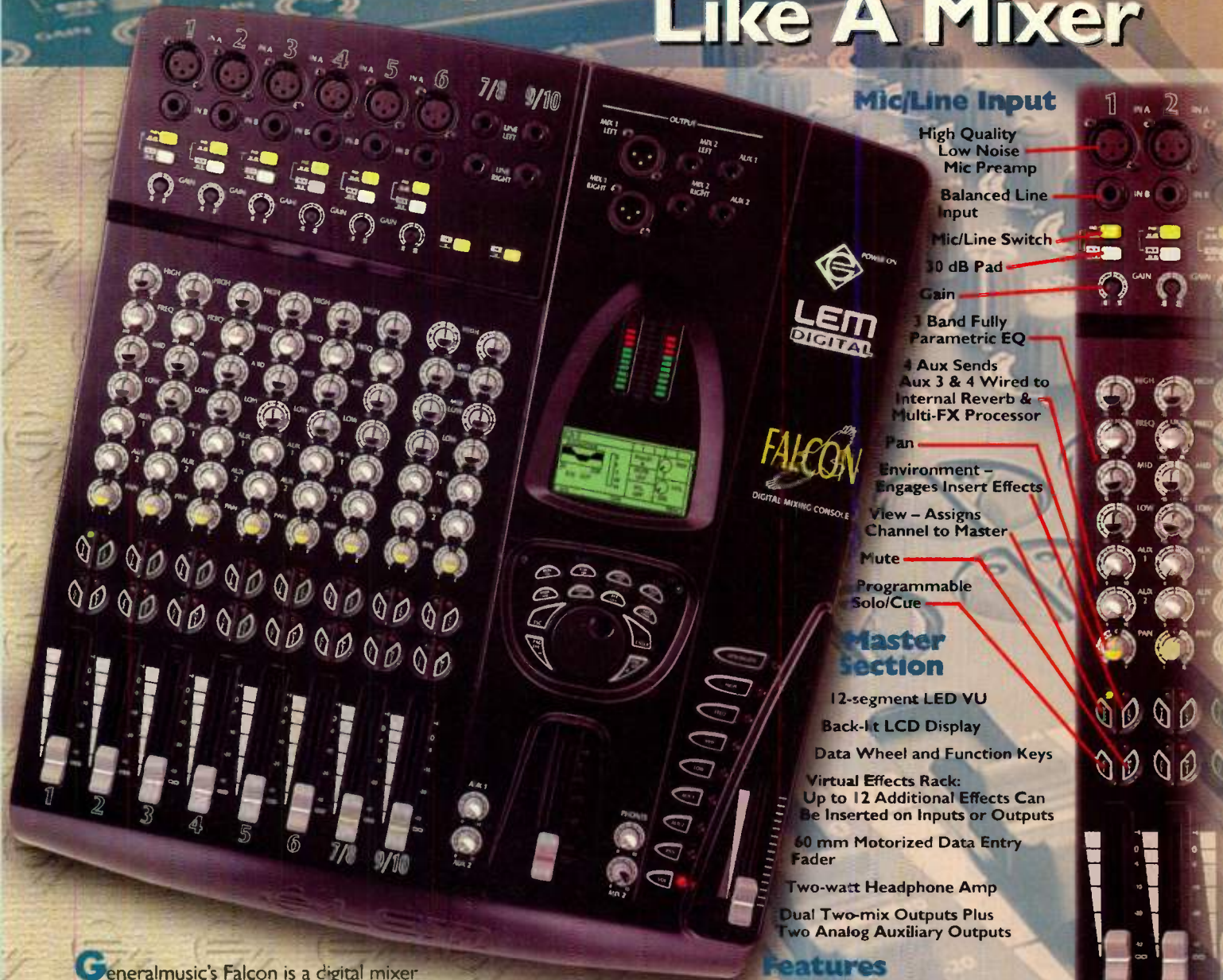
No T-shirts, a few mouse pads, a couple goodies here and there...that was it. The days of companies throwing funny little things at you as you went from booth to booth, let alone the courting of the press, seem numbered. Replacing swag: coffee makers at several booths (Line 6 had the best). Well, I guess the "need for speed" is necessary when you pass through a couple different time zones just to get from one end of the L.A. Convention Center to the other.

And that's the story from the City of Angels. The overall message seemed clear: "You have enough toys, now use the technology that's available and make some music!" Not a bad idea.

*Craig Anderton, card-carrying humanoid biped, is continuing to take his "loopz & guitar" act on the road in Europe. He'll be jamming with Reissdorf Force in Germany right after he finishes finding out what's hot at the Frankfurt Music Fair.*



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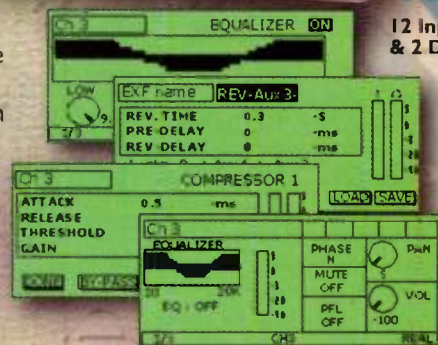
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CIRCLE 24 ON FREE INFO CARD

World Radio History



# We're Mad As Hell...



PHOTO BY JONATHAN POSTAL

## So why do we take it?

BY AL KOOPER

Today I have a bone to pick. (How do you pick a bone, anyway? Is it similar to a guitar? Is there a bone pick available?) At any rate, the CD replaced the LP in the mid-'80s. The loss of 12-inch space for graphics and credits was immeasurable. Booklets replaced back covers and inserts. At first, my eyes adjusted to the smaller typefaces, but now a magnifying glass sits permanently on the coffee table—a necessity today for reading CD liners. And the shrink-wrap on the CD itself has been conquered by brute intelligence. Just take a pen or key and follow the slit of the hinge indentation on the front left with a mighty scrape. The super-glued tape at the top presented a two-year challenge, but I think I got it now. With a little practice, one can actually open the jewel box with the tape still on top. After that it removes easily. This what separates us from the monkeys. Some companies make cheap CD-openers, but they don't address the aforementioned top strip and, ultimately, the pen trick works better. And all this just to get it open and then be confronted with an illegible 6-point typeface. The use of a magnifying glass is annoying and counter-productive. Don't go below 9-point type fellas. Add two more pages if you have to, but solve this nuisance

in the new millennium, please!

Okay, let's move into shape problems next. A few years ago, Motown put out a wonderful Temptations box set in an elongated book that housed five CDs. It was quite handsome, but it didn't fit on my CD shelves. I called Motown up in a frustrated moment. "Where am I supposed to fit your Temptations package," I asked, surely expecting an anal suggestion. "Start a new area," they honestly opined, and I thought to myself, that was pretty good advice. So I put them on top of my CD shelf and that worked until the Sony Billie Holiday box came out an inch longer. They're just screwin' with me, now, I thought to myself as I found another top shelf that fit the Sony package and relocated all the box sets there. I smiled smugly and got on with life until the Rhino '60s Soul Box arrived at the store. This was modeled after the old boxes you would carry your 45 RPM records in to other people's parties in the late '50s. Where in the hell am I gonna put this now? More space was needed.

That night I dreamed that all the record companies had a meeting once a year and decided new ways to stymie and confound you and I, the consumers. They all fell on the floor hysterical when Rhino previewed their '70s box, covered in shag carpeting and defying any dimensions that had been used prior to it. Then I woke up and realized I wasn't dreaming, just reflecting. There really was a carpet-covered, odd-shaped box-set for sale. I long for the simplicity of storage from the days of yore. Once the one-joke giggle of these clever packages has dissipated, the storage problems begin.

I hate these designers! When you get

these elaborate booklets open and read the hopelessly trivial verbiage that accompanies these amazing sets, the next problem arises. Why do they overlay type on pictures on the same page? You can't read the type as well and you can't enjoy the photo as much. In one page, you've pissed off the consumer twice. Maybe that's why they do it. Thank the Lord when they don't do that—like on the recent three-CD Booker T & The MG's set. But they getcha again on the Burt Bacharach box with a stapled-in booklet with tiny type. Now I gotta lug the whole box just to attempt to read the booklet. *Aarrrrghhh!*

And let me remind you how these companies produce these lavish sets in the first place. They've already made back the cost of most of the recordings, so they're in profit from package one. Also, the deals this music exists in were so one-sided in the companies' favor, that to recompile it and put it out cost the company nothing. *Sooo*, some genius came up with the idea of adding regal, tribute-paying design to the package and *still* having a non-costly package at the same time. *But* the consumer doesn't know that these artists, for the most part, are all recouped *and* have low royalty deals, so let's charge them an arm and a leg for these sets.

So here we are today. And, like George Carlin says, "The American people enjoy being told what to do." Write to these record companies and tell them to make these damn things all the same size, increase the type size, include removable booklets, kill jewel boxes (except for Jewel's CDs) and go to sturdy paper instead, take the

damn super-glued stickers off the top of regular CDs, and pass the low price of production down to us, too. Revolt in the millennium to simplify your life. Well, actually, the Y2K bug will do that for you gratis just to start you off. See ya next month. **EQ**

*Write to these record companies and tell them to make these damn packages all the same size, increase the booklet type size, include removable booklets, kill jewel boxes and go to sturdy paper stock, take the damn super-glued stickers off the top of regular CDs, and pass the low price of production down to the consumer!*

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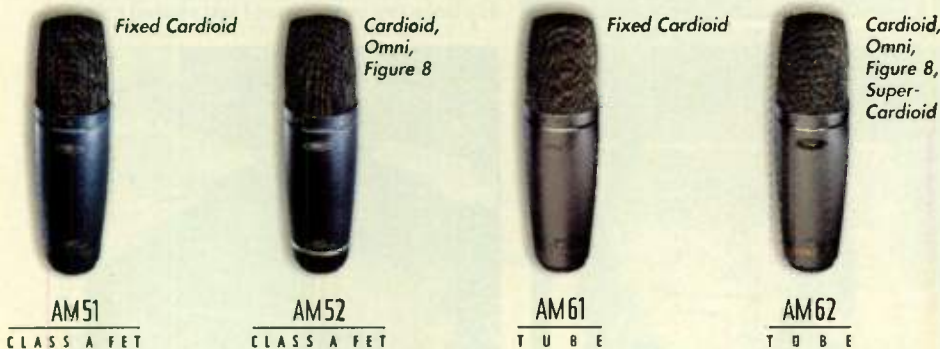


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**CIRCLE 07 ON FREE INFO CARD**



the new legend

studio. What's different?

Not a lot, actually. I've got a little Mackie desk. I moved from the Otari 24-track to ADATs. We've got a good, natural sound in these rooms. I rehearse, record, do demos — it's a very good working environment. I've been using ADATs, but I'm looking at some hard-disk systems. I'm tempted to go with the RADAR, and may get the new digital Mackie desk. It's brilliant this year — everything has become so inexpensive for state-of-the-art digital.

Have you done much film scoring lately?

No, I've pretty much let that go — it's a big

political harangue, if you want to know the truth. [Laughs.] I prefer to be in music.

Photography?

I've been shooting a lot — my travels, but with a somewhat bent view. The subject matter is always your own mind, you know. I'm planning to put a book out in a year or so.

If you could have a party right now with any guests, who would you like to have?

Let's invite Monica Lewinsky, Ken Starr, and Bill Clinton.

Who would you like to perform at your funeral?

The Spice Girls — reunited, of course.

If you were a musical instrument?

A cello would be nice.

What's wrong with the music industry?

Well, what's right with it?

What do you listen to while driving around?

Lately, I've been listening to Bill Evans. Working with Monk's music for six months was great — very rigorous study. It really gives you an entrée into another musical universe. I might try Bill Evans next.

Isn't it astounding how some of the old jazz was so well recorded? Such presence.

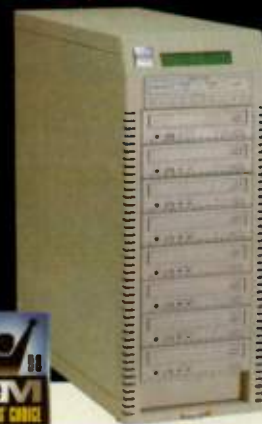


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CIRCLE 01 ON FREE INFO CARD

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It's amazing. If you put on an album like *Bag's Groove* by Miles Davis — probably recorded in Hackensack [NJ] by Rudy van Gelder — the sound of it is so huge, so fat — and right in your face. [Mr. Van Gelder's studio is in Englewood, NJ.] We've got all this technology now, but it doesn't sound like that. I love valve technology, and now we're trying to "re-create" it. My engineer, Eddie, is a genius, and he thinks he can make things sound even better with digital. I don't know.

**If you could go back before the birth of recording, what would you like to hear?** Wouldn't it be great to listen to Bach himself, to actually hear the master playing?

**Any astounding musicians working today?** Arvo Part and Steve Reich come to mind.

**Do you know any interesting business tricks?**

Read *The Art of War*. I think it's all there. Most of the business tricks could be learned from someone like Michael Ovitz. I guess the main business trick is seduction — and let the other person think they are winning.

**Funny studio stories?**

Hmmm. We were in Montserrat for the fifth Police album and we had a trick called "taking people to the party." When one of

us would fall asleep in the control room, he would get covered with bits of scotch tape and cigarette butts and wake up completely covered in garbage. It became a horrendous running gag. We have photographs of the victims waking up.

**Any old sayings you hate?**

"More than my job's worth."

**What animal do you identify with?**

The horse, or a salmon.

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

Musical artist? Well, I think Sting would have to top the heap there. I've worked with many great people, but in terms of overall sensibility — he's a very talented musician and a real artist.

**Biggest mistake of your life?**

No regrets.

**How would today's teenager get a good start in the music business?**

I don't know if there is such a thing. Get a hit record. Get everybody to love you, right off the bat. The more pedantic answer? Learn your craft. I don't know — probably sleep with somebody and get straight on MTV. I'm not being cynical, but it certainly wasn't the way I started. I got into it from a very

innocent place. I wanted to play really well, and the rest all came much later on.

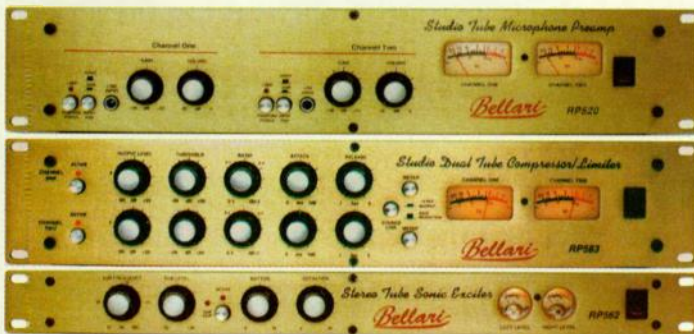
**Have you achieved what you envisioned back then?**

Yes, I think so, and probably a lot more. I've been really fortunate. I work hard, but I've certainly gotten all the kudos. I've been in one of the greatest bands of all time. If you grow up in Britain, like I did, you must understand the dreams they brainwash you with. And I've actually achieved them. I'm comfortable, do what I want. I'm free to play the kind of music I like. I don't have to work and try to make more money. It's a pretty good place to be.



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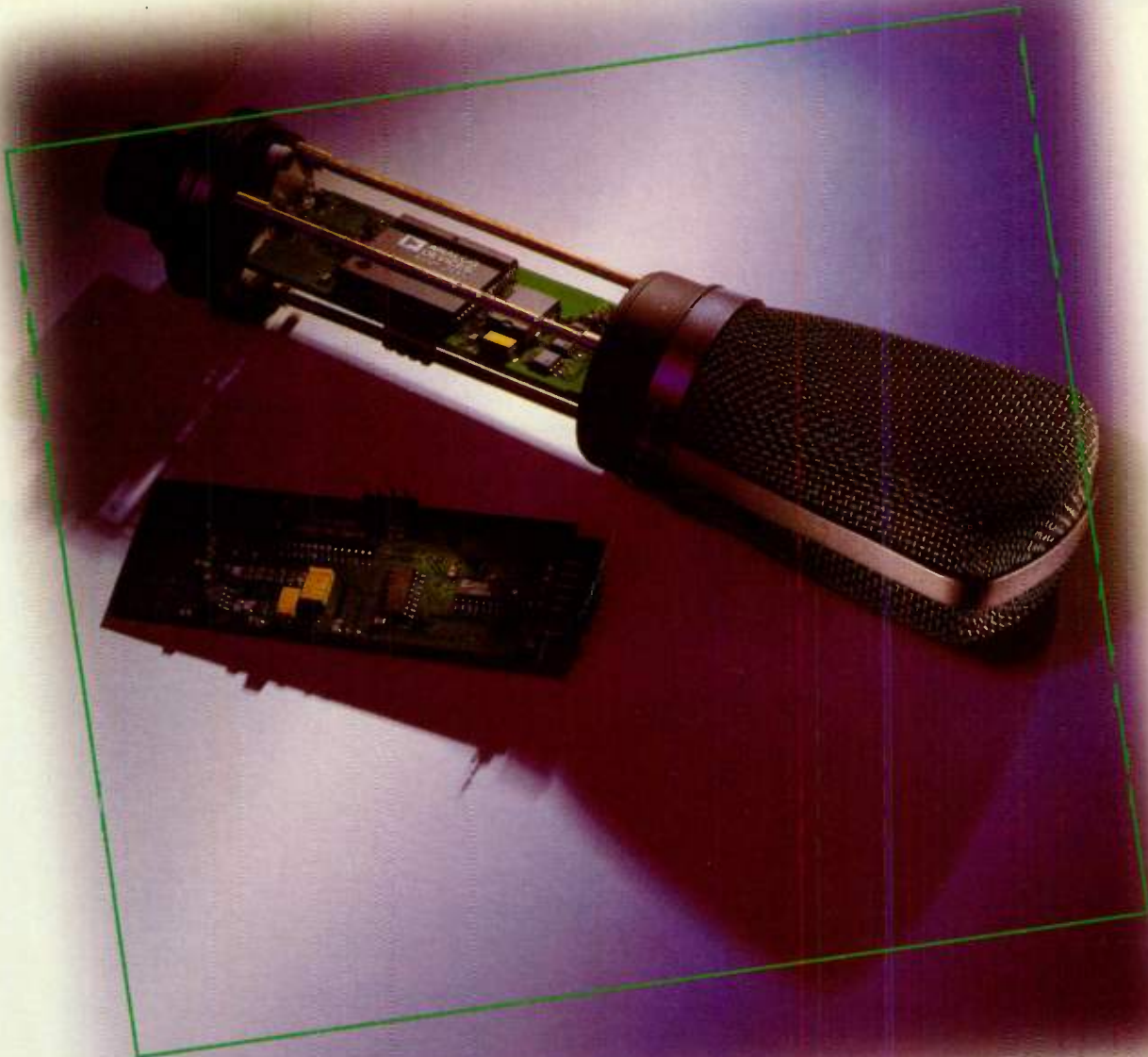
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# The Godfather of Recording

An interview with  
producer/engineer  
Bruce Swedien

BY BOBBY OWSINSKI

*Perhaps no one else in the studio world can so rightfully claim the moniker of "Godfather of Recording" as can Bruce Swedien. Universally revered by his peers, Bruce has earned that respect thanks to years of stellar recordings for the cream of the musical crop. His credits could fill a book, but legends such as Count Basie, Lionel Hampton, Stan Kenton, Duke Ellington, Woody Herman, Oscar Peterson, Nat "King" Cole, George Benson, Mick Jagger, Paul McCartney, Edgar Winter, and Jackie Wilson are good places to start. Then comes Bruce's Grammy-winning projects, which include Michael Jackson's *Thriller* (the biggest selling record of all time), *Bad and Dangerous*, and Quincy Jones's *Back On The Block* and *Q's Jook Joint*.*

*As one who has participated in the evolution of modern recording from virtually the beginning, as well as being one of its true innovators, Bruce is able to give insights on mixing from a perspective that few of us will ever have. The following is an excerpt from my upcoming book on mixing (and the greats that do it) entitled, appropriately enough, *Mixdown*.*

**EQ:** Do you have a mixing philosophy that you follow?

**Bruce Swedien:** Everything that I do in music — mixing, recording, or producing — is music driven. It comes from my early days in the studio with Duke Ellington, and from there to Quincy. I think the key word in that philosophy is what I would prefer to call "responsibility." From Quincy (no one's influenced me more strongly than Quincy), I've learned that when we go into the studio our first thought should be that our responsibility is to the musical statement that we're going to make and to the individuals involved.

**Responsibility to present the music in its best light...?**

To do it the best way that I possibly can. To use everything at my disposal, not to necessarily re-create an unaltered acoustic event, but rather to present either my concept of the music or the artist's concept of the music in the best way that I can.

**Is your concept ever opposed to the artist's concept?**

It's funny, but I don't ever remember running into a situation where there's been a conflict. Maybe my concept of the sonics of the music might differ at first with the artist, but I don't ever remember it being a serious conflict.

**Aren't you hired because of your overall concept?**

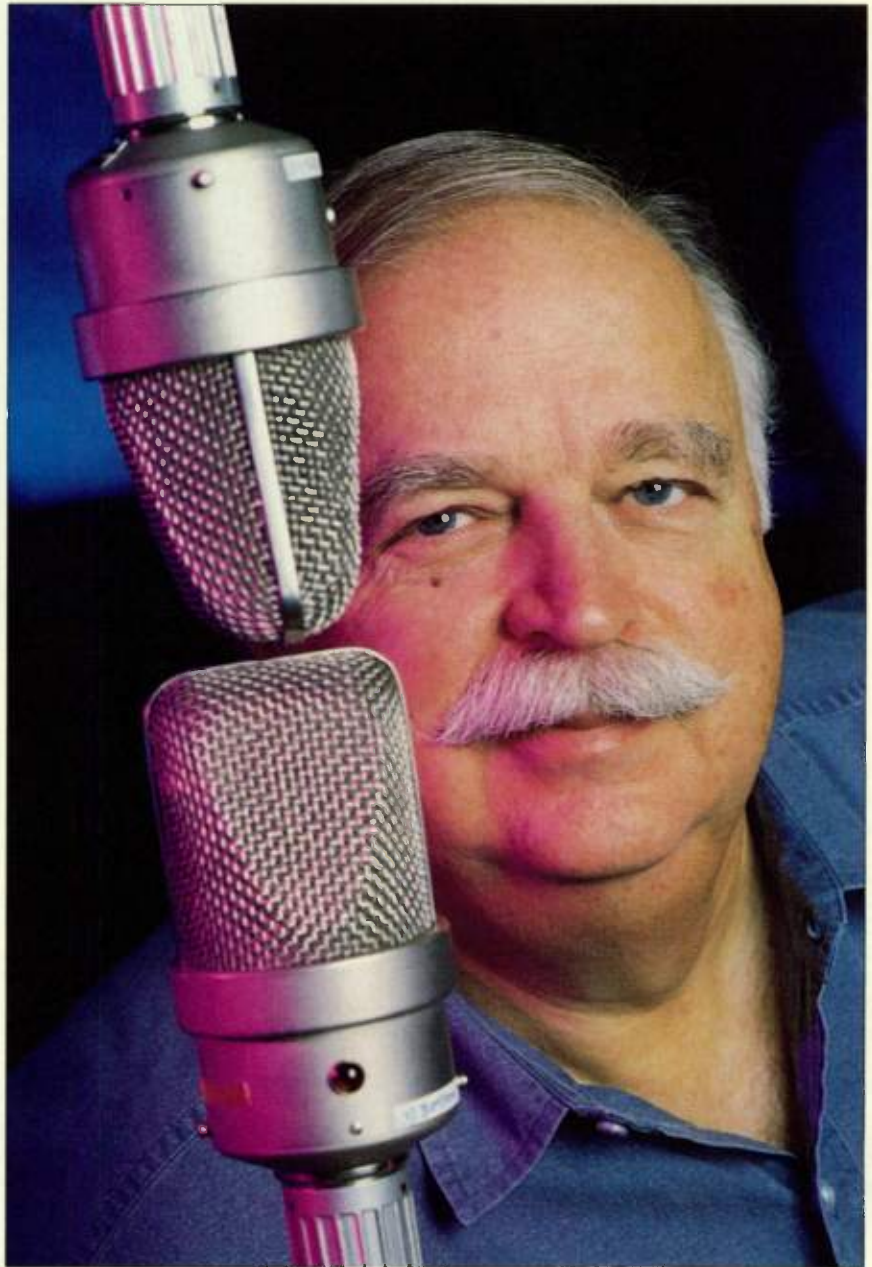


PHOTO BY JULIAN JAMES

**THE MASTER:** Bruce Swedien has worked with some of the biggest artists — and on the biggest albums — in music history. Here's how he does it.





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World Radio History

I have a feeling that's true, but I'm not really sure. My range of musical background probably helps a lot. I studied piano for eight years, and, as a kid, I spent a lot of time listening to classical music. So when it comes to depth of musical experience, I think that's one reason that people will turn to me for a project.

**Do you think that starting out without the benefit of the vast amount of technology that we have today has helped you?**

Oh, definitely...absolutely. And I think what's helped me more is that I was the right guy in the right place at the right time at Universal Studios in Chicago. Bill Putnam, who was my mentor and brought me from Minneapolis as a kid, saw or heard something in me that I guess inspired some confidence. From there I got to work with people like Duke Ellington, Count Basie, Woody Herman, Stan Kenton, Oscar Peterson, and others. One of the thrilling parts about the late '50s at Universal was that I learned microphone technique with Count Basie and Duke Ellington, and these guys were in love with the recording process.

**Really? I was under the impression they recorded only because they had to...**

Absolutely not. Now there were some bandleaders that were that way, although I can't think of anybody offhand, but most of them just loved being there. The guy that I think was most influential in my early years as a kid was probably Count Basie. I did a lot of records with that band.

**How were you influenced?**

I came into the industry at that level as a real youngster. In 1958, I was only 20 years old and I started right out working with Stan Kenton, and a couple of years later Count Basie, Duke Ellington, Quincy, and so on. But I was not in love with the status quo that was part of the recording industry at the time. The goal of music recording in the late '50s was to present the listener with a virtually unaltered acoustic event, and that wasn't terribly exciting to me. I loved it, but I wanted my imagination to be part of the recording.

Another guy who bumped into that, who I didn't work with but I got to meet in the early '60s at Universal, was Les Paul. There was one record that I remember that came out when I was in

high school in 1951 that changed popular music forever — Les Paul and Mary Ford's "How High the Moon," which was an absolutely incredible thing. I couldn't wait to get to the record store to buy it so I could try to figure out what that was all about. At that point in time, I think a whole segment of the record-buying public made a left turn in that the records of the day were pretty much, as I said, an unaltered acoustic event, and we were trying to put the listener in the best seat in the house. But all of a sudden this record came along without a shred of reality in it, and a whole segment of the record buying public said, "This is what we want."

**Can you hear that sonic space in your head before you start to mix?**

No. That's the wonderful part about it. **Is your approach to mixing each song generally the same then?**

It's never the same. I think I have a very unique imagination. I also have a "problem" in that I hear sounds as colors in my mind. Frequently, when I'm EQ'ing or checking the spectrum of a mix or a piece of music, if I don't see the right colors in it, I know the balance is not there.

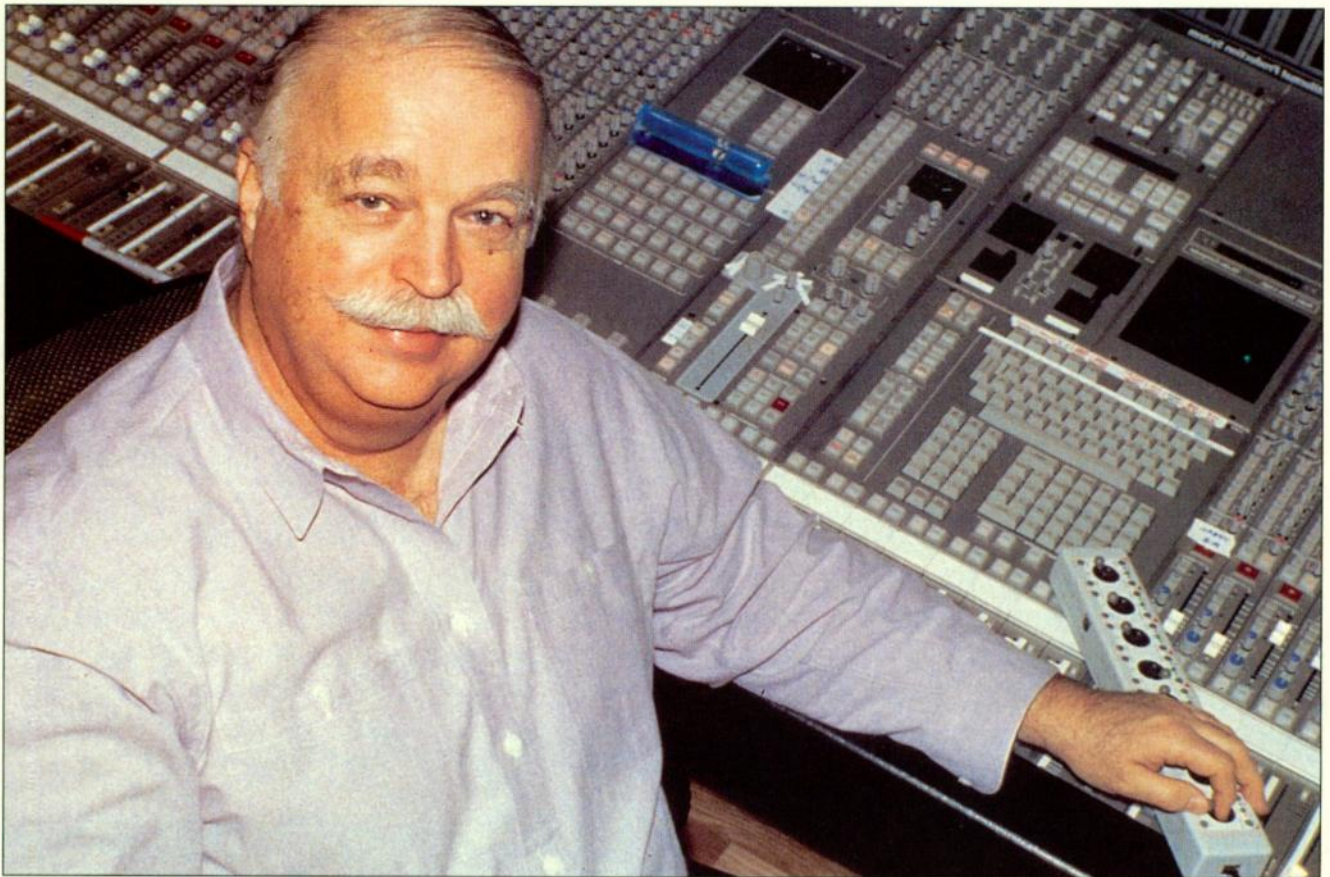


PHOTO BY DAVID GOGGIN

Wow! Can you elaborate on that?

Well, low frequencies appear to my mind's eye as dark colors, black or brown, and high frequencies are brighter colors. Extremely high frequencies are gold and silver. It's funny, but that can be very distracting. It drives me crazy sometimes. There is a term for it, but I don't know what it's called.

What are you trying to do then, build a rainbow?

No. It's just that if I don't experience those colors when I listen to a mix that I'm working on, I know that there's either an element missing or that the mix values aren't satisfying. How do you know what proportion of what color should be there?

That's instinctive. Quincy has the same problem. It's terrible! Drives me nuts! But it's not a quantitative thing. It's just that if I focus on a part of the spectrum in a mix and don't see the right colors, it bothers me. I have a feeling it's a disease, but people have told me it isn't.

How do you go about getting a balance? Do you have a method?

No...it's purely instinctive. Another thing that I've learned from Quincy, but that started with my work with Duke Ellington, is to do my mixing reactively, not cerebrally. When automated mixing came along, I got really excited because I thought, "At last, here's a way for me to preserve my first instinctive reaction to the music and the mix values that are there." You know how frequently we'll work and work and work on a piece of music and we think, "Oh boy, this is great. Wouldn't it be great if it had a little more of this or a little more of that." Then you listen to it in the cold gray light of dawn and it sounds like shit. Well, that's when the cerebral part of our mind takes over, pushing the reactive part to the background, so the music suffers.

Do you start to do your mix from the very first day of tracking?

Yes, but again I don't think that you can say any of these thoughts are across the board. There are certain types of music that grow in the studio. You go in and start a rhythm track and think you're gonna have one thing and all of a sudden it does a sharp left and it ends up being something else. While there are other types of music where I start the mix before the musicians even come to the studio...I'll give you a good example

of something. On Michael's *HIStory* album, for the song "Smile, Charlie Chaplin," I knew what that mix would be like two weeks before the musicians hit the studio.

From listening to the demo...?

No. It had nothing to do with anything except what was going on in my mind, because Jeremy Lubbock, the orchestra arranger and conductor, and I had talked about that piece of music and the orchestra that we were going to use. I came up with a studio setup that I had used with the strings of the Chicago Symphony many years before at Universal. The first violins are set up to the left of the conductor and the second violins to the right, the violas behind the first fiddles and the celli behind the second fiddles, which is a little unusual. So I had that whole mix firmly in mind long before we did it. So sometimes you do "hear" the final mix before you start?

Sometimes, but that's rare. From what point do you generally build your mix?

It's totally dependent on the music. Always. But if there were a method of my approach, I would say the rhythm section. You usually try to find the motor and then build the car around it. Some people always put the bass up first, some the snare, some the overheads...

No, I don't think I have any set way. I think it would spoil the music to think about it that much.

I guess you don't have any kind of method for setting balances?

Starting the bass at -5 or something?

*The goal of music recording in the late '50s was to present the listener with a virtually unaltered acoustic event, and that wasn't terribly exciting to me. I loved it, but I wanted my imagination to be part of the recording.*

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Boy, that would be terrible. I couldn't do that if my life depended on it.

**Do you have a method for panning?**

I don't think I have any approach to it. I generally do whatever works with the music that I'm doing.

**So it's just something that hits you when you're doing it?**

Yeah, that's really the way it works. It'll be an idea, whether it's panning or a mix value or an effect or whatever, and I'll say, "Ooh, that's great. I'm gonna do that."

**What level do you usually monitor at?**

That's one area where I think I've relegated it to a science. I use Westlake BBSM8's for nearfield speakers, and I try not to exceed 85 dB SPL. On the Auratones I try not to exceed 83. I've found in the past few years that I use the big speakers less and less with every project.

**Are you listening in mono on the Auratones?**

Stereo.

**Do you listen in mono much?**

Once in a while. I always check it because there're some places where mono is still used.

**People admire the way you sonically layer things when you mix. How do you go about doing that?**

I have no idea. If I knew, I probably couldn't do it as well. It's purely reactive and instinctive. I don't have a plan. What I will do frequently, when we're layering with synths and so on, is to add some acoustics to the synth sounds. I think this helps in the layering in that the virtual direct sound of most synthesizers is not too interesting. Therefore, I'll send the sound out to the studio and use a coincident pair of mics to blend a little bit of acoustics back with the direct sound. Of course, it adds early reflections to the sound, which reverb devices can't do. That's the space before the onset of reverb where those early reflections occur.

**So what you're looking for more than anything is early reflections?**

I think that's a much-overlooked part of sound because there are no reverb devices that can generate that. It's very important. Early reflections usually will occur under 40 milliseconds. It's a fascinating part of sound.

**When you're adding effects, are you using mostly reverbs or delays?**

A combination. Lately, though, I have been kinda going through a phase of using less reverb. I've got two 7-foot-high racks full of everything. I have an

EMT250, a 252, and all the usual stuff. All of it I bought new. No one else has ever used them. It's all in pretty good shape, too.

**Do you have any listening tricks?**

You know what? Since I moved from California (I live in Connecticut now and I'm not going back), one of the things that I miss is my time in the car. I had a Ford Bronco with an incredible sound system, and I still kinda miss that great listening environment.

**Do you do all your work at your project facility now?**

No, wherever they'll have me. I love it here, but my studio's dinky. I have an older, little 40-input Harrison and a 24-track. The Harrison is a wonderful 32 Series desk that's the same as the one I did *Thriller* on. I think that's one of the most underrated desks in the industry. It's all spiffed up with a beautiful computer and Neve summing amps. It's just fabulous.

**Didn't you have a couple of Neves put together?**

I did have a beautiful Neve, but after I finished Michael's *HIStory* album and Quincy's *Q's Jook Joint*, I was kind of burned out and very, very tired. So I told my wife as we were having breakfast one morning, "Honey, I'm gonna get rid of this damn studio at home, and I don't ever want to have another at home." Six months later I was buying a console. I guess once a junkie, always a junkie.

**How long does it usually take you to do a mix?**

That can vary. I like to try not to do more than one song a day unless it's a real simple project, and then I like to sleep on a mix and keep it on the desk overnight. That's one of the advantages of having my little studio at home.

**A lot of your projects are really extensive in terms of tracks...**

That's not so much true any more. I

start a mix tomorrow here at home for EMI in Portugal of a Portuguese band. It's all on one 24-track tape.

**How many versions of a mix do you do? Usually one. Although when I did "Billy Jean," I did 91 mixes of that thing and**

the mix that we finally ended up using was mix 2. I had a pile of 1/2-inch tapes to the ceiling, and we thought, "Oh man, it's getting better and better." [Laughs.]

**What are you using for a mastering machine these days?**

I have an Ampex ATR with both 1/2-inch and 1/4-inch heads. I also have a Mitsubishi 86HS that I don't really use any more. The ATR is my favorite. I bought it new and nobody else has ever used it.

**So it's mostly 1/2-inch?**

No. Quarter-inch is wonderful and I use it a lot. Quarter-inch has a little different sound. It's a little mellower. Half-inch, because of the tape width, has phenomenal transient response. If you're doing R&B or Rock or Pop music, then that's a great choice. But this band from Portugal that I'm mixing is Fado music, and it's very somber and pretty and soft, so I'm gonna probably do that on 1/4-inch.

**I haven't heard anybody mention 1/4-inch in a long time.**

It's typical with pretty music, and I think it's the better format. It's very, very lovely.

**Do you have an approach**

**to using EQ?**

I don't think I have a philosophy about it. What I hate to see is an engineer or producer start EQ'ing before they've heard the sound source. To me it's kinda like salting and peppering your food before you've tasted it. I always like to listen to the sound source first — whether it is on tape or live, and see how well it holds up without any EQ or whatever.

**That being the case, do you have to approach things differently if you're coming in to do just the mix?**

*Low frequencies*

*appear to my mind's*

*eye as dark colors,*

*black or brown, and*

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*brighter colors.*

*Extremely high fre-*

*quencies are gold and*

*silver. It's funny, but*

*that can be very*

*distracting. It drives*

*me crazy sometimes.*

Not usually...but I'm not really crazy about listening to other people's tapes — I gotta tell you that. I do, however, consider myself fortunate to be working, so that's the bottom line. *[Laughs.]*

**Do you add effects as you go?**

There's probably only two effects that I use on almost everything: the EMT 250 and 252. I love those reverbs. There's nothing in the industry that comes close to a 250 or a 252.

**What are you using them on?**

I love the 252 on vocals with the 250 program. It's close to a 250, but it's kinda like a 250 after taxes. It's wonderful, but there's nothing like a 250.

**What do you do to make a mix special?**

I wish I knew. I have no idea. Perhaps the best illustration of something special is when we were doing "Billie Jean," and Quincy said, "Okay, this song has to have the most incredible drum sound that anybody has ever done, but it also has to have one element that's different, and that's sonic personality." So I lost a lot of sleep over that. What I ended up doing was building a drum platform and designing some special little things like a bass drum cover and a flat piece of wood that goes between the snare and the hat. And the bottom line is that there aren't many pieces of music where you can hear the first three or four notes of the drums and immediately tell what piece of music it is. But I think that is the case with "Billy Jean," and that I attribute to sonic personality. I lost a lot of sleep over that one before it was accomplished.

**Do you determine that personality before you start to record?**

Not really. In that case, though, I got to think about the recording setup in advance. And, of course, I have quite a microphone collection that goes with me everywhere (17 Anvil cases!), and that helps a little bit in that they're not beat up.

**Do most of your projects these days involve both tracking and mixing?**

I don't know what's happened, but I don't get called to record stuff very much these days. People are driving me nuts with mixing, and while I love it, I kinda miss tracking. A lot of people think that since I moved to Connecticut I retired or something, but that's the last thing I'd want to do. You know what Quincy and I say about retiring? Retiring is when you can travel around and get to do what you want to do. Well, I've been doing that all my life. I love what I do, and I'm just happy to be working. So that's the bottom line. **EQ**

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# SONY

# The Art of the Insert

Are you taking full advantage of what insert jacks have to offer?

BY CRAIG ANDERTON

There are many ways to process sound in conjunction with a mixer, but one of the most convenient is to patch a processor into an insert jack. These jacks allow you to patch analog devices into a channel strip's signal path, and are common in both low-end and high-end mixers. However, they have a few other tricks up their sleeves, as we'll see during the course of this article.

## HOW THEY WORK

In today's mixers, insert connections use stereo jacks with a switching action (fig. 1). Typically, the insert point is between the preamp and EQ, although some consoles allow switching between pre- and post-EQ positions.

Just because the insert jack is a stereo type, don't be misled into thinking it carries left and right channel signals—the jack's tip carries the preamp out, and the ring connects to the EQ in. With nothing plugged into the jack, the tip and ring connect together. Inserting a stereo plug into the jack interrupts the flow between tip and ring, and allows routing the signal through an external device.

Using inserts with stereo jacks requires a special cable with a stereo plug on one end and two mono plugs on the other. The plug that connects to the tip is the send, and patches to the processor's input. The plug that connects to the ring is the return or receive, and plugs into the processor's output.

With these special cables, make sure you clearly identify the send and receive connections. I make my own cables, and use red plastic plugs for the receive connection (red=receive).

## INSERT APPLICATIONS

Inserts can be used for more than just inserting a signal processor; here are some less commonly known applications.

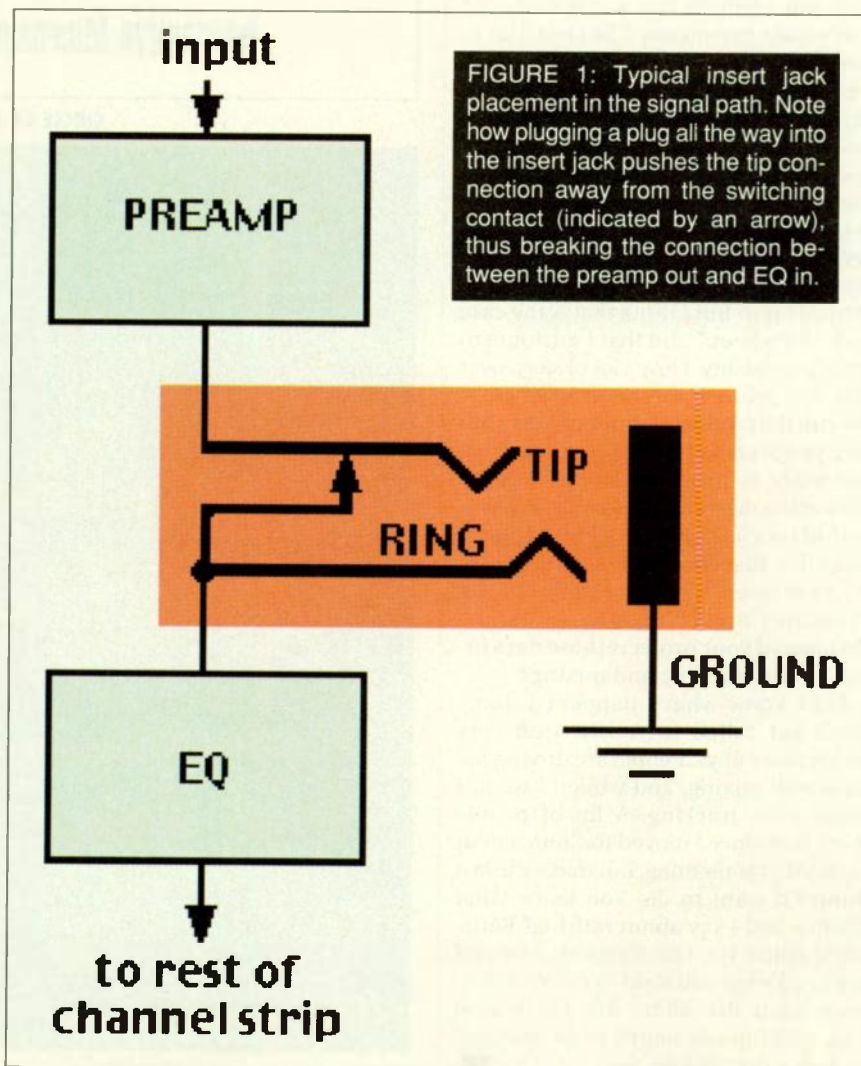
**"Multing" to other inputs.** There are times when you want to split a signal to more than one channel (e.g., to have different EQ for each channel, thus creating a pseudo-stereo effect from a mono source). To do this, plug in a standard cord halfway so it comes in contact with the insert tip connection. Because the plug is not plugged in all the way, the tip and ring remain connected, so the signal goes through the channel strip as usual, but is also tapped off by the cable. Plug the other end of the cable into another mixer channel.

Plugging in halfway is kind of funky, though, as the connection may not be all that tight, leading to possible intermittent problems. If you do a lot of multing, wire

up a custom cable (fig. 2) with a stereo plug on one end (J1) and a mono plug (J2) on the other. Solder the stereo plug's tip and ring together, and connect this to the cable's "hot" lead. Connect the stereo plug's ground to the cable's ground lead. The other end of the cable connects to a mono plug (hot lead to the plug's hot connection, and ground to ground). Plug the stereo plug all the way into the insert connection, and the mono into the multed input.

This technique can also provide a pseudo-direct output. Simply use the send as the direct out.

**Bypassing the internal preamp.** Many consoles leave the internal preamp in the signal path at all times; an associ-



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William Wittman, Engineer/Producer



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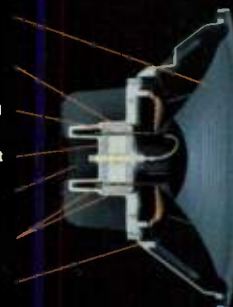


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# Burning for You

More practical  
FAQs about burning  
your own CDs

BY DAVID MILES HUBER

A while back, I endeavored in these pages to answer a number of burning questions about the art and technology of creating your own CDs. Now, though, disc recording has moved out of its terrible twos and into its blazing years of adolescence. Therefore, let's take another look at how the technology has since improved — or just plain changed.

**Do CD-R and CD-RW drives wear out?**

Yes. Many owners of first-generation CD-Rs are beginning to experience the effects of drives whose parts are starting to wear out or go out of alignment. These drives weren't built to withstand the heavy (and sometimes even moderate) demands of most pro studios. For example, the read laser on my 4-year-old Philips CDD-2600 SCSI drive lost its alignment a few months back. It didn't happen all at once, but slowly enough that it would accept certain blank media, while rejecting others. (In short, its erratic performance was driving me nuts!) Even though the warranty had long

expired, I gave Philips a call, sent it back for a free refurbishing, and I was back in biz in no time!

If you have an older, more expensive drive, I'd definitely recommend that you consider adding a second, cheaper drive to the system (such as an EIDE CD-RW) that could be used to take the workload off of your older SCSI workhorse. The downtime you save may be your own.

**I've heard that burning discs at double or quad speed is better than single speed recording. Is this true, and why? There seems to be some truth to this. The recorded "pits" seem to be more readable and consistent when the recording speed is 2X or higher. It's speculated that problems arise when**

the laser is focused on the pit for too long a time, resulting in deformations when recording at single speeds. This problem is less true for newer drives that make use of Optimum Power Control (OPC), which optimizes the write laser's power to counteract differences between CD-R discs, disc speeds, and surface irregularities.

**What are the real differences between SCSI and EIDE drives? Which should I get, and why?**

Lately, it seems that EIDE CD-RW drives have been taking over the PC world. These drives (which can be plugged directly into an available port on your hard-drive ribbon cable) are generally less expensive, don't need a hardware controller card, and are easier to set up



PHOTO ILLUSTRATION BY GREG GENNARO



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World Radio History

# Production: What A Concept

The benefits of working  
— and sticking with —  
a production concept

BY SHELLY PALMER

Being 40, it's weird to be thought of as "old school." I did, in fact, live before MIDI. It's true that my modular Moog System II is serial number 002. It was a simple time. SMPTE timecode had not yet evolved from its humble beginnings as a NASA computer countdown code. I had an original Apple II (not "+"), a TEAC 80-8 8-track, and, yes, my goal was to be able to afford the highest technology contemplated — a real plate reverb.

Those were days of passionate research and striving for new technology. Four k was all the RAM you could afford. Z80's were the engines of choice. Minimoogs, Oberheim 8-Voices, Linn Drums, FSK pulses, Prophet-5's, control voltages, and gates were decidedly high tech. Creating new sounds was a daily job. Better string sounds, fatter brass, hotter percussion, hipper sweeps. And, to working musicians, sampling was only a theory.

Many of you won't recognize the references in the first two paragraphs. Don't worry. Some of you probably think that plate reverb is only a setting on a TC M5000 or a Lexicon 300. That's OK. The purpose of this story is to bring a little "old school" experience to the party and to stress that the highest piece of gear in your studio is *you*. Convergence is major buzzword this month. In our case, it's

the convergence of composer, producer, engineer, musician, singer, business manager, marketing executive, and janitor!

Of all the problems I see (or hear) with the current crop of hopeful demos coming across my desk, the biggest is lack of a production concept. Using the highest-tech piece of gear in your studio, you can solve this problem instantly. Here's how:

Think about this: What are we trying to create? It's a simple question. Will it be John Williams meets Bob Marley at Willie Nelson's house? How about Bach and Van Halen on bad acid? Maybe you'd like a nice polka? *What are we trying to create?*

You should never, ever start a production unless you know exactly what

your production concept is. I'm not talking about production method or any other elements of preproduction (we'll get into them some other time). I'm talking concept. Some example production concepts are: a stylistically perfect baroque recording; a killer dance mix; the hottest club record ever made; a showcase for the lead singer; an effective advertisement; a knock-off of an old Beach Boys' groove; the greatest sonic experience ever recorded; and so on. A perfectly valid production concept is "brand new" (as in never been done before). Good luck with this one. If it really is brand new, it may be a little hard to sell.

These are concepts. They are not to be confused with end products or production methods. Never lose sight of

your original production concept. It is a pot of gold at the beginning and end of the rainbow. The ultimate realization of your original production concept is the goal of your production effort.

The production concept gets the money guys excited. The production concept addresses the needs of the market. The production concept keeps you on course. The production concept creates rules for you to follow. The production concept pays the bills. The production concept is everything.

But what if we have a fantastically successful, acoustically wonderful accident in the studio and we discover the next guaranteed, chart-busting, top-10 hit? Good for you. However, if you are doing your job as producer, the above situation will be within your original production concept. It would be highly

*continued on page 146*



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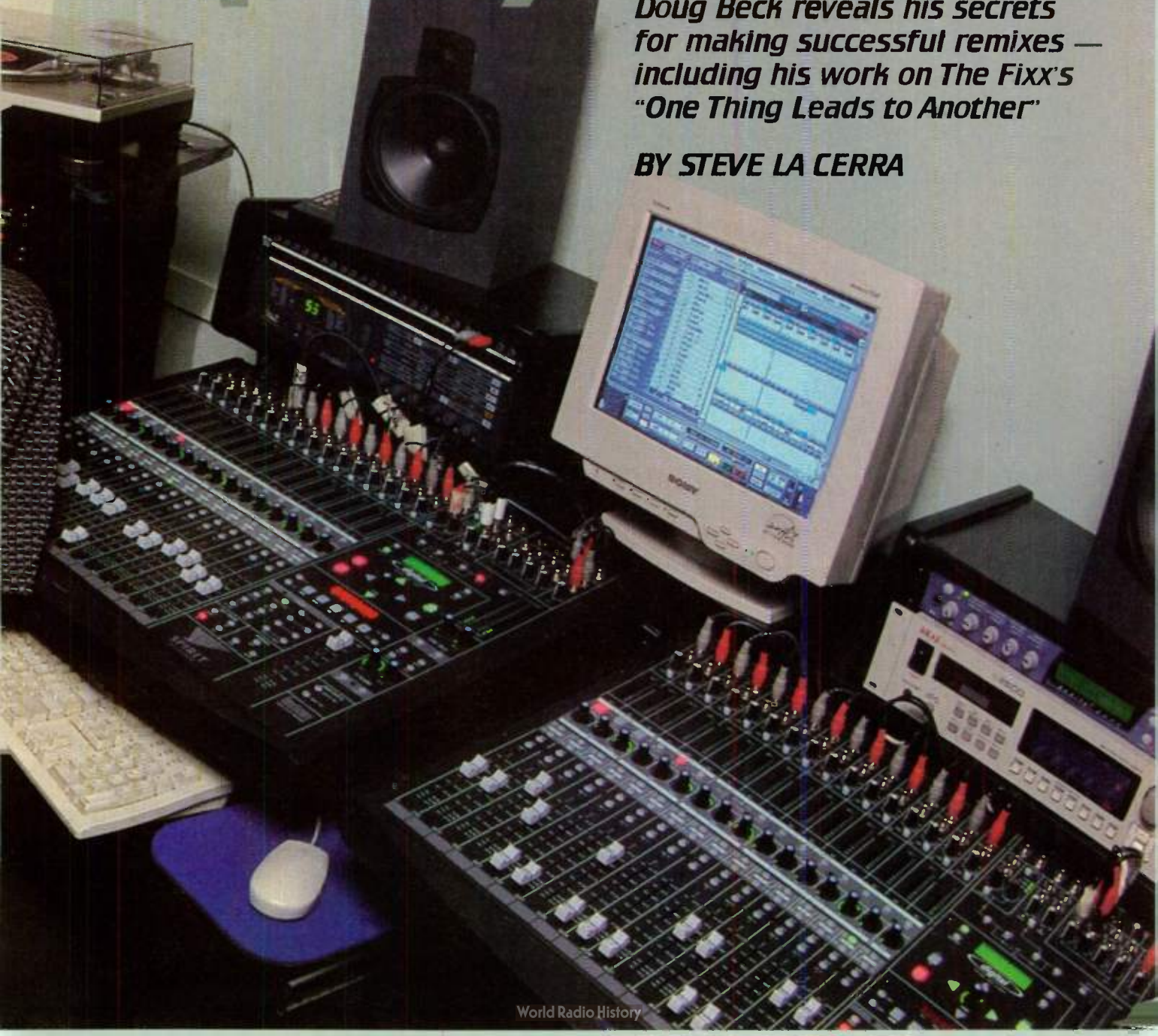


**FIXX IT MEN:** (From left to right) DJ Boris, The Fixx's Cy Curnin, and Doug Beck

# *fixxin' it* *in the* *(re)mix*

*Doug Beck reveals his secrets for making successful remixes — including his work on The Fixx's "One Thing Leads to Another"*

**BY STEVE LA CERRA**



[Here's an interesting story: Doug Beck, a producer/engineer working in New York City, produces a club track in his apartment and presses up 500 records as a sort of "electronic business card." He sends them out to labels and production houses across the country and gets two calls back. One comes from L.A. and the other comes from a production house that's only three blocks away: Bobby Guy and Ernie Lake at Reel Tyme Productions. Guy and Lake like the programming and the sounds on the record, so they begin working with Beck, pairing him up with DJ Boris, an upcoming DJ in the NYC area. As Guy and Lake's careers begin to take off, they open opportunities to Boris and Beck. The next thing you know, Boris and Beck are doing production work on remixes for the likes of Boyz II Men and Shania Twain.

Doug Beck fills in some of the details of how he got into remixing: "About a year and a half ago, Ernie and Bobby started to get extremely busy doing remixes and production. I acted as a satellite studio to theirs. My apartment is only a few blocks away, so Ernie would come over and work at my place while Bobby was working in their room. After a while, space became available within their facility on 9th Avenue, so I moved in and continued to work on records with them. From there, Ernie and Bobby teamed me up with DJ Boris, who was a rapidly up-and-coming NYC DJ at the time. They gave us an opportunity to do some remixes. Before we knew it, our mixes were getting picked up and we were getting quite a bit of

work on our own under the name 'Boris and Beck.' In addition to the remixes for Shania and Boyz II Men, we've done a lot of independent 12-inch releases, as well as remixes for Motown, Columbia, Mercury, and Red Ant Records. We also have a couple original vocal records we're finishing up right now as well."



#### GETTIN' A FIXX ON IT

Most recently, Boris and Beck have been working on remixes for The Fixx — which came about in an interesting manner. Boris spins every Friday night at the Roxy in Manhattan. To keep his hand on the street pulse, Beck tries to go there every week when Boris spins. Several months ago, Beck noticed the strong reaction when Boris played a few

records from the '80's that had been remixed into club-style anthems. At the Roxy, Doug used his cell phone to make notes into his answering service about the tracks from the '80's that he'd like to remix. A few nights later, he was having dinner with a friend who was building a studio for Fixx frontman Cy Curnin. You can guess the rest.

"Cy was totally into it," explains Doug, "and totally cool. The Fixx had recently recut the 'One Thing Leads to Another' tracks on DA-88 tapes and Cy had just received copies of the master tapes that day. They were on his desk when my friend went to ask him about it. Cy came over to the studio with the masters. We brought in a D A - 8 8 , transferred the tracks into my Mac, and started building the remix." [Note: The Fixx didn't own the original masters, so they recut the song.]

#### SONIC GRAVEL

Doug received three DA-88 tapes with a total of 24 tracks. He had separate tracks for the lead vocal, two separate groups of backing vocals, guitar and synth tracks, and a submix of the drums. From these original tapes, Beck used all of the vocals, Jamie West-Oram's guitar, and Rupert Greenall's PPG Wave synth sounds, as well a very identifiable percussion sound that plays on the quarter notes. Boris and Beck refer to this percussion sound as "gravel."

To perform the transfer, Beck routed the TDIF output of the DA-88 into a TDIF input on one of his Spirit 328 digital consoles, and then to the Mac via the Korg 1212 I/O interface. From there, the remix proceeded in a manner much like

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# A Woman's

# Tough



Four of the top women in recording gather together to discuss the techniques that made them successful

**BY JENNIFER MONNAR**  
**PHOTOS BY EDWARD COLVER**

**Y**ou might find this surprising, but some very big records — including ones from Barenaked Ladies, Smashing Pumpkins, Joni Mitchell, R. Kelly, the Artist Formerly Known As Prince, Tool, Rickie Lee Jones, Dr. Dre, etc. — have been produced and engineered by women — a definite minority in the recording industry. Who are we and how are we doing it? Well, I'm glad you asked!

A while back, I had the opportunity and privilege to sit down and talk with some of my fellow rebels. Susan Rogers, Sylvia Massy, Julie Last, and I (see the sidebar for our credits) talked about engineering as art and sonic experimentation, tips, tricks, and some tried-and-true miking techniques. (Try saying that one a couple of times.) Our conversation went a little something like this...

**Jen:** When you're producing and engineering simultaneously, what's one way you can ease some of the burden of having both jobs at the same time?

**Sylvia:** Sometimes, on a really high-pressure session, I'll actually bring a dummy band in the night before. This is really embarrassing, but it works. On the Smashing Pumpkins session, we had everything set up the night before. All the instruments, or surrogate instruments, were set up and miked and all going to tape. We played and recorded some and listened back, and it worked. The next day, the band came in, set up their equipment, and we started rolling tape immediately. We captured every second of it, and it was all good.

**Julie:** Were there any adjustments you needed to make when the real players came in?

**Sylvia:** Well sure. But it was less harrowing than scrambling to get all the levels together and the headphones and everything for those people who sometimes have no patience for you.

**Jen:** That's a great idea. It's a good thing to do if you have the luxury of doing it.

**Julie:** Speaking of headphones, that would be a very important thing. A big part of the engineering job is making sure that the players are enjoying what they are hearing, and that is a part of the job that should never be a last-minute scramble.

**Jen:** Whenever I do vocals now, I bring my own headphones that I give to the vocalist. I just carry these headphones around with me because I think they sound better.

**Julie:** What model are you using?

**Jen:** The Sony 7506's or the VR600's. Also, they're completely closed so you don't get headphone leakage. Which on vocals is especially nice to avoid. Stuff like that can get completely neglected. That's one thing I do to try

to help in that situation, and I never trust that the studios are going to have good-sounding headphones. I just bring my own. I give them my headphones because I know they're going to work and they sound better than whatever is most likely going to be at the studio anyway.

**I think we all agree that engineering is or can be an art form unto itself. How does your art manifest itself on the records you make?**

**Susan:** I consider my skills as a producer rooted in what I can do as an engineer. I have a certain sound that I like. For the past couple of years, I have been recording the drums

in mono, just using one overhead. I just have a specific sound that appeals to me.

**Jen:** Well, since you mentioned your little mono drum thing Susan, give it up now.

**Susan:** I think it's just getting to be pure laziness. [Laughter.] Stylistically, you get tired of hearing the same old thing. Why use two mics, when one will do? [More laughter.] Sometimes I individually mic the toms, sometimes I don't. Even if I do mic them individually, I don't like them panned too wide. I like hearing the drums as just one instrument. That's the percussion kit. Trying things that appeal to you so that you as an engineer can express your artistry. *This is what I would like to hear. This is how I like things to sound.*

**Jen:** What's the mic setup?

**Susan:** On the kick drum it always varies. One thing that always stays the same is that I don't like any mic better than a Shure SM57 on the snare. The overhead mic, that can be anything. Sometimes I don't even put it overhead, I put it *underhead*. I'll take those new CAD mics; just whatever. As long as it's a microphone I like, it doesn't matter if it's a dynamic, condenser, or tube. Sometimes I'll put it above the cymbals or sometimes I'll put it about 10 feet back from the drums, or sometimes I'll put it just a couple of feet above the kick drum, maybe like four feet back, just to hear how it sounds. If it sounds appropriate for the song, then that's what I'll use.

I just did an album with Barenaked Ladies, and there was one song that had a surf beat. I just made the drums and everything sound dull. I deliberately didn't put any high end on anything. I wanted the listener to get the feeling that he was listening to an older record. An old tape of an older record. You know, it's just whatever grabs you or whatever

you find evocative. That particular sound seemed evocative to me, and the band liked it. I think obviously it worked because it inspired them to play in a way that sounded like that. I think when you're miking up the drum kit or miking anything, *try something*. If it inspires you or inspires someone else, you keep it. If not, you just say, "Wow, I just had a really bad idea." [Laughter.]

**Jen:** Yeah. I don't know if it's a result of sampling or what's going on in the electronica movement, but it seems like

Sometimes I individually mic the toms, sometimes I don't. Even if I do mic them individually, I don't like them panned too wide. I like hearing the drums as just one instrument. Trying things that appeal to you so that you as an engineer can express your artistry. *This is what I would like to hear.*



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there's a lot more sonic experimentation going on. The music basics have to be there, but sonically there's an open-mindedness now about trying a lot of different things.

**Susan:** Artists these days, a lot of people anyway, like singing through an amp. So, quite frequently, I'm putting up two microphones for the vocalist. Lately, I like the U 67, or a C12 if you can get it. I must say it depends on the singer. You can never say what a great vocal mic is because everyone's voice — everyone's instrument — is so different. But you really can't go wrong with a really good expensive microphone. [Laughter.] Putting up one of those and putting up an SM57 to run into the amp...I enjoy experimenting with a lot of different amps and tweaking the amp myself so that I get just the right sound that I want to blend in with the clean sound. Then I have them on separate tracks. That's kind of nice.

**Julie:** So, you have the '57 sitting right next to the tube mic?

**Susan:** Yeah. I just put them side by side.

**Julie:** And are they singing more into one or the other or in the middle?

**Susan:** I don't know. Probably just in the middle.

**Julie:** Interesting.

**Susan:** I just sort of put it there and...

**Julie:** And you get what you get.

**Susan:** Yeah. I don't worry too much about it. I think the style field is broad enough now that I don't think we're absolutely obligated to make really pristine or clean-sounding records in Pop-Rock. I think because of Hip-Hop and Rap, these days we can get away with having records that are sloppy in some aspects. I don't think we can get away with bands playing out of time, though. I think those days are gone probably for a long time. But as far as the cleanness of the vocal sound or the cleanness of any particular sound, I think things can be a little bit dirty these days and it's okay.

**Jen:** Yeah. I think the genre tends to dictate that nowadays. Like the Rap and Hip-Hop stuff I've been doing.

Since it's not my background and it's not what I buy or tend to listen to usually, I'm not really used to how it sounds. So I have to kind of hold back from doing what comes naturally to me, which is to try to make everything sound great. But that's not necessarily the way to go with that type of music. There's got to be some dirt to it. There has to be a harshness to it and a street element to it, because that's what the music's about.

**Sylvia:** I'm in the mixing phase of my latest project now, and I'm really trying to make a few of the song mixes sound wrong. I'm trying to put things in extremely strange places and have dynamics that are so drastic that it'll just knock you out of your seat. There's a safe way of a record sounding, but, like we're talking about, I don't think it *has* to sound safe anymore. You can do anything.

**Susan:** Yes, but as long as it's in time.

**Julie:** And in tune.

**Sylvia:** Yes, timing and tuning.

**Susan:** Except for vocals, because of Trip Hop. You can get away with singing flat. You can hear it on the radio now. You didn't in the '80s. I'm grateful for that. As a producer and engineer, if something really appeals to me, it's pretty infrequent that I'll say to myself, "Oh that's wrong."

**Jen:** Back to basics for a moment. Your acoustic guitar sound is amazing, Julie. Do you find that you're switching mic setups around as much as you might with other instruments, or do you find that to be a more consistent thing?

**Julie:** I've found there are certain things that always seem to work well. One setup I like is B&K omni mics in stereo on acoustic guitar.

**Jen:** The 4006's?

**Julie:** Yes, the 4006's, placed kind of in a V with one mic aiming at the bridge and the other aiming at the back of the hole so that they're kind of pointing around the sound hole, to either side of the sound hole. Often that's just gorgeous. It doesn't sound like a wide stereo 'cause the mics aren't

## PARTIAL DISCOGRAPHY



**Susan Rogers:** Barenaked Ladies (*Stunt*), Tricky, David Byrne, Jill Sobule, Nil Lara, Paul Westerberg, Michael Penn, Queen, Violent Femmes, and The Artist Formerly Known As Prince (*Purple Rain*, *Around The World In A Day*, *Parade*, *Sign of the Times*, *The Black Album*, etc.)



**Sylvia Massy:** Smashing Pumpkins, R.E.M., Tool (*Undertow*), Love & Rockets, Melissa Etheridge, Johnny Cash, Tom Petty and The Heartbreakers, Luscious Jackson, Oingo Boingo, Flea, etc.

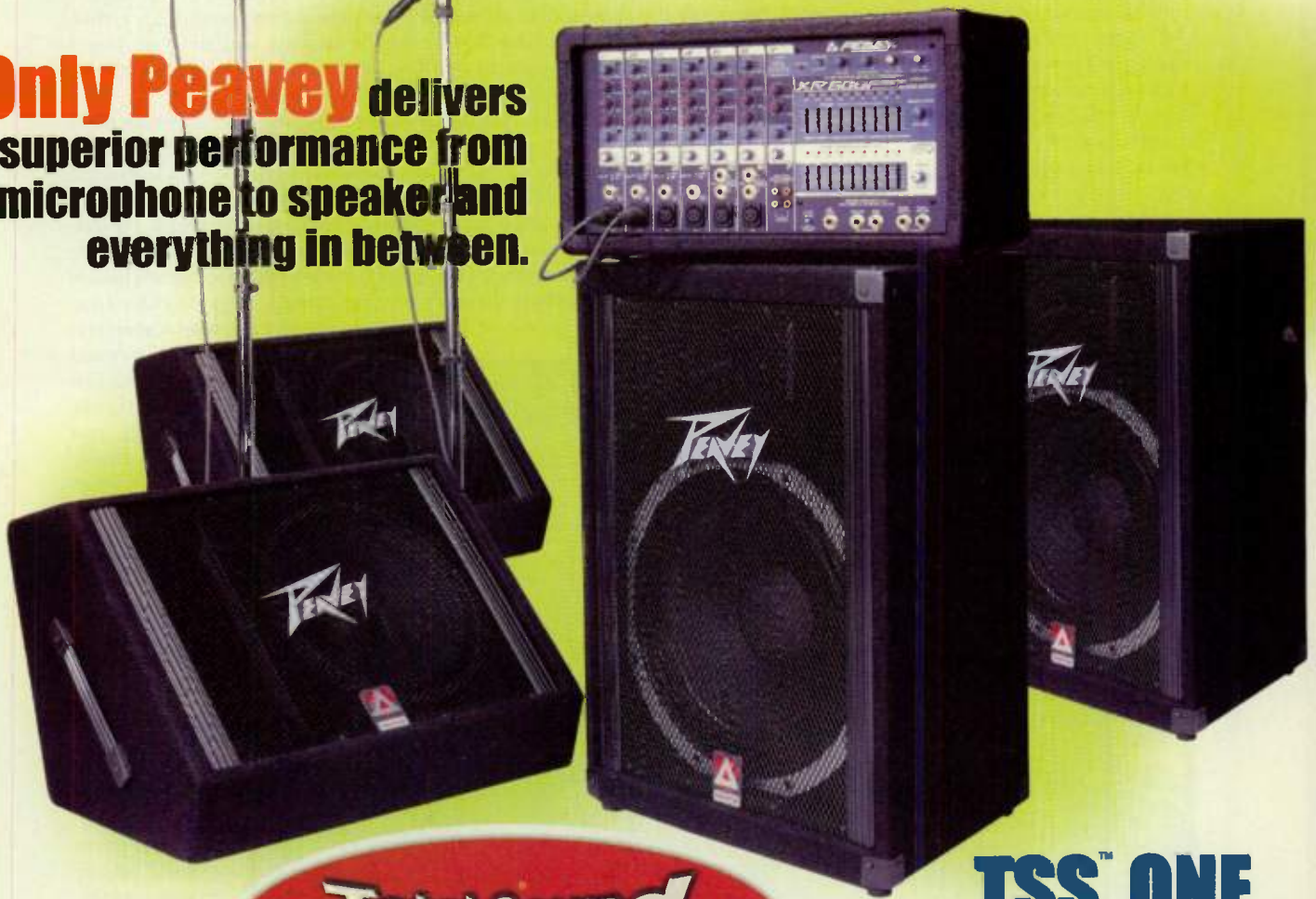


**Julie Last:** Shawn Colvin (*Cover Girl*), Joni Mitchell, Rickie Lee Jones (*Traffic From Paradise*), Wilson Phillips, David Byrne, Brian Eno, Toni Childs, Lou Reed, Liz Phair, Vonda Shepard, etc.



**Jennifer Monnar:** R. Kelly, Me'shell N'Degeocello, Luther Vandross (*Heaven Knows*), David Sanborn, Dr. Dre, Ras Kass (*Rasassination*), The Gregory Hines Show, King T, Anthrax, Mickey Hart, etc.

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# PEAVEY

very far apart, but you do get a slightly different frequency response at those two positions. And it's very clear and present sounding. So that always is a good place to start. But, often I've been doing recordings where the singer is singing and playing at the same time, and so that introduces a whole other set of variables. I was wondering if you guys had ever had any experience with that, and if you wanted to talk about it?

**Susan:** That's one of the most difficult and challenging situations in the studio; to get a great sound on acoustic guitar and vocal when they're playing together. My personal solution to it has been to just use one mic to pick up both. I find I get the best results that way. I take a U 67 or a C12 or something like that and I just position it to get the blend that I like between vocal and acoustic guitar. I just let the

think that whatever reverb you would want on the vocal should go on the guitar, too. That becomes very realistic sounding. If the object is to get a realistic performance, then I go for what I consider to be a realistic sound. To me, I can't come up with anything better than that because I've never found two mics that didn't phase.

**Jen:** Well, I think that you bring up another interesting point that a lot of people tend to forget when tracking. I always try to make an instrument sound like what it sounds like in real life. I think a lot of people forget to go out into the room and tell the musicians to play for them. Don't just listen in the control room, because you're missing so much of it. You might be able to make it sound great, but maybe that's not what it sounds like. Maybe the drummer plays a crappy old drum kit for a reason. Or maybe they use a beat-up old guitar amp. Unless you

go out there and put your ear to it (figuratively speaking), you don't really know what you're getting. And it makes it harder to figure an appropriate mic placement if you don't go out there and figure out where the sweet spot is. I think that gets forgotten a lot. Many people grab an EQ before they try to move a mic or change a mic for that matter. What the musician's instrument sounds like and what it's supposed to sound like gets lost.



**WHO'S WHO:** (From left to right) Jennifer Monnar, Julie Last, Sylvia Massy, and a stand-in for Susan Rogers, who was on a business trip at the time of the photo shoot.

singer know ahead of time. If the singer is going for a vocal and guitar and we've decided this is what we're going to do, then they don't mind. Even if it's on two mics you don't have that much separation anyway, so I just use one.

**Julie:** That's an interesting way to do it, but if you're putting reverb or effects on the vocal, then you're stuck with that on guitar.

**Susan:** I make that a part of the sound. I make that decision right then and there — that's how it's going to be. If that's how you want to do it, then you want a song that's built around *that* sound. I'll take that sound and make that the skeleton and make everything else subservient to that. If it's a song that's based on acoustic guitar and a very intimate vocal and it can be captured in one performance like that, where you're not punching in and you're not overdubbing the voice, then I make the track support that. I also

**Susan:** But that comes from an engineer's self-confidence, and I think it's important for young engineers to learn. As soon as they put a mic up in front of it and they push up the fader, they may say to themselves, "Ooh, that sound's awful. I better do something about it." And, like you said, they go right for the EQ or the compressor. You should have the self-confidence to say "That sounds awful. I wonder what he's playing?" Walk out there and see. Does it sound awful out there?

If it really does sound awful, you can get them to change the instrument or you say, "That sounds awful. Is that what you wanted?" [Laughter.] Sometimes they want that and then you go with it. But you need to have the self-confidence to say, "That's bad. Can I make it better?" or "That's great and I'm ruining it."

**Jen:** Drum tracking is a perfect example of that. I know

people that, when they do drums, they just start taping them to death. Either get the rings out with tuning, or that's the sound of the kit and just make it musical and make it work. Obviously, I have a special fondness for recording drums because I'm such a wanna-be drummer. I love it. Is there a particular instrument that you're especially fond of recording?

**Sylvia:** It's all fun for me. Everything and more. Anything is great. Recording street sounds is great. I can't really single out any particular instrument because it's all fun and challenging.

**Julie:** I prefer anything that creates a sound wave that's moving through the air as opposed to plugging in a drum machine or a synth. Also, I'm always just thrilled to be faced with something I've never dealt with before and to say, "How am I gonna do this?" And to be challenged in that way.

**Jen:** Like what?

**Julie:** Like a dijeridoo or an accordion.

**Sylvia:** Have you recorded a dijeridoo?

**Julie:** I have. That was a time when the instrument got pulled out of the box and I thought, "I've never done this before." You can't draw on your past experience of things that have worked, so it throws you into a whole new place where it's like meeting someone for the first time and getting to know each other. So you make your best guess and see what happens.

**Sylvia:** What do you like to record, Susan?

**Susan:** I have a real fondness for guitar. I like to record acoustic guitar and electric as well. Often, a guitar player will have his sound dialed in on the amp, but when a guitar player doesn't particularly

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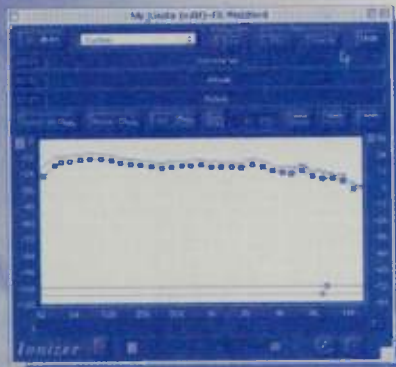
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have a fondness for guitar amps and will let me go in there and tweak the amp, I enjoy that a lot. I enjoy acoustics as well as electric guitar. I enjoy vocals. I like working with singers; really helping them to get that special performance.

**Jen:** For guitars, are there some amps that you find you use over and over?

**Susan:** I like the little Fender Tweeds of course, the really old ones, the Fender Deluxe, and the Vibro Champ. The Vox AC30's and AC15's.

**Julie:** So, the little guys.

**Susan:** Yeah. For acoustic guitar, I have a general rule of thumb, that the more expensive the guitar, the cheaper the mic. I like to use a '57 on really nice acoustic guitars. That's my favorite sound, to just put a '57 right on the front edge of the sound hole. But, with a very inexpensive, poor quality acoustic guitar, if I can't persuade the guitar player to swap it for something a little nicer, then I find I have to use an expensive mic. Something that's going to give the guitar what it doesn't actually have.

**Jen:** That's a good rule. What was the situation with Michael Penn?

**Susan:** That was the same thing. I think it was on Michael Penn's album that I learned more than I had ever learned before about guitars because he and the producer, Tony Berg, were such aficionados. They took a great amount of time to match the right guitar for the right song and the right guitar with the right amp. So I got great ear training in guitars, and that's when I found by experimenting along with them that I didn't like anything better than a '57. And that's still true today.

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World Radio History

Jen: Is that true for electric also? With miking amps?

Susan: No. Usually I like the [Sennheiser] 421's. Sometimes a '57, but sometimes a 421.

Jen: Do you go with the on-center thing or off-axis?

Susan: I put it on the seam right where the small part of the cone joins the big part of the cone. If I can see it. Sometimes I just guess.

Sylvia: Sometimes I'll have someone out in the room with headphones on and I'll direct them to move the mic across the cone until there's a sweet spot, and it usually is right in the seam where you're talking about.

Jen: That's where I usually find it, too. One thing that I do is take a flashlight and just hold it right up to the grille. You can see the whole cone and you can position the mic just right.

Sylvia: A combination I'm really excited about now, as far as guitars go, is a Gretsch guitar like a Rockjet with a Matchless DC30.

Susan: Oh, they're beautiful.

Sylvia: Really one of the most beautiful amps.

Jen: Yeah, they're really nice. The sound is so lush. I love those. What about compression?

Susan: I either use it a lot or not at all. I don't like a little bit of compression. I can't find a compressor that's really completely transparent. I love the 1176 and the LA3A and a lot of other things that are nice, but you always hear the sound run through it. If I'm really going to compress, I'll use an 1176 or an LA3A or an LA2A, if you've got them. But if I'm not going to go all the way, I don't use it at all.

Sylvia: Well, I'm a compression nut. But I'm there with Susan, where if

*continued on page 148*



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NEUMANN

M147 TUBE

VACUUM TUBE  
CONDENSER  
MICROPHONE

Is history repeating  
itself with the  
introduction of  
Neumann's M 147,  
which is based on  
the popular U 47  
tube mic?

BY AL SCHMITT WITH  
STEVE LA CERRA

# NEUMANN M147 TUBE

It's no big secret that Neumann was one of the pioneering companies in the development of vacuum tube condenser microphones. Many of their early designs have a distinct place in audio history. Consequently, when they introduce a new tube microphone design, it's no small deal. Several years ago, the company made big news with the introduction of the M 149, a relative of the classic M 49 tube microphone. Now Neumann appears to be making an even bigger splash with a new tube mic based on the popular U 47 tube: the M 147 Tube.

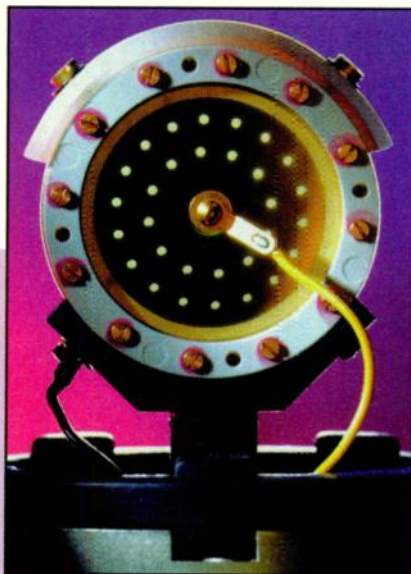
The M 147 Tube is a side-address, vacuum tube mic with a dual-diaphragm capsule. Like some of the other more recent Neumann introductions, the M 147 Tube has a transformerless output circuit to keep self-noise to a minimum. Although it's similar in appearance to the tube U 47 (and its successor, the U 47 FET), the M 147 Tube has a fixed cardioid pattern that becomes more directional as frequency increases — giving the microphone more of a supercardioid pattern in the high-frequency range. (In fact, the M 147 Tube's capsule is the same K 47/49 pressure-gradient capsule used in the U 47 and M 49.)

Frequency response of this capsule is essentially flat into the upper midrange and then has a boost of no more than 3 dB above 2 kHz. The M 147 Tube definitely looks like the U 47's little brother: it has the classic Neumann nickel finish and a very similar body/head-grille shape in a smaller package. Although it "looks" like a vocal microphone, Neumann stresses that the mic may also be used as a spot mic for just about any purpose, including vocal, string instruments, wind instruments, and piano. Included with the M 147 is an aluminum case, cable, SG 1 metal swivel stand adapter, power supply, and cable.

## OPERATING HIGHLIGHTS

The Neumann M 147 Tube uses a sub-miniature triode tube to achieve a gain of about 10 dB (the tube also acts as an impedance converter). Because the microphone delivers a high output voltage, it can be used with cables up to about 300 meters long. In an effort to maintain optimum anode current and heater voltage for the tube regardless of cable

length, a compensation circuit is built into the N 149 A power supply. A sensor monitors voltage level through the length of the cable; if it detects an un-



## NEUMANN M 147 TUBE SPECIFICATIONS

**Frequency Range:** 20 Hz to 20 kHz  
**Directional Pattern:** Cardioid  
**Sensitivity @ 1 kHz into 1 kohm:** 20 millivolts/Pa  
**Rated Impedance:** 50 ohms  
**Typical SPL for less than 0.5% THD:** 114 dB  
**Maximum Output Voltage:** 8 dBu  
**Signal-to-Noise Ratio:** 70 dB, CCR1 468-3  
**Rated Impedance:** 50 ohms  
**Dynamic Range for the Mic Amplifier:** 102 dB for less than 0.5% THD, DIN/IEC 651

acceptable voltage level at the heater, the power supply compensates for the difference. The N 149 A also employs a slow start-up to maximize the life of the tube. Studios that already have an M 149 Tube in the mic locker will be interested to find that the N 149 and N 149 V power supplies used for the M 149 may also be used with the M 147.

## IN THE STUDIO

When I'm doing a session, I check my mics about an hour before the session

starts, and then leave them plugged in. So by the time I'm ready to record, they're warmed up for about an hour, which I feel is a good idea. The first time I used the M 147 was on a Barbra Streisand session for the four arco basses in a large orchestra. I had the mics about 5 feet in front of the basses, and the sound was magnificent. I normally try to use tube '47's, but I figured I'd try the M 147's, and they sounded wonderful. I used them again on basses for a Mint Condition session that I did with Claire Fischer, and they sounded great on that, too. I think they sound very similar to tube '47's.

Next I was doing an end title for a film with Clint Eastwood called *True Crimes*, and we were recording Diana Krall with a big orchestra. We had a trio rhythm section with piano, bass, and drums, plus the orchestra and Diana. Since I had two M 147's, I used one on the upright bass and it sounded fantastic. The bass player came into the control room, and when he heard the playback, he fell in love. I used the other M 147 on Diana's vocal, and it sounded awfully good on her as well. For Diana's vocal we also had put up a (Telefunken) '251 that was rented — so I don't really know what kind of shape that mic was in — but we decided to use the Neumann. The M 147 was crystal clear. Diana sings softly, and there's a breathiness and an air to her voice that the M 147 really captured. She sang about 8 inches away from the mic. I had no problems with the noise floor and the mic had plenty of gain.

The power supply for the M 147 isn't fancy, but it does the job. It's small so you can get it out of the way, and all it really has on it is the On/Off switch. There's no pad on the mic or power supply, and since the mic is strictly a cardioid, there is no pattern switch on the power supply.

I always like to use shock mounts on mics just to make sure I won't have any problems with low-frequency vibration. The shock mount for the M 147 (model EA 1) wasn't available yet, so my M 147's came with the standard swivel mount. But even though I didn't have the shock mount, I didn't have any problems with low end reaching the mic through the

# 5.1 SURROUND

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# NEUMANN M147 TUBE

SCHMITT PHOTO BY EDWARD COLVER

stand. Depending upon the room you're working in, that could happen — that kind of transference through the floor — but I didn't experience it. This could be because the capsule and the electronic circuit are both internally shock-mounted to prevent vibration from reaching the diaphragm. In any case, the shock mount is available for situations where you're concerned about vibration. [Editor's note: The WS 87 windscreen is available for situations where the M 147 might be susceptible to wind noise.] Because the M 147's are smaller than the old tube '47, they are easier to handle. I also liked that they're easier to get in and out of tight spots.

So far, I'm thrilled to pieces with the Neumann M 147's. I don't think there's any instrument that I wouldn't try them on. Whatever instrument I used them for, I was very impressed with the



*Al Schmitt has been in recording studios since he was seven years old and is the winner of an unprecedented seven Grammys. Some of the artists he has worked with include Henry Mancini, George Benson, Steely Dan, Natalie Cole, and Quincy Jones, among many, many others.*

sound. In that respect, they reminded me of the Neumann M 149, which I can use on everything. I've been feeling the same way about the M 147's. These mics have a great low-end response and a nice, clear top end.

A lot of engineers (and studios for that matter) out there are scuffling around for a living and don't have the kind of money to afford really expensive tube mics. I'm one of those guys that would never buy just one mic. I always want pairs, and you could be talking around \$10,000 for a pair of microphones. That's a lot of money for the average guy or studio. But if you bought a pair of M 147's for around four grand, you'd have two mics that are versatile and sound fabulous. That amount could be scraped together and it'd be well worth it. I think the M 147 is going to be a real popular mic for Neumann. I wish I had about five or six of them!

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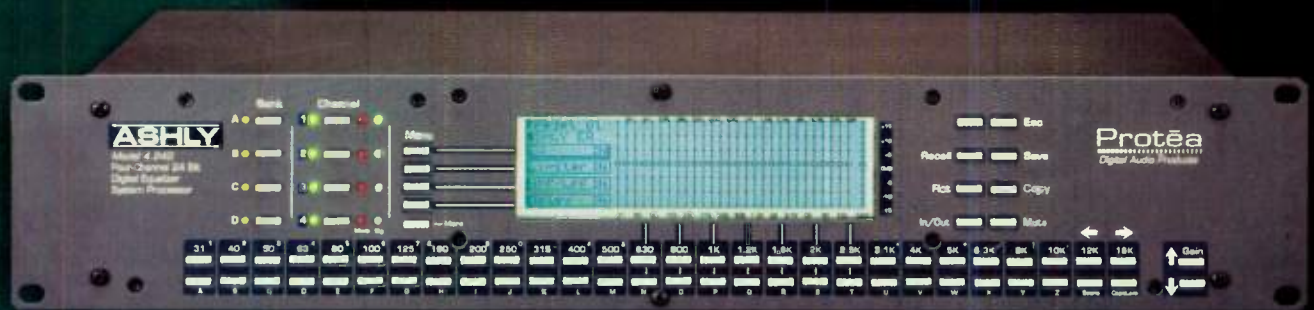
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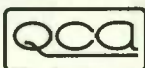
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**What are you using in terms of compression?**

I'm using the Summit TLA-100 on Jonathan's vocals.

For bass and backup vocals, I'm using dbx 160's. I've also got one Behringer Composer in there that I'll use every once in a while.

**Do you find you're using a lot of compression?**

No, I don't use it very much at all. The TLA-100 on Jonathan is partly a gain stage thing. Jonathan isn't a very loud singer, so I use the compressor to boost the signal gain and then I compress it just a little bit. I rarely touch the bass — it's just the way the Korn sound is. I take a DI post-EQ signal directly off of Fieldy's bass head — that's his sound, and it stays that way. The only thing that compresses really hard are a couple of the background vocals that Head does where he really gets on the mic. With a song like "Blind" he's not singing that hard, so he's not really touching it, but on "Faggot" and "Ball Tongue," he's really yelling, so I'm hitting him really hard there. I also use the compressor to level out the bagpipes pretty good.

I'm using the same general mic setup that I used with the band last year. They've got an endorsement through Shure, and I find that the Shure gear works really good for me. I like to use an SM91 and a Beta 52 in

the kick, and then I put a little subharmonic synthesizer on that just to fatten it up a bit. I've got a VP88 as an overall overhead because David's kit is 25 inputs now. I've got four SM81's around the drum rack and the VP88 over the top, which has a little more air to it and adds more of an open kind of feel.

**How are you incorporating David's drum pads into the mix?** David has one 808 pad, a pad that does two different snare sounds, and a kick drum pad that he uses on one or two songs.

They're all set up straight with no compression. Sonically, they're pretty much set up the way they need to be.

**Jonathan has a pretty dynamic range in terms of his vocals. How are you dealing with that in a live setting?**

We use a Beta 87 with Jonathan — he's really comfortable with it because of the flat grille. The way he moves around and moves his head up and down, he's hit his teeth a number of times — and it hurts. So he likes having the flat



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grille. I think a '58 would be a little more controllable for me, but the '87 is what he wants to use. The mic sounds good, but the stage volume is so loud that it ends up picking up a lot of hi-hat and snare because Jonathan tends to back up towards the riser a lot. I have to take out a little more top than I'd like to, which would help give it a little bit more crispness and intelligibility, but it sounds just fine.

Shure has a feedback reducer, the DFR11, and I use that in the afternoon during set up. Once Scott Tatter, the monitor engineer, is done doing his thing on stage, I just set the mic as far down stage on the edge as possible and ring it out super loud. That helps get rid of the offending frequencies. I don't use all the frequencies every day because I can usually tell when I'm going to be safe and when I'm going to be on the edge — I get it to where I've got the major frequencies notched out. Sometimes you get a little of the high end "zing" that's rolling around in the room due to the top of certain H3000 programs and some delay stuff, but I haven't had any real feedback.

**You mentioned that you're using the compressor to boost up his vocal gain. Just how hard are you hitting it?**

Well, during the day when I'm ringing out, you can hear people behind the stage making noise. Jonathan is

singing really well these days. He's not belting it out like Etta James, but compared to where he was

last year, it's a world of difference. It depends on the day and the room. If I can get away with it, and he's feeling really good, I'll be at +5 on my VCA and +5 on my fader. Other days it's +10 on both or even more.

**So do you just tend to ride the fader through the set?**

I ride it all night long. I know the songs real well, so when he's not singing, I'll bring it down. If I just leave it up and he's wandering around the drum kit, like he usually does, the whole mix gets washy. It's gotten better this year. He's singing hard, so the gain's not quite as high as it was on the last tour. The other thing that's helping him out is that Fieldy has cut down the amount of click [i.e., string noise] that he has coming out of his cabinets on stage. Last year, there was a lot more string noise coming from his cabinet. I still have plenty of that from him, but it's not bleeding into Jonathan's mic and getting through the H3000. So it is cleaned up a ton.

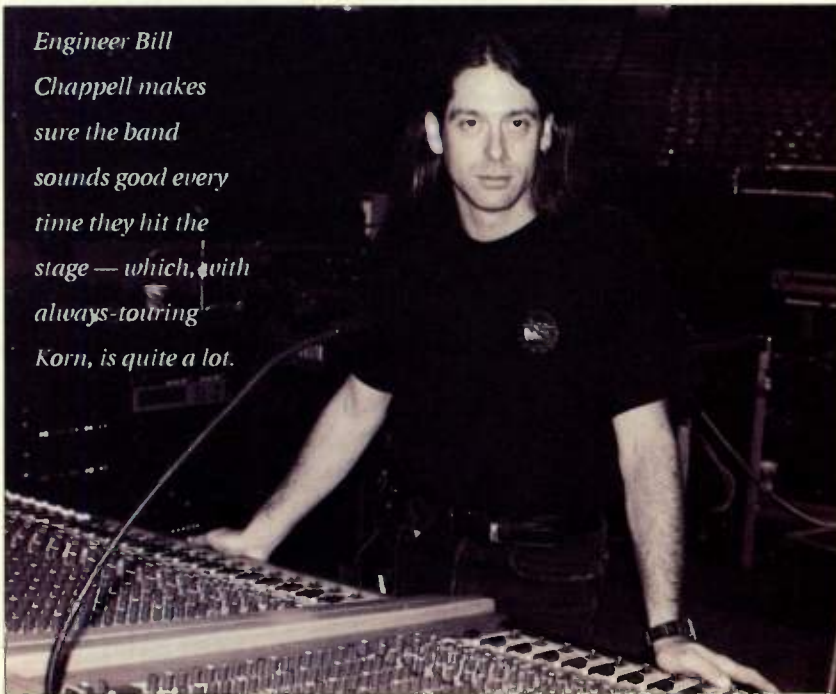
David, the drummer, is on personal monitors now, so I don't have wedges shooting straight downstage into Jonathan's mic either. So the whole Korn picture has cleaned up a lot. It's definitely better for me.

**The last time we spoke, you men**

*continued on page 148*

*Engineer Bill*

*Chappell makes  
sure the band  
sounds good every  
time they hit the  
stage — which, with  
always-touring  
Korn, is quite a lot.*



Ergonomically shaped handles (pat. pending) from our X-Array™ concert speakers are comfortable to lift from any angle

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## ROAD GEAR

Audio-Technica PRO 100S



### VERSATILE VHF

Audio-Technica has introduced the PRO 100 Series VHF wireless systems designed for a wide range of applications, including live performance, places of worship, lecture circuits, public address, and aerobic instruction. The systems offer four options: guitar, handheld, lavalier, and headworn. The PRO 128 handheld microphone includes the PRO-R1 receiver and an ATW-T28 handheld unidirectional dynamic microphone/transmitter, which features Audio-Technica's Hi-ENERGY



Mackie SRM450

dynamic element and internal shock mounting. The PRO 127G UniPak guitar system includes the receiver, an ATW-T27 UniPak transmitter, and an AT-GCW guitar input cable. The PRO 127L UniPak in-

cludes the receiver, the UniPak, and an AT829cW cardioid condenser mic. The PRO127H UniPak includes the receiver, the UniPak transmitter, and a PRO 8HEcW hypercardioid dynamic headworn mic. Prices range from \$242 to \$332. For more information, call Audio-Technica at 330-686-2600, fax them at 330-688-3752, or visit [www.audio-technica.com](http://www.audio-technica.com). Circle EQ free lit. #130.

### SEEING AND HEARING IS BELIEVING

Mackie has introduced the SRM450 active sound reinforcement monitor and the SRS1500a active sound reinforcement subwoofer. The SRM450's horn design is a unique three-piece assembly derived from high-end studio monitor technology where wide dispersion and precise reproduction of voice and high frequencies is critical. Mackie has also developed a new combination mic/line level control incorporating its studio-quality, low-noise mic preamp technology. This is built directly into the SRM450, allowing the enclosure to also function as a complete stand-alone PA sys-

tem. The SRS1500a contains a 15-inch, high-precision, long-throw woofer and utilizes a road-tested Mackie FR Series 600-watt high-current amplifier to provide bone-jarring bass reproduction (126 dB output). For more information, call Mackie at 425-487-4333, fax them at 425-487-4337, or log on to [www.mackie.com](http://www.mackie.com). Circle EQ free lit. #131.

### WIRELESS WONDER

Nady Systems' 760 UHF wireless system has many of the same features as Nady's high-end 950 GS, but is much more affordable, listing under \$1000. The 760 UHF is a half-rack unit with 160

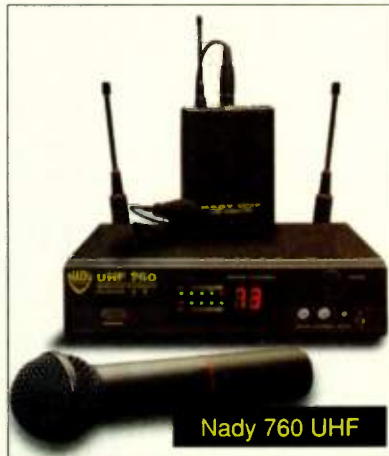
frequency synthesized, user switchable UHF channels (on both the receiver and transmitters) in selected 20 MHz wide groups between 686 and 950 MHz. Up to 20 systems can be operated within each group simultaneously. The half-rack size receiver features 2-color, 5-segment LED bar graphs for Audio and RF levels, an LED warning of low transmitter battery voltage, and rear mount antennas. Optional transmitter models include the choice of a rugged, all-metal handheld microphone and lavalier/instrument bodypack transmitters with durable all-metal

housings. The 760 delivers audio performance with hardwire transparency and 120 dB dynamic range. Operating distance is typically 250 feet, and up to 500+ feet line-of-sight. For more information, contact Nady Systems at 510-652-2411. Circle EQ free lit. #132.

### POWER THAT'S JUST RIGHT

QSC's PowerLight 6.0 is the latest addition to their premiere touring amplifier line. The PowerLight 6.0 delivers 1500 watts per channel at 8

ohms, 2500 watts/channel at 4 ohms, and 3000 watts/channel at 2 ohms. The PL6.0 incorporates Power Factor Correction (PFC) and draws 40 percent less aver-



Nady 760 UHF

age AC current than the PL9.0, while sharing its same power supply and output circuitry. Other features include high-speed components and N-channel MOSFETs combined with a four-tiered DC supply to yield efficiency comparable to class D designs, while operating in the linear mode for lowest distortion and noise. With three rack spaces, the PL 6.0's weight and size are compact at 59 lbs. For more information, contact QSC Audio Products, Inc. at 714-754-6175 and visit their Web site at [www.qscaudio.com](http://www.qscaudio.com). Circle EQ free lit. #133.



## FROM THE TOP

During the last year, EMTEC has given more than 100 Master Awards to leading engineers, producers and studios around the world.

The Master Award recognizes recordings that reach a number one position on any nationally recognized music chart. It has been our distinct pleasure not only to acknowledge the outstanding recordings made by the Master Award winners, but also to make a donation in the recipients' names to UNESCO to preserve some of the world's most important cultural and natural monuments. You can see some of the award recipients on-line at [www.emtec-usa.com](http://www.emtec-usa.com) (click on "What's New").

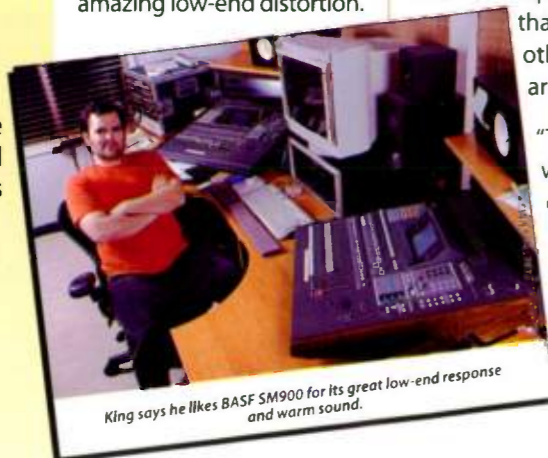
Music itself is a cultural treasure that must be preserved if we are to continue to enjoy recordings that now span a century. For many years, some artists and producers looked ahead to the next project without thought of preserving their old recordings. Now, with the proven value of reissues and the promise of multichannel DVD-Audio, labels, artists, producers, and studios are joining to restore and preserve historic recordings. Engineers are working to ensure that today's recordings are carefully preserved and archived for future generations.

EMTEC is pleased to play a key role by providing the media, technical expertise, and awareness that it is up to us in the recording community to pass on the legacy of great recordings.

**Joe Ryan**  
President • EMTEC Pro Media, Inc.

Their tools have grown more sophisticated over the years, but the Dust Brothers still rely on the same basic production approach. "We usually start with the rhythm section," Simpson says, "getting the beats and bass line really tight. Then, we overdub keyboards and guitars and create sound effects from samples off different records. We create sort of a mess, which dates back to our early days of recording when we couldn't do the arrangements on a computer. Back then, we'd fill up a 24-track deck two tracks at a time with endless loops through the whole song. Then we'd use console automation to mute these tracks to create the arrangement. Today, we'll build up a track with lots of extra stuff and slowly start weeding it out. It's like cooking – you add all the spices, let it marinate, and then you reduce it."

The Dust Brothers are particular about the recording equipment they use, with the main criteria being vibe, vibe and vibe. "For a long time," says Simpson, "a big part of our sound was our Soundcraft Spirit console. It's a fairly inexpensive board, but it has a certain character. We would overload the line amps and mic preamps to get this amazing low-end distortion.



King says he likes BASF SM900 for its great low-end response and warm sound.

That was a big part of our sound."

"I've got some old Pultec EQs that I like," adds King, "and some great old Neumann U47 mics. TDM amp simulators are really cool, too. I'm into the latest, most technologically advanced gear, as well as the finest gear from throughout the history of recording."

As with most rap and hip-hop music, the real magic of the Dust Brothers sound is happening down low. "We're big fans of low end," Simpson says, "so we tend to crank up the bottom on all our tracks. We also have a couple of staple tools in our arsenal – a Gibson SG bass has made its way onto almost every track that we produce. It has a phenomenal tone. We put it through this SansAmp rackmount guitar amp simulator, and it's become one of our trademark sounds. It's this sort of half fuzz bass, half funk bass.

"Our love for low end was one of the reasons that BASF SM 900 was recommended to us," Simpson continues. "We like a lot of bottom. We were told that BASF was the tape to use, because it has a far greater low-end response

than the other tapes that are out there."

"The engineer who recommended BASF claimed that it was heads and tails better than the other

tapes," says King. "I did some A/B testing myself, and found the BASF to have better clarity and a more open high-end, as well as a nice, warm sound. Now, when the choice comes, I reach for BASF first."

To what do the Dust Brothers attribute their success? "We like to have fun making music," King says, "and we take a lot of pride in what we do – like any good craftsman out there. We can be transparent, or we can stylistically dominate a project – it's whatever the artist wants."

"Some producers are very hands-off," says Simpson. "They just book the studio time, make sure all the musicians are going to be there and then they just let the band do their own thing. We're very hands-on. In addition to being producers, we also engineer many of our own projects, which is an important distinction.



Simpson compares his production style to cooking – add the spices, marinate, then reduce.

"Our overall vision is to try and create timeless music," Simpson continues. "Each project brings its own new challenges, and each artist has his own vision. For us, that's the starting point – to merge the artist's vision with creating timeless music." ■



# In Session With... Randy Staub

The next time that hard-rocking urge sends you to your CD collection, check the liner notes of your favorite disc for the name Randy Staub. Working alongside legendary

producer Bob Rock, Staub has engineered and/or mixed some of the most popular rock albums of the past decade, including Metallica's *Load* and *Reload*, Veruca Salt's *Eight Arms to Hold You*, Bon Jovi's *Keep the Faith*, The Cult's *The Cult*, Monster Magnet's *Powertrip* and many others. Staub's name graces a few notable pop/rock albums as well, including U2's *Rattle and Hum* and *A Day Like Today* by fellow Canadian Bryan Adams. *Studio Observer* caught up with Staub between sessions and asked him a few questions about his recording approach, his sound secrets and his tape of choice.

### Is there a Randy Staub recording style?

I try not to have any specific method of working, or any specific pieces of gear I always go to. I try to keep things spontaneous. I just go with what sounds good, whether it's a \$10,000 microphone direct to tape or a \$200 microphone through six crappy guitar pedals.

### You've recorded some huge-sounding drums. What's your secret?

A lot of it has to do with the drummer. My recording approach is a fairly standard setup with lots of dynamic mics. On the snare, I use two or three mics like the [Shure] SM-57 and the [Neumann] KM-86. On kick, I use the Sennheiser 421, AKG D-112 or an old AKG D-20. I usually mic the top and bottom of toms, both with dynamic mics. I try to get away with as few overheads as possible, often AKG 460s or Neumann U 87s. I also use another pair of condensers up higher, and a lot of room mics.

### How about bass?

Once you find a really good bass, more than half of your job is done. I usually record directly plus an amp, or a combination of two or three amps. I like to use some type of subwoofer or big 15-inch or 18-inch cabinet as well. I find the only way to get those really big sub frequencies is to use at least a 15-inch speaker.

### What's your approach to recording electric guitar?

Again, it gets down to the instrument itself and the amps. If you want a big guitar sound on your record, it better be a pretty big sound in the room. I have a custom active splitter box that allows you to split the guitar to six different amps. A lot of times I'll use six or more amps and eight or nine cabinets. It might be a combination of Marshalls, Boogies, big cabinets, small cabinets... With Metallica, for example, we may listen to 12 or more different guitar rigs just to find good-sounding cabinets.

### Do you have a preferred vocal mic?

No, I don't. I use whatever seems to suit that particular singer, whatever he or she is comfortable with. When it's time to do the vocals, we'll do a big shootout with the best mics we can find – Neumann U47s, M49s, 87s, 67s and AKG C-12s. I'll also switch vocal mics based on the tune.

### What is your favorite tape format?

I like tracking to analog mostly because of the sound. I use it for drums and guitars. I use digital for vocals and bass. With the amount of bottom I'm trying to get, I find that digital machines stay much clearer. I don't need the extra warmth or compression that analog tape will give me for the bass guitar.

I like to mix to digital, to a time code DAT machine. Recently, I did some mixing to 24-bit, with Apogee converters and a Tascam DA-88. That was my first experience with mixing and mastering to 24-bit, and it went well. The 24-bit mixes had so much detail it was almost disconcerting. It seemed like there was more detail coming back off the 24-bit tape than I heard on the mix bus!

### What is your tape of choice?

For analog tape, it's definitely BASF 468. I've been using it my whole career. It's fantastic tape – I can't say one bad word about it. Sonic quality, longevity, reliability – BASF tape has these qualities. It's excellent-sounding, high-quality tape. Sometimes when you're editing and cutting two-inch tape, it gets beat up pretty good. You're handling it a lot, it's piled on the floor, hanging off the wall... I've never had a problem with BASF, and I've been using it for 10 or 12 years now.

### Share your most memorable album project.

The *Black* album definitely has to be one of them – it was the first record Bob [Rock] and I did with Metallica. It was a very intense record to make, and we spent a lot of time on the sounds. I've never been on a record that was so thorough; every possible sound and part was given a full going-over. At the time, nobody knew it was going to be such a huge success.

When I was still at A&M, I got to work on Roy Orbison's last record. I got to record some of his vocals. That was a highlight, as I am a pretty big Roy Orbison fan.

### Any nuggets of wisdom for up-and-coming engineers?

It's all about making the artist comfortable. If the artist is comfortable, then they'll play well and it will sound good. Then you can go about doing your thing. It's not about the engineer, or the thousand-dollar guitar sound you can get. It's all about what the artist wants. ■



## Tape Talk

JEAN TARDIBUONO

Vice President of Sales and Marketing  
Studio and Broadcast Products  
EMTEC Pro Media, Inc.

Last issue, I let you know that we had introduced the industry's only formatted ADAT product: BASF Formatted ADAT Master. This product benefits ADAT recorder owners by saving them time, money and machine head wear.

Now Alesis and BASF have combined forces to create another useful tool for the recording community. "Care and Feeding of Your ADAT" is a one-hour video tutorial on how to get the

maximum performance out of an ADAT recorder. The video shows how to properly clean the heads, how to clone a master, and provides a wealth of information on the operations of the ADAT system.

It also stresses the importance of using reliable, top-quality tape to make the best master recordings. Phil Paske, EMTEC Pro Media Technical Support Engineer, gives tips on how to properly store and handle ADAT masters to maximize the life of the tape.

Look for our upcoming "Care and Feeding of Your ADAT" promotion, which will be offered at all authorized BASF dealers. Everyone will have an opportunity to receive this video (\$19.95 retail) as a free gift with the purchase of BASF ADAT Master. Contact your authorized BASF dealer for details. Find the name of your nearest BASF dealer by visiting our website at [www.emtec-usa.com](http://www.emtec-usa.com).

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How much ADAT tape do you purchase per month?

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Valencia, California 91355  
Fax: (805) 257-0793

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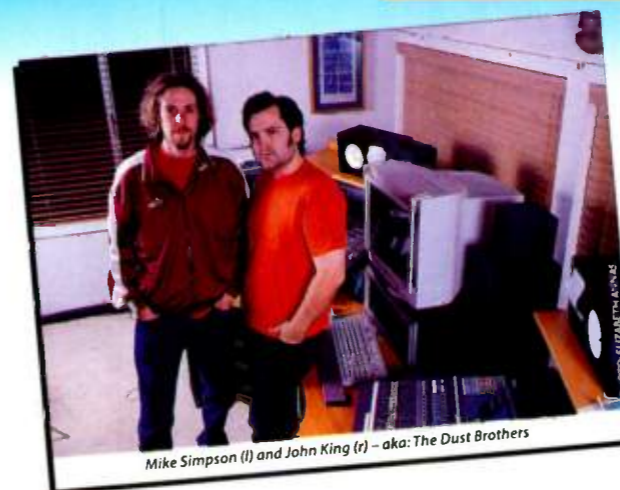
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# Studio OBSERVER

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VOLUME 3 NUMBER 1 FEBRUARY/MARCH 1999



Mike Simpson (l) and John King (r) - aka: The Dust Brothers

## MAGIC DUST: The Dust Brothers Use BASF to Capture Timeless Tunes

applying the hip-hop production style to other genres of music.

"We use a lot of sampled beats and do scratching on nearly every record," King says. "We use the Roland TR-808 kick drum on almost everything - it has a very warm, analog sound. We use a lot of live playing, but we use the parts like you would use samples. Now that we're

has become quite litigious, and it's very expensive to use samples. So we use more obscure sounds and try to create new works out of old sounds. Originally, we would go through old funk records, but now I find myself listening to weird classical music and orchestral covers of standard pop songs. We try to find non-current sounds and somehow modernize them."

If you're a rap, pop or alternative artist, a coating of dust can be a very good thing. Dust Brothers John King and Mike Simpson, working out of PCP Labs (their Silverlake, Calif. studio), are one of today's hottest production teams.

After producing, co-writing

"Mmm-bop" to the top of the charts.

The Dust Brothers have also worked with Coolio, Squirrel Nut Zippers, Technotronic, Howard Stern, They Might Be Giants, Korn, The Chemical Brothers and others. Throw in some commercial spots for the likes of Nike and Microsoft, soundtrack work

Dust Brothers produced the Beastie Boys' seminal album, *Paul's Boutique*, and wrapped Beck's hip-hick voice in a tapestry of samples and loops to create his album *Odelay*. King and Simpson produced three songs from the Rolling Stones album *Bridges to Babylon*, including the first singles released. And teen pop sensation Hanson rode a Dust Brothers production of their single

work on an album of their own material for their label Ideal Records, and it's apparent that the Dust Brothers are *the* production duo in demand.

What keeps the Dust Brothers in high demand is their unique cut-and-paste production style that blends samples, loops, scratches and other sonic anomalies. At the heart of their technique is

ProTools, it doesn't feel like samples. Cut-and-paste is more like razor blade editing."

King and Simpson got involved with samples early on, but were never big fans of simply taking a recognizable riff and making a song out of it. "Back in those days, you could get away with it," Simpson says. "Now the whole sampling issue

got their start using analog tape, the computer has quickly become their most important production tool. "You need the same skills when you're working on a computer as when you're working with analog tape," King says. "You still need the producer skills to run the programs and do magic on the computer. You just have less freedom with tape, basically."

## The best is now the quickest.

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

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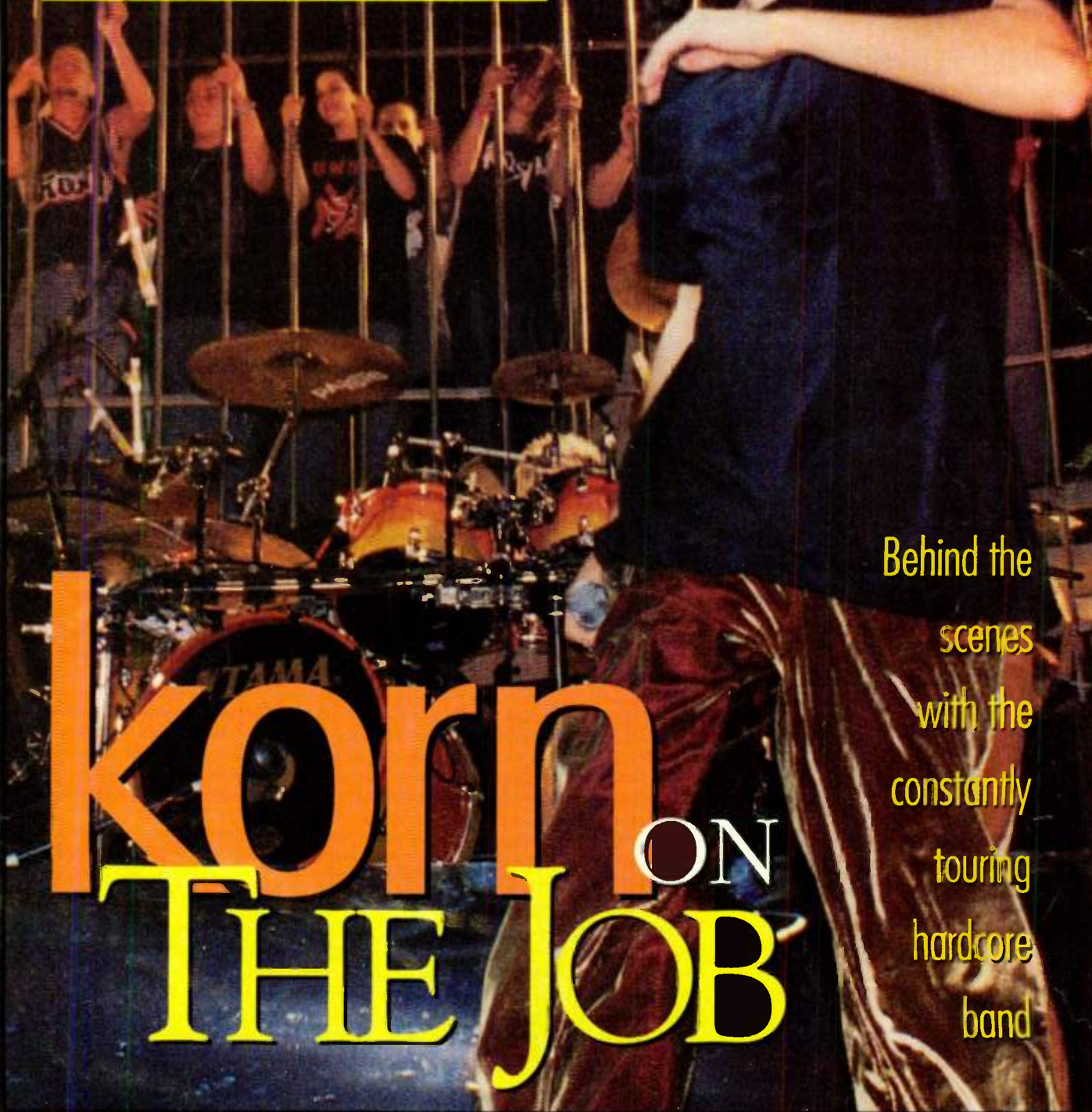
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**LE**  
**LIVE**



Behind the  
scenes  
with the  
constantly  
touring  
hardcore  
band

**korn** ON  
**THE JOB**

PHOTO BY STEVEN J. MESSINA

World Radio History

# KEEPER OF THE KORN

ENGINEER  
BILL CHAPPELL  
OFFERS SOME  
INSIGHT INTO KORN'S  
KING-SIZED  
LIVE SOUND

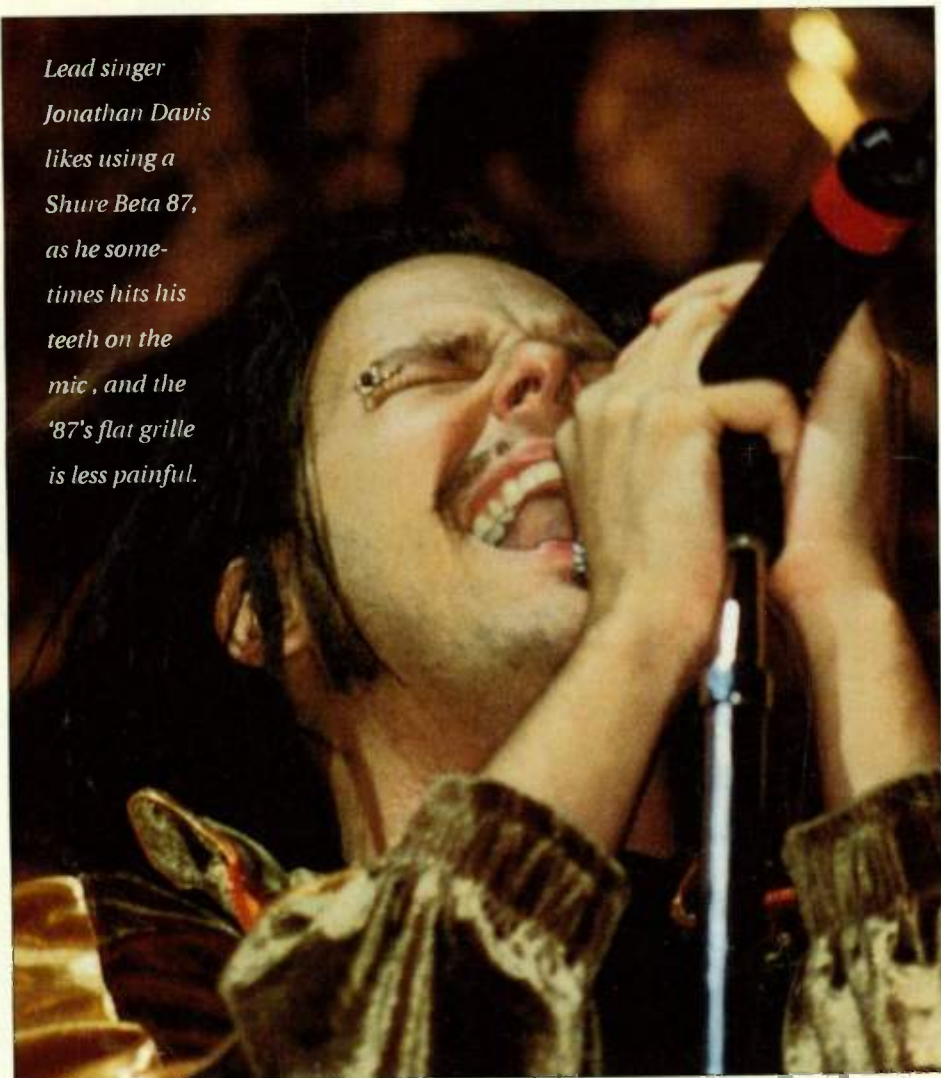
By Robert  
Granger

Since the release of their self-titled debut album, Korn — vocalist Jonathan Davis, bassist Fieldy, guitarists Munky and Head, and drummer David Silveria — have built one of the largest loyal fanbases in music today through their endless touring. For the past two years, engineer Bill Chappell has been the man behind the band's trademark "chunk" consistently, night after night. The past year alone has seen the band headlining the massive Family Values tour, their own small arena tour, as well as co-headlining duties with Rob Zombie in support of their latest release, *Follow The Leader*. *EQ* recently caught up with Chappell to discuss how he captures the band's larger-than-life sound.

**When did you first get started with Korn?**

It was Spring of 1997 — I took over front-of-house for them when they decided to change some of the personnel in their camp. Their manager had known me from the tours I did

*Lead singer Jonathan Davis likes using a Shure Beta 87, as he sometimes hits his teeth on the mic, and the '87's flat grille is less painful.*



with Ministry — he's originally a Chicago guy — so he knew me and my work and offered me the gig. I did the '97 Spring tour, and then we did Australia, some festivals in Europe, and finally Lollapalooza. When Munky got sick on the Lollapalooza tour [Munky contracted viral meningitis — Ed.], we broke and I left for Green Day. Right after I finished Green Day, I started up on the Family Values tour.

**What are you carrying out on the road?**

On Family Values we carried nine columns and 24 subs, and now were down to eight and ten a side. We're using Harrison boards at both ends

for Korn, and for opening acts we're using a Yamaha PM3000 at front-of-house and a Yamaha 3210 on stage.

**How many channels are you running off the Harrison?**

I've got around 37 inputs running from the stage, and then I bring two effects units back on channels while the rest come back on returns. So I've got about 40 or so fader channels, total.

**What are you using effects-wise?**

I use the Eventide H3000, which is my usual vocal effect. It helps me put a little more meat behind Jonathan's vocals. I'm using the TC Electronic M2000 reverb for subtle reverbs, and

# CONCERT SOUND FOR A BAND PERFORMANCE

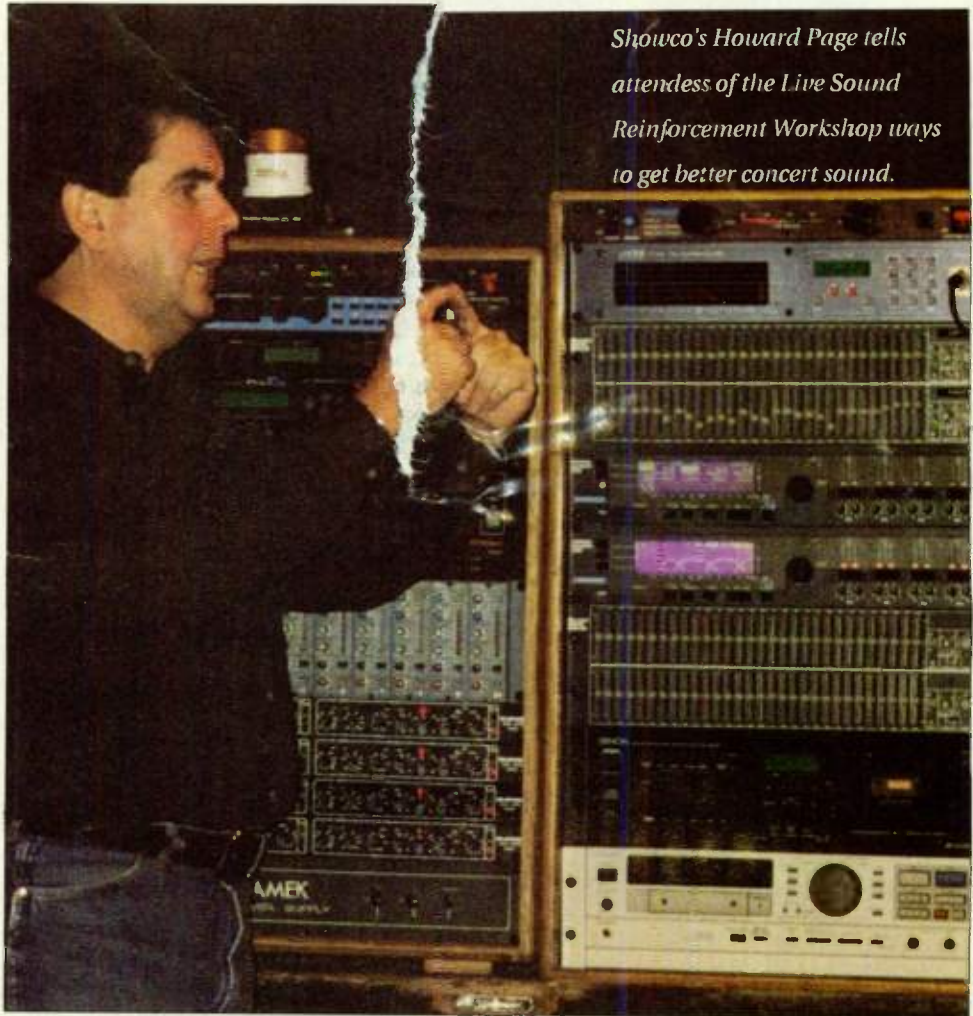
A STEP-BY-STEP  
GUIDE, AS  
PRESENTED AT THE  
LIVE SOUND  
REINFORCEMENT  
WORKSHOP

By Howard  
Page

As live sound professionals, we've all been there at one time or another. You stand in the audience at someone else's gig and suffer through a bass-heavy mix, all the while expecting the sound engineer to turn it down. You wonder, "What is that guy hearing?" Obviously, your point of reference is clearly different from that of the soundman, so what should the reference really be?

Live concert sound is, by nature, very subjective. However, over the years I've learned one very important rule of thumb — the closer the live show sounds to the artist's record, the more people who believe it was a great-sounding concert. Since people generally play their favorite artist's CD many times over, they subconsciously embed that sound image into their brains. When that fan purchases concert tickets, he or she generally expects to hear a "live" replica of the recorded material — after all, this is the person's only point of reference.

Experience has taught me that the real art of live sound mixing is to use the artist's recorded material as the reference — and to make the goal the closest recreation of that reference as possible. In do-



Showco's Howard Page tells attendees of the Live Sound Reinforcement Workshop ways to get better concert sound.

PHOTO BY ROGER MAYCOCK

ing so, I provide the majority of the audience with the type of sound they expect. I firmly believe that if you follow this approach to live sound mixing, you will quickly build a reputation for engineering good, consistent-sounding shows.

With this in mind, I've assembled a step-by-step checklist that, when followed, can significantly increase your chances of delivering the kind of sound that will not only benefit the audience and the performer, but will also benefit you and your company. So let's get started.

1. **Make contact with the artist or representative.** Discuss the setup to be used, request a stage plot, find out what mics are being used (and where), and get

a copy of the material to be performed so that you can familiarize yourself with it. If possible, learn how the artist sounds live. Discuss any difficult situations such as monitors, loud stage levels, etc. and, most importantly, be certain to convey a confident "can do" impression.

2. **Plot the performers into the equipment being provided.** Make console input channel decisions. Plan the use of the microphone selection (as opposed to what may have been requested) and define the stage microphone patch systems. Determine the monitor speaker placement and assign the mixes. *Write this stuff down*, and distribute the information to the crew prior to the event.



Sabine True Mobility Wireless System

## WIRELESS SYSTEM THAT KILLS FEEDBACK

Sabine's True Mobility wireless system is the first wireless system with the built-in FBX Feedback Exterminator, Auto De-Esser, and compressor/Limiter. Unlike conventional microphone systems that are limited by the potential for feedback in acoustical "hot spots," the True Mobility system's FBX Feedback Terminator kills feedback in setup and during your program. The system also features a built-in dual-battery charger to save money on 9-volt batteries. Each True Mobility Receiver comes with the all-digital Targeted Input Processing, in which every microphone gets precise, targeted control suited to provide maximum performance. The system comes in two models: The UHF system is a state-of-the-art PLL synthesized system with 30 channels, dual-squelch circuitry, and noise reduction. The VHF system includes a 16-channel PLL synthesized receiver. Both systems are available in handheld, lavalier, and headset models. For further information, call Sabine at 904-418-2000. Circle EQ free lit. #134.

## SECURING THE RIG

Polar Focus' Z-beam is a patent-pending rigging tool. The ZB-20-880-B provides rotational control for any flyable loudspeaker. Users can set pre-

vised angles with four scales. The working load limit is 880 lbs (440 kg) with a 10:1 design factor. A simple technique controls elevation angle. Data sheet, manual, and pricing information available at [www.polarfocus.com](http://www.polarfocus.com). For further information, contact Polar Focus at 419-363-4444. Circle EQ free lit. #135.

## STAGING THE SCENE

Yorkville has introduced their new Performance Series enclosures. With new looks and improved technology, the enclosures bring full-range PA speaker technology within reach of the cost-conscious performer. The series consists of a powered and unpowered full-range enclosures and stage monitors and a powered subwoofer. Performance stage monitors have been updated to a "side-by-side" format with a vertical horn. All feature road-tested components including black hardware, blue/black carpet covering,



Yorkville Performance Series

custom HF and LF drivers, heavy-gauge perforated metal grilles, flush-mounted stand adapters, non-skid plastic feet, and metal corners. The suggested retail price is \$999. For more information, call Yorkville at 716-297-2920, fax them at 716-297-3689, or visit [www.yorkville.com](http://www.yorkville.com). Circle EQ free lit. #136.

## CHEVIN'S Q6 TRAVELS LIGHT

Capable of 4-channel operation (600 watts/channel at 4 ohms), the Chevin Q6 weighs just 27 lbs, fits in two rack spaces, and can be used in a wide range of applications, from powering 16 16-ohm

compression drivers to a complete club system with stereo FOH speakers and two monitor mixes. The Q6 delivers no-compromise performance throughout the frequency spectrum, even under drastic operating conditions. A Soft Clip circuit prevents driver failure in the event of persistent overdriving. All Chevin amplifiers are

backed by a five-year warranty and the Q6 is available for a suggested retail price of \$2849. For more information, call 860-434-9190. Circle EQ free lit. #137.

## YAMAHA CONSOLE FOR CLUBS

Yamaha has announced the GF Series of sound reinforcement consoles. Available in 12-, 16-, and 24-channel models (GF12/12, GF16/12, and GF24/12), these new 12-bus mixers provide a small-footprint, low-cost live sound solution for performing musicians, churches, and small- to medium-sized installations. Each GF Series console features 12 output busses consisting of six auxiliary sends, for group outputs, and a main stereo pair. Mono output is also available, derived from the stereo bus as either pre- or postfader, which is ideal for center cluster situations often found in churches, for example. All channels on the GF Series mixers feature a 3-band equalizer with a sweepable midrange. Insert points are also provided on all mono channels and the main stereo bus. This allows for dynamics units and other signal processors to be inserted directly into the signal path. The GF Series is scheduled to ship in April, 1999. For more information, call Yamaha Corporation of America at 714-522-9011 or visit [www.yamaha.com](http://www.yamaha.com). Circle EQ free lit. #138.



Chevin Q6

# Pure Power...Pure Sound!



"A best buy"... "The Carvin DCM1500 - with its detailed top end, punchy low end ... sounds great."  
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"Carvin gives the end user a roadworthy, high-powered amplifier (DCM2000) at a price that is almost too good to be true. Little wonder, then, that these amps have been showing up in quite a few local bands' rigs."  
 © Pro Audio Review, March 1998 - Roger Williams III, Systems Engineer

## MATCHED COMPONENTS — SUPERIOR PERFORMANCE

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CIRCLE 11 ON FREE INFO CARD

GRP

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**3. Set-up and tune the system and monitors at the venue.** Hold a crew meeting and ensure that everyone knows his or her responsibilities at load-in and strive for neatness throughout the entire setup. Allow time for unexpected problems or changes and check safety issues such as system rigging and power connections by having at least one other member of the crew check your work. Eliminate the unknowns — religiously turn the FOH and Monitor systems on by inputting pink noise and turn each amplifier (half) up and then down one unit at a time to check both wiring and components. Take a methodical approach to tuning the system — use an RTA (real-time analyzer) only as a guide, and always start by setting the crossover band output levels for the best-sounding balance *before* fine tuning with a graphic EQ. The best tool is to use your own voice into a known microphone — let your ears be the final judge!

**4. Patch the mics and check all lines.** Again, neatness makes a huge difference. Color-code as much as possible and check all stage sub snake boxes, cable paths, and direct boxes.

Resolve any hum and buzz problems you encounter.

**5. Being really ready for the performers.** *FOH:*

With the console clearly labeled and assigned and all effects and other inserts properly patched and verified, ZERO THE CONSOLE — all EQ at 12 Noon, faders down, pads in, gains down, and masters up. Verify that Unity Gain means the same thing on both the console and all the signal processors. *Monitors:* Vocal wedges have a starting-point EQ with a basic blend for vocals. Keep all instruments out of the mix until called for. Set the console to “flat” as a starting point.

**6. The performers arrive!** Conduct your soundcheck as it relates to FOH. Similarly, conduct your soundcheck as it relates to the Monitor system. Check on-stage levels, bleed/speaker placement, and resolve issues of microphone placement or type. Check the overall level of the show and ask yourself, “How should it sound? What does the audience expect to hear? What do we want to establish from the soundcheck?” Set a mix reference point.

**7. Actually doing the show.** Get a

song list and make notes regarding “up” selections as opposed to “ballads.” Have a plan for using effects. Decide the dynamic points of the show — who does what solos and in what songs? “Sell” the sound of the show to the audience by going with the dynamic flow that the performers are creating. *Don't reinvent the wheel!* Focus on re-creating the artist's recorded sound as closely as is realistically possible. Never lose the focal point of the sound — get back to the mix reference as set at the soundcheck. Audibly scan the stage and ask yourself, “Can I hear every element of the performance?” When in doubt regarding the overall level, always pull back on dynamic lows!

Finally, it's important to recognize that the artist is the creative source and that you, the sound engineer, are controlling the pipeline through which the audience hears that creative input. There are many difficult, creative challenges to engineering live sound, but the end result can be extremely rewarding. Ultimately, experience is the best teacher!

*Howard Page is vice president—audio services for Showco of Dallas, TX*

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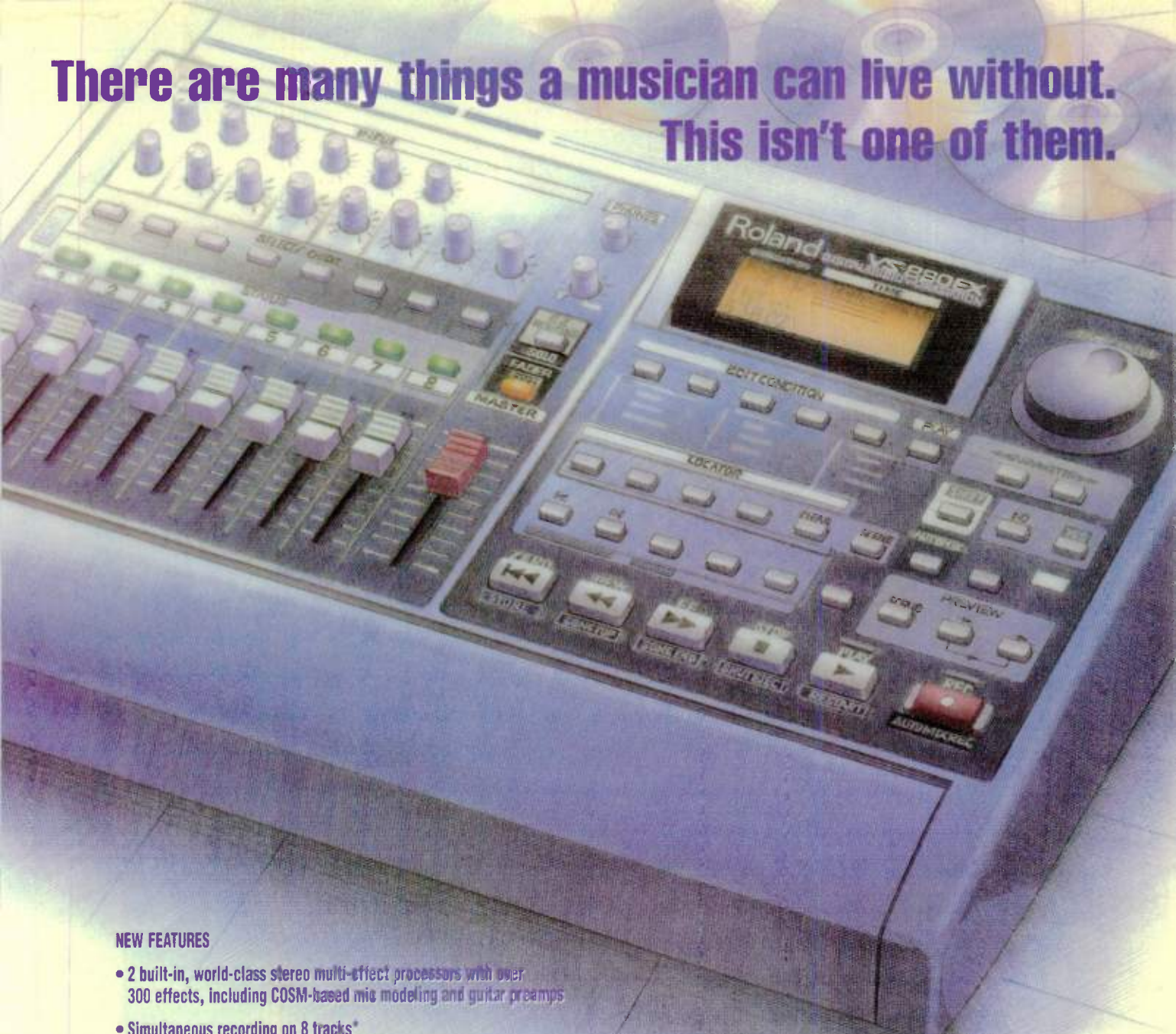
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# THE ANATOMY OF A WEBCAST

TWO MEMBERS OF  
THE GRATEFUL DEAD  
BRING TOGETHER  
THE ROCK AND WEB  
COMMUNITIES  
FOR A UNIQUE  
LIVE-SOUND EVENT

**By The  
Fez Guys**

On a wet and windy Monday night in San Francisco, Sy Klopps Studios (a full-digital audio facility wired to the Internet) hosted the first live Webcast by members of the Grateful Dead. Playing as The Other Ones, the band used the event to kick off the release of their first album: *The Strange Remain*. The physical site of the Webcast, housed within a large building belonging to Nocturne Productions (a respected video and lighting house for live events), is a musician/engineer/producer's dream playpen. Besides being decked out with acres of wall-obscuring classic rock paraphernalia and gold and platinum records, the rooms are packed with high-quality audio toys for musical creation and production.

The studio is 32-track digital (four ADAT decks, an Otari Status 18R desk, a small wall of Focusrite and other processing, etc.). The performing area contains an inspiring array of musical instruments and amplifiers. There's around ten pre-CBS Fender



*Above: Getting ready for the Webcast. Left: Bob Weir and Mickey Hart answer questions from the on-line audience before the show.*



Stratocasters, several varieties of old Gibson Les Pauls, various other acoustic and electric guitars, and about 40 vintage instrument amplifiers, including Fender, Gibson, Gretsch, and Silvertone. One bass (a Fender, of course) and one bass amp (an SVT, surprise!) cover the needs of the bottom end. There's a white DW trap kit behind a Plexiglas baffle, a baby grand piano, and, to top it all off, a genuine Hammond B3 organ. All of these tools and toys are carefully and artfully arranged within an open and spacious environment. And the whole place is wired with a T1 line for data transfer and an ISDN line for

those special dialup occasions.

Right now, the environment is buzzing with activity. A handful of people watch or work, some huddled over computer and audio gear, intent and focused at the task at hand. When Bob Weir and Mickey Hart (guitar and drum, respectively, from the Grateful Dead) stroll in along with Dave Ellis (saxophone from the Charlie Hunter Trio) and Mark Karan (guitar), the mood cranks up a notch. Mickey keeps it playful by leaping on the drums and playing a simple beat, smiling and chanting unintelligible rhythmic noises. Everyone laughs. The remaining members of The Other

PHOTOS BY JOSH SALEMIN



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**Fostex**



Ones, Phil Lesh (bass from The Grateful Dead), Bruce Hornsby (keyboards), Steve Kimock (guitar from Zero), and John Molo (drums) are not in attendance, but there's enough of the band to play a quick rendition of "Friend of the Devil." The Webcast has begun.

After the song, the band members

lights bathe the area in a warm glow.

In front of the stage area, five Betacams record the chat and typists transcribe the Q&A for those who are connected in the chatrooms. It's a relaxed, friendly atmosphere. The band responds with generous attention, clearly appreciative of their fans. Queries come from previously reviewed and edited e-mails and in

real time from both the Internet and a live chat room hosted and promoted by AOL. A transcript of the chat is fed onto the event Web site and into a [www.dead.net](http://www.dead.net) IRC (Internet Relay Chat) chat room. The interviewer takes the questions, relays them to the band and the responses are typed in

ductions, Inc., Evolve Internet Solutions, Nocturne Productions, Sy Klopps Studios, ISP Networks, SRA Networks, Ice Nine Publishing, LiveConcerts.com, MP3.com, America Online, LiquidAudio, Rolling Stone Online, Cutting Edge, and Netopia.

The audio signal path goes like this: After traveling from a mic to the Otari desk in the studio (now doubling as an audio broadcast production suite), a stereo signal is sent to the ubiquitous Mackie 1202 mixer in the Web production room (downstairs and about 80 feet of cable away). Stereo feeds from the Mackie go to L/R XLR inputs on the Cutting Edge Omnia.net processor (reviewed elsewhere in this issue), which optimizes the signal for streaming over the Internet. The Omnia's processed stereo output is then fed back to the Mackie (again L/R XLR connections), and from there the signal travels to a little Radio Shack distribution amplifier that splits it into three feeds. One feed for each of the three Windows-based PCs encoding and streaming the audio to powerful remote servers that can handle tens of thousands of streams simultaneously.

Because three specific streams are provided, three individual computers must be used. One computer streams 56 kbps RealVideo (which includes audio), another streams 28 kbps RealVideo (with audio), and the last streams only 28 kbps RealAudio (all audio streams are mono — this is a chat, after all). Windows machines are used because they tend to be a more stable environment when encoding with RealNetworks products. The three streams travel over the facility's direct dial 128 kbps ISDN connection to a server infrastructure in Seattle, WA, hosted by LiveConcerts and Real Broadcast Network (RBN). RBN is a joint venture between RealNetworks and MCI to serve large numbers of simultaneous streams.

To get online fans to participate, press releases were distributed and announcements were made on [www.dead.net](http://www.dead.net), [mp3.com](http://mp3.com), Rolling Stone Online, and Wired news. Of course, the most effective promotion is the fabled word-of-mouth network of



sit with interviewer Steve Silberman (author of *Skeleton Key — A Dictionary for Deadheads*) and answer questions from fans around the world. The band relaxes on a square brown leather sectional sofa in front of a large painting of the cover of the album being promoted. On either side large color video monitors display an endlessly cycling psychedelic montage. Color-corrected

real time. The entire interview is available as scrolling plain text, streamed audio-only, or streamed audio and video in two formats.

Because this event is a first on so many levels, a lot of people are involved. In fact, a pretty complex dance of disparate organizations is required to make it happen. Some of the groups participating are: Grateful Dead Pro-



the Dead community. At the appropriate time, fans landed on The Other Ones event Web site and followed a link that offered a choice of streaming formats. Afterwards, the event was archived for anyone who missed it live.

Besides being the first time that members of The Grateful Dead performed live on the Internet, it was the first time a bonus track was made available as a free download to promote their album release. A file of The Other One's version of "Mississippi



Half-step" (a classic Garcia/Hunter tune) was made available in both MP3 and LiquidAudio formats from a variety of Web sites. The actual album was also available as a mail-order purchase for online fans a week before it hit the stores.

Is all this time and effort worth it? Naturally, the value of anything depends on what the expectations are. Were The Other Ones interested in bolstering their e-mailing list? At last count, over 2000 addresses were added as a result of the event. Was the band interested in promoting album sales? Over 3000 copies of *The Strange Remain* were sold by mail order prior to the album's release in stores (another first: during that week The Other Ones took more album orders via the Web than the 800 number). Did they want to make their fans happy? Over 20,000 downloads of the bonus track occurred in the one week period surrounding the Webcast. Clearly it was a success by any number of standards.

During the event, the site received over 318,000 "hits." Over 28,000 streams of the 30-second excerpts from the album were recorded. There were even another 22,000 streams played of Bob Weir and Mickey Hart's prerecorded audio invita-

tion. And, less easy to measure but still relevant, the outpouring of positive feedback via e-mail from fans to the band (and all involved) is certainly gratifying.

This new-media promotional event, though still in its infancy, shows great promise as a mainstay of any musician's attention-getting arsenal. It's well known that the community surrounding the Grateful Dead have long been active on the Internet (The Dead was the first band-specific Usenet group) and that fans of the band are ahead of the curve when it

comes to grassroots support, both traditional and online. The success of this live Webcast and the excitement of both the old-school rock establishment and new-model Web-enabled people points toward expansion in the field. The geeks and the freaks found another common ground in the place where Cyberspace meets Steal Your Face. We all benefit.

*The FezGuys are Jon Luini and Allen Whitman. Read their monthly column in the back of this book each month and visit them at [www.fezguys.com](http://www.fezguys.com) for more information.*



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# CUTTING EDGE OMNIA.NET



By **THE FEZGUYS**

Recognizing the increasing application of the Internet as a platform for streaming audio, Cutting Edge has released the first stand-alone processor box specifically designed to optimize audio before it gets hammered flat in the encoding process. The Cutting Edge Omnia.net comes to us from the broadcast world. Its elder brother, the Omnia.fm, is a high-end audio processor that is well known in the business of radio. Anyone doing live Internet Webcasting or creating downloadable or streaming audio files for their Web site can benefit from this four space, rack-mount unit with its instantly recognizable alien-influenced, post-modern melted design faceplate. Everyone agrees that audio streamed over phone lines needs all the help it can get. The Omnia provides a large arsenal of assistance in this application.

The user interface is simple and straightforward, incorporating only two physical controls: a push-activated jog wheel and one other recessed push button. Any of the many presets can be modified by the user and saved

to memory and/or a Cutting Edge-approved PCMCIA card. For Internet radio programming, the Daypart feature allows different presets to be used when formats vary significantly. There is an interface for remote operation (currently only Windows-based, but slated to be compatible with MSIE and Netscape browsers within the year).

The promise of communication and manipulation of the unit through either RS-232, modem, 10BaseT, or Internet connections make the Omnia a go-anywhere tool. There are two

PCA card slots in the back of the unit: one for processing and one for communication. Analog and digital outputs can be used simul-

## ROAD TEST

**MANUFACTURER:** Cutting Edge, 2101 Superior Ave., Cleveland, OH, 44114. Tel: 216-241-3343. Fax: 216-241-4103. Web: [www.nogrunge.com](http://www.nogrunge.com).

**APPLICATION:** Optimizes audio for Web-based encoding.

**SUMMARY:** Performs as advertised. The unit is in a class by itself.

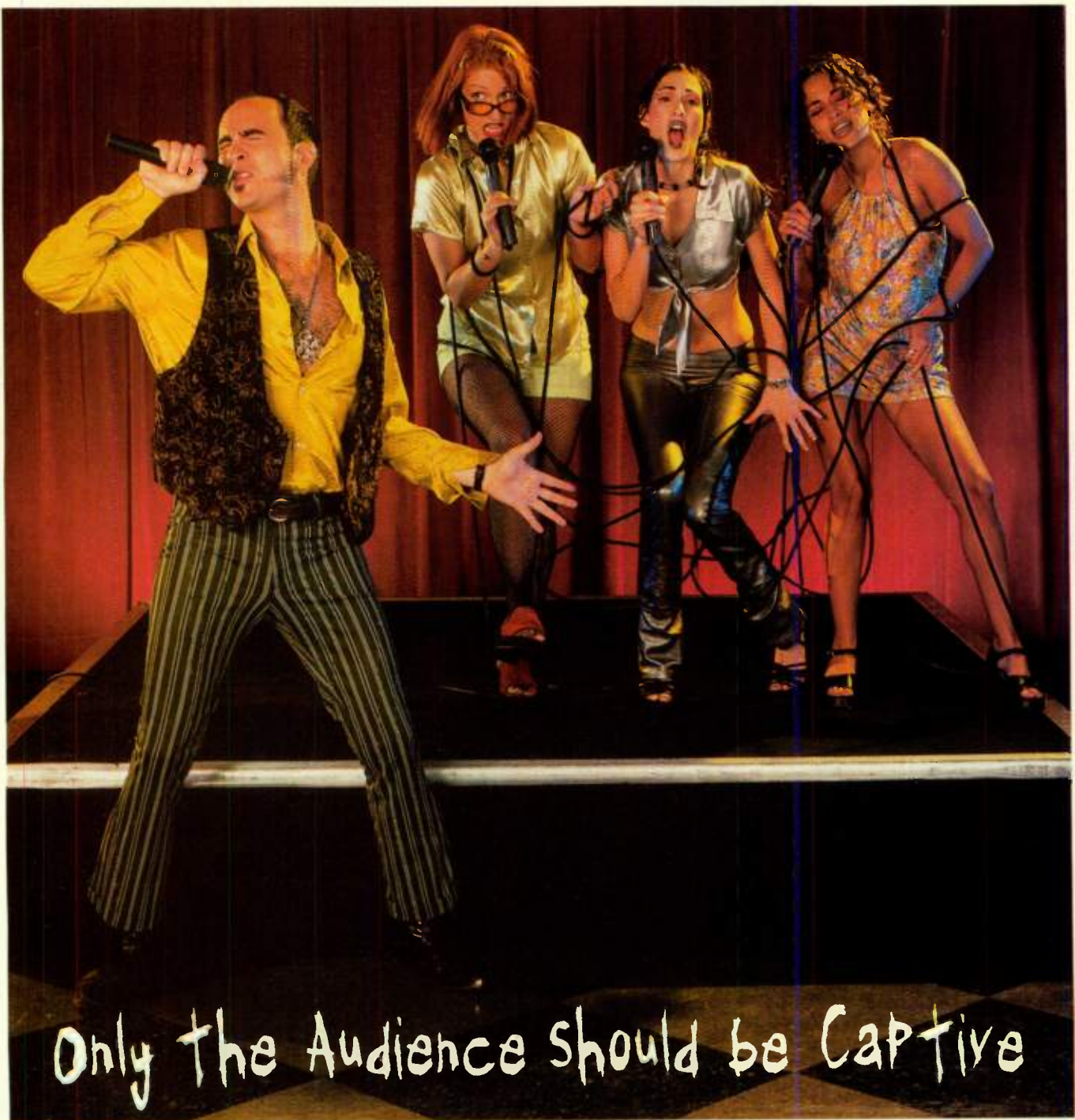
**STRENGTHS:** Extremely high-quality construction and design; XLR and AES/EBU connectors; very versatile.

**WEAKNESSES:** May be deemed too costly for most Webcasters.

**DIMENSIONS AND WEIGHT:** 32 lbs.; 19 x 5.25 x 16.25 inches.

**PRICE:** \$3800

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taneously. Cards can be swapped to rearrange the entire system architecture. The I/O level LED meter window on the front panel can be switched between input and output monitoring. There's even a headphone jack, kindly placed on the front of the unit.

Features include: a "Thunder Bass EQ," with up to 12 dB of time-aligned bass boost; a "Warmth EQ" with up to 6 dB (in 1 dB increments) of upper midrange boost and cuts in the 800 Hz-2 kHz range for bringing out vocals; "Phase Linear Dynamically Flat

Time-Aligned Crossover," which keeps the entire audio spectrum of the signal "exactly synchronized" across

the whole feature set; a "Wideband AGC," basically a "leveler section" for control of the input signal; a "Multi-band Dynamic Peak Limiter," a 3-band spread (Low, Mid, High) for "sophisticated" limiting; a "Non-Aliasing Distortion Controlled Final Limiter" to prevent that irritating "digital feel" to your mix by eliminating aliasings, and a "Prediction Analysis Clipper" that reduces overshoots in sample-rate conversions (the AES/EBU digital inter-

face can accept any sampling rate between 32 kHz and 50 kHz).

Operation is simple. We were able to plug it in and have it up and running in just a few minutes during preparations for a Webcast of The Other Ones in San Francisco (see article in this issue). It's clear that the box supports the "plug-and-play" mentality of high-pressure live situations but also rewards a more painstaking study of its powerful and flexible features.

So how well does the Omnia.net perform? Very well. The unit works exactly as promised, polishing and molding the audio signal. Audio encoded and streamed with Omnia.net processing is definitely clearer than the unprocessed variety. Aliasing was eliminated and bass frequencies became appropriately present. Typically, streaming audio encoders have poor control over input levels and can easily experience a lot of clipping. Audio optimized with the Omnia.net can be slammed wantonly against the encoder. Transients are no longer a problem because they have been "right-sized" out of the signal. Obviously, that's not the only use of this rather elegant piece of hardware.

Webcasters, usually used to mini-plugs and tinny, tiny audio playback systems, might be happy to know the Omnia.net is a true audiophile device. From its XLR L/R in/out connectors to the AES/EBU digital interface, it's clear the Omnia.net is sculpted lovingly by people who are just this side of fanatical about clean audio. The box is not cheap, but if you want to be sure that all your listeners (even those with a 28k modem) can understand and enjoy clean and sonically legible streaming, the Omnia.net is the only game in town.

Check out the Omnia.net test results at the FezGuys Web site: [www.fezguys.com](http://www.fezguys.com). Go to column #29 and click on the links to hear the audio samples.

*The FezGuys are Jon Luini and Allen Whitman. Be sure to check out their monthly EQ column.*

So how well does  
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CIRCLE 87 ON FREE INFO CARD

World Radio History

# BLUE Bottle Condenser Microphone

Beneath The Bottle's classic look lies a high-powered contemporary performer

BY STEVE LA CERRA

For the past ten years, BLUE (a.k.a. Baltic Latvian Universal Electronics) has been quietly servicing the vintage microphone market, restoring tube mics and power supplies as well as building new power supplies and shock mounts for classic mics. Approximately four years ago, BLUE began handcrafting small quantities of high-quality microphones in the Baltic State of Latvia. Their flagship is The Bottle, a vacuum-tube condenser mic set consisting of the 9612 preamp, 9610 power supply, one capsule (BLUE recommends the B6 or B7 capsule as a good "starter"), and BLUE's Champagne mic cable. Right out of the box, it's clear that The Bottle is a special microphone: the supplied flight case is a serious piece of work, with a padded, crushed-velvet lining, and separate compartments for The Bottle, three capsules, 9610, and cables (thank you!). There's no doubt this case will keep the mic safe from harm.

## CRANK IT UP

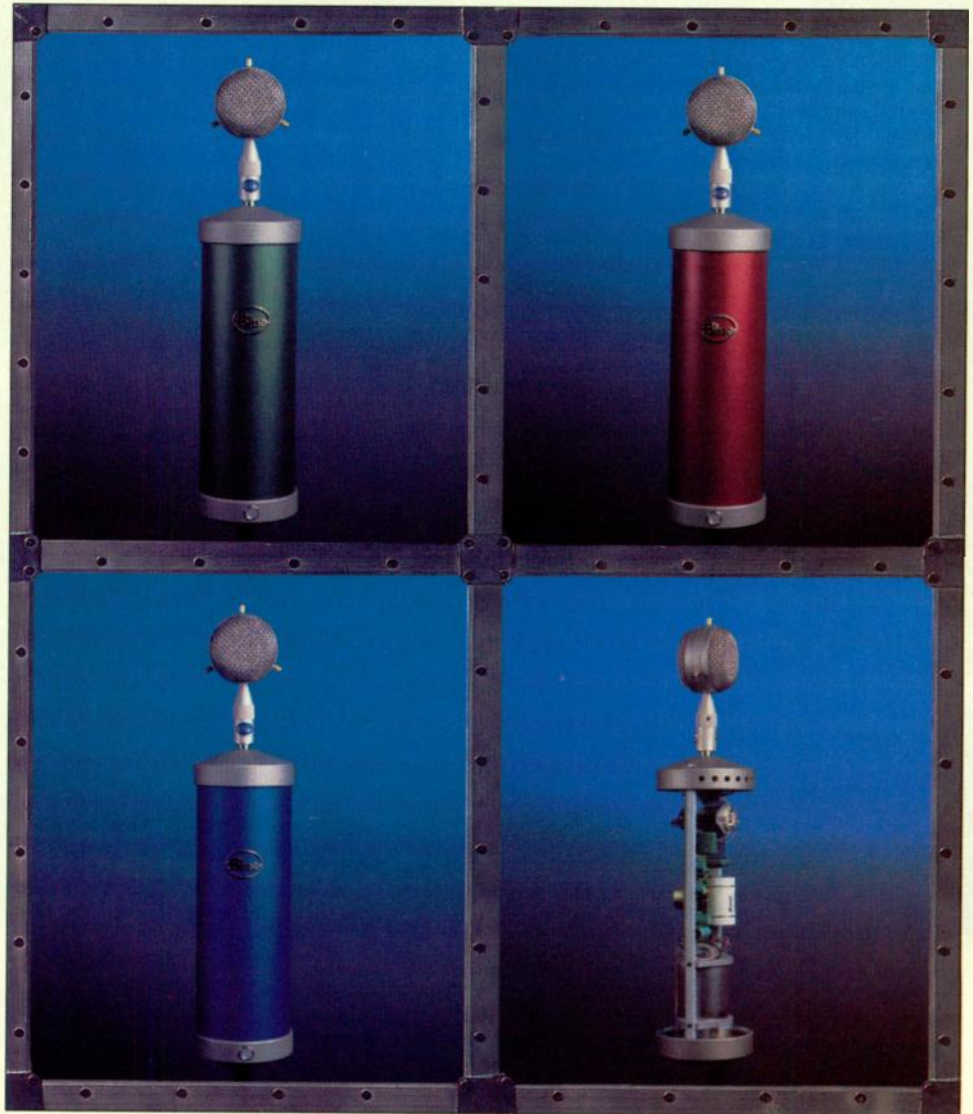
BLUE sent *EQ* three cardioid capsules: the B6, B7, and a prototype B0. Each has a different frequency shape, and a total of eight different capsules are available. All capsules are internally shock-mounted and must be secured during transport, so the three brass thumbscrews inserted around the capsule rim must be unscrewed before use. To mount a capsule on the preamp, gently push and twist the capsule onto the pivoting bayonet

mount. Our B6 and B7 capsules mounted very smoothly, but the B0 was a bit on the tight side. It's a good idea to mute the mic's output when changing capsules, but if you forget to do so, only a small amount of noise is transmitted to the output.

Once securely mounted on a heavy-duty stand, we plugged the mic into the power supply using BLUE's premium Champagne mic cable. Unlike most tube mic cable, the audio conductors in the Champagne cable are a twisted pair with a separate, tinned-copper braid shield. Five additional conductors are used for control and

power, and then all seven conductors are again protected from interference with a braided shield. This design maintains audio purity as well as providing robust construction.

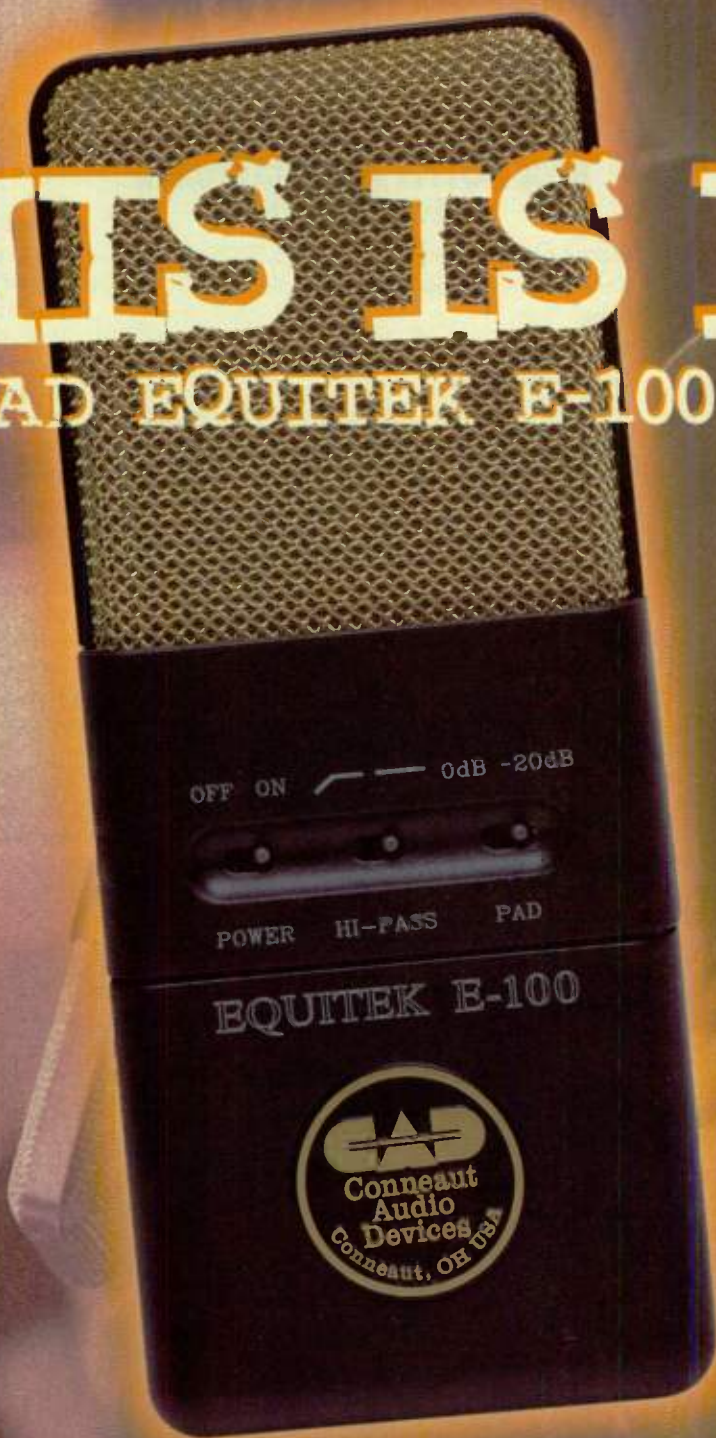
On the front panel of the 9610 are a backlit meter, I/O connectors, three LEDs, a switch labeled "heater/plate," and a capsule polarization voltage trim control (-6 to +4). The finish of the components is clean, and the controls have a high-quality feel. On power-up, the plate LED lights dimly. The meter can be switched to show voltage at either the heater or plate, and you can watch it slowly ramp up from 0 to 100 percent,





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which takes several minutes (BLUE has intentionally designed a slow start to extend life of the tube). When the voltages reach 100 percent, the respective LEDs glow brightly; when both heater and plate are at operating voltage, the “ready” LED lights, a lamp in the base of The Bottle glows full-strength from its dimly lit startup, and audio output is unmuted. Much to our surprise, neither startup nor switching of the polarization trim produced any audible noise from the mic’s output.

We used The Bottle in the studio on a variety of instruments, including drums, vocals, and acoustic guitars, and found the capsules to have very distinct flavors. We’d consider the B6 to be the most linear of the bunch. While its transparency was appreciated on some instruments like acoustic guitar, it wasn’t necessarily flattering on male vocals. Our favorite for male vocal — and in general — was the B0, a smooth-sounding capsule with an open top end and a very subtle low-mid bump that flattered

## BLUE BOTTLE MANUFACTURER SPECIFICATIONS

**Frequency Response:** 30 Hz to 20,000 Hz,  $\pm 4$  dB

**Rated Source Impedance:** 200 ohms

**Tube:** EF86

**Sensitivity:** 8 millivolts/Pa,  $\pm 1$  dB

### Capsule Options:

B7: cardioid (single back plate, large diaphragm)

B6: cardioid (dual back plate, large diaphragm)

B5: pressure omnidirectional

B4: perspex sphere pressure omnidirectional

B3: cardioid (mid-size diaphragm)

B2: figure eight

B1: cardioid (small diaphragm)

B0: cardioid (large diaphragm, bright)

a thin-sounding tenor. The B7 yielded the darkest sound, with less high-frequency harmonic content and a more closed-in top. It sounded thick on acoustic guitar and produced a “retro” sound for vocal. We liked this capsule for room mic on the drum kit, and it tamed shrill-sounding instruments, such as certain female voices.

On a male crooner with a huge dynamic range, The Bottle easily captured dynamics without a problem. As he sang louder and louder, we were expecting The Bottle to crap (technical term for running out of headroom...), but it never did. This is probably a result of the power supply’s ability to maintain the necessary voltages to the microphone.

Taking a cue from BLUE about The Bottle’s high-SPL capability, we placed the mic directly in front of a kick drum for a hard-rock session. We were reluctant to hang The Bottle upside-down from a studio boom, but the body is so big that this was the only way to get the capsule low enough (using a low stand resulted in the capsule sitting higher than the drum). We didn’t care much for the tone it produced (with a B7), though it easily handled the SPL. Initially, we left the polarization trim at “0,” but our mic preamp overloaded, so we moved the control down to  $-4$  (which was fine).

*continued on page 146*

## BLUE BLUEBERRY MICROPHONE

The Blueberry is BLUE’s most affordable microphone. A cardioid condenser with a discrete Class A amplifier, The Blueberry employs a single, large diaphragm in a factory-tuned capsule. BLUE supplies The Blueberry with a hardwood storage case; optional accessories include the S1 shock mount and W1 pop filter (packaged together) and the BB high-definition mic cable. A quick look under the hood revealed that the Blueberry had the same high level of craftsmanship as its big brother, The Bottle, with a clean circuit layout and an impressive-looking capsule.

Our first session with The Blueberry was a male vocal, and we liked the sound of The Blueberry right away. The vocalist was working within about four inches from the mic and though The Blueberry exhibited some proximity effect, it was subtle — without the overblown, big fat bottom many mics produce at this distance (this character proved to be a strength on other instruments as well). We then used The Blueberry to record acoustic instruments, including piano, guitar, and percussion. On piano, The Blueberry was one of the few mics we’ve used that sounds more like music and less like a microphone. Transient response was excellent and (depending upon distance) the mic also picked up the sound of the player’s fingernails clicking against the keys. The hammers were well articulated without sounding too aggressive. Positioning the mic within a foot of the harp bumped up the bass response slightly, adding a nice warmth to the instrument’s low end.

At about 10 inches away from the bridge of an acoustic guitar, The Blueberry’s pickup pattern was just wide enough to catch a bit of room ambience, adding depth to the sound of the guitar. When we tried the mic on an egg-type shaker, the high-frequency response was a bit spitty, though The Blueberry did have the ability to clearly discern the timbre of the egg from a maraca, which was (at times) being played simultaneously. Moving the mic off-axis resulted in a softening of the high frequencies (most notably on tambourine), but, as long as the instrument was kept on axis, the tone was clear and clean.

Our Blueberry came without the shock mount, and, after a few sessions, we realized that positioning this mic can be very difficult when it is attached directly to the mic stand. This is because the mic’s range of angles to the stand is very limited due to the stand mount being integral to the mic body (miking a floor tom was a major production). If you’re serious about purchasing this mic, add the shock mount into the budget so that position adjustments can be made more easily and accurately.

That minor gripe aside, The Blueberry is a very good, all-around microphone with excellent construction. Most studios would find it useful in many situations, and it’s priced reasonably enough that they won’t have to break the bank to buy it.

—Steve La Cerra

**PRICE:** \$1295. S1 shock mount and W1 pop filter (packaged together), \$316; BB high-definition mic cable, \$34.95. EQ FREE LIT. #: 105



Up the value of your mic locker without dropping another nickel into it.

Pit an amateur with \$10,000 worth of microphones against the pro with a \$1,000 mic and the better recording will emerge from the latter corner, pretty much every time. How? Quite simply, pros use their ears.

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Furthermore, a detailed, accurate monitoring system is what patches flesh and blood into the electrical system and provides a clear window to the sound at every step of the recording process. This is precisely why the best in the business agree that their monitors are the single most critical piece of hardware in the studio.

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#### **Monitors:**

*Response: 40Hz - 20kHz.  
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# Cakewalk Pro Audio 8

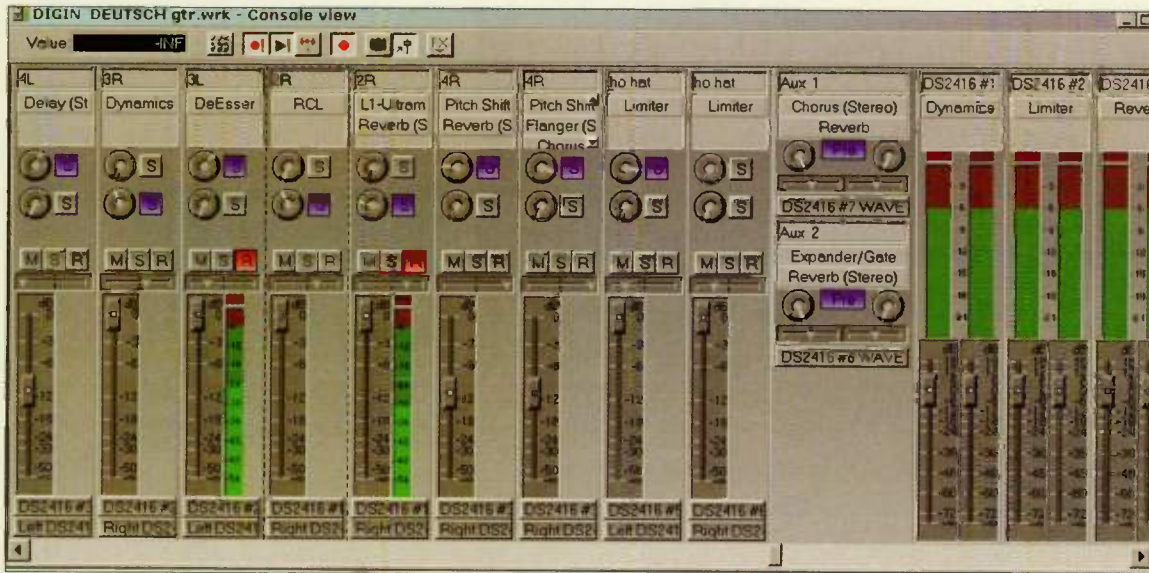


FIGURE 1: The Console view offers immediate access to all of the parameters you need to record, playback, and mix a session. DirectX processing plug-ins are simply (mouse) clicked into place at the top of each channel. Input meters appear on channels when they are placed in Record Ready. Channels and mutes can be grouped to simplify mixing.

## Cakewalk debuts a significant upgrade to their popular sequencing software package

BY WADE MCGREGOR

The latest version of Cakewalk's flagship software program, Cakewalk Pro Audio 8, has support for audio files with up to 24-bit 96 kHz sampling. This is coupled with the significant enhancements to the control interface as to make this upgrade a necessity for current Cakewalk users. Cakewalk now offers a no-fuss path to recording and mixing audio and MIDI events while maintaining many of the convenient keystrokes and shortcuts of previous versions. This version also offers synchronized playback of AVI, MPEG, or QuickTime movies that can be saved in AVI format.

Cakewalk uses the multitrack metaphor in creating sequences of MIDI data and audio—a very large multitrack, though, with up to 256 tracks of MIDI and audio (limited by hardware,

and typically less than 60 audio tracks). The underlying mix engine supports full 32-bit floating-point processing. The DirectX support has been enhanced dramatically, allowing multiple plug-ins to work in real-time with far less CPU overhead than previous versions. The support of multiple sound cards has also been improved, and allows multi-channel cards to be addressed or multiple stereo cards to act (asynchronously) as main and auxiliary sends. There are also a number of changes that

enhance the compatibility with other Windows programs, along with better integration of features such as audio metering and support for opening multiple project files.

The new Console view (see fig. 1) brings all of the necessary recording and playback controls into reach. Introduced in the short-lived Version 7, and building on the faders and knobs of the StudioWare view of Version 6, the Console view finally makes the process of recording MIDI and audio on a com-

## EQ LAB REPORT

**MANUFACTURER:** Cakewalk, 5 Cambridge Center, Cambridge, MA 02142. Tel: 617-441-7870. Web: [www.cakewalk.com](http://www.cakewalk.com).

**APPLICATIONS:** A Windows 95/98/NT application for the production of music, interchangeably using MIDI or audio in project studio and postproduction environments.

**SUMMARY:** A significant upgrade to the capabilities of this very popular sequencing software package that adds support for video, real-time MIDI effects, and high-resolution audio.

**STRENGTHS:** The Console view offers concise access to functions; supports up to 256 tracks of audio or MIDI data; improved DirectX integration, native 32-bit performance; and 96 kHz and 24-bit audio support.

**WEAKNESSES:** Real-time console mixing really isn't; larger numbers of tracks require a very fast PC.

**PRICE:** \$299 (check the Web site for upgrade pricing); \$149 for each of the FX1 and FX2 packages of additional DirectX Processing plug-ins.

**EQ FREE LIT. #:** 106

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(\* 48 input channels with 2 cards)

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Group Crossfade  
Group Trim  
Group Split  
Group Gain Change  
Group Normalize  
Group Move in Time  
Play from Beginning  
Play Selection  
Play from Cursor  
Play to In Point  
Play to Out Point  
Loop  
Jump to Splice Point  
Jump to In Point  
Jump to Out Point  
Jump to Marker  
Zoom In by 2  
Zoom Out by 2  
Zoom to Sample Level  
Zoom to Full Recording  
Rescale waveform  
Scale in Real Time  
Scale in Beats per Minute  
Scrub Automation  
Autorewind on Stop

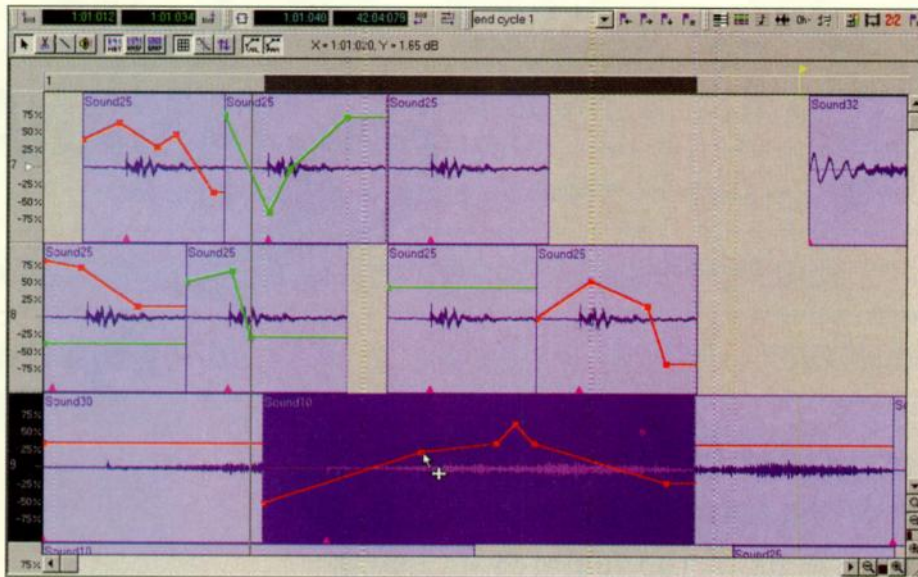


FIGURE 2: Volume (red lines) and panning (green lines) can be automated using envelopes that overlay the audio tracks in Audio view. Control nodes are placed and adjusted easily with the cursor (crossed arrows) to allow precise automation while viewing the waveforms. The Console view sliders then follow (and can modify) the volume and pan settings, too.

puter akin to the (relative) simplicity of an analog mixer and reel-to-reel multitrack. Unlike StudioWare, however, the Console provides all of the primary Track view functions in a mixer metaphor.

The integration of DirectX plug-ins into each input or output, as patchable processing, not only allows you to control the whole process from a single window, it also allows you to easily access processing and routing with your mouse (or using MIDI controllers). The Console view includes many customizable parameters, such as the Snap-To setting that returns controls to a user-defined setting with a double-click on the control. This is a great feature for re-setting specific sends and faders without having to recall a complete snapshot.

While positioning audio files in a sequence, you often find that the "beat" is not at the very beginning of the audio file. CWPA 8 allows you to set a "beat location," called an Anchor, within the audio file manager, with greater accuracy. The ability to fine tune volume and panning has been enhanced to allow vector (envelope) editing of these parameters right down to the sample level. In Audio view, buttons allow the drawing of volume and panning directly over the waveform (see fig. 2). The user can then choose between recording fader moves, MIDI controllers editing, or vector editing of automation. Audio volume has been rationalized to include the MIDI parameter of velocity, so you no longer have to check two parameters to

know the current audio level setting. However, you may need to take a snapshot of the Console view at the beginning of the track to ensure that all of the controllers for volume and pan are in sync.

Viewing the sequence has been enhanced to allow the Event List to be filtered (you don't have to scroll through 50 controller events while simply looking for a MIDI note on), and zooming in on the graphic windows is far more versatile. I particularly like the way the sequence of audio and MIDI data in the Clips window can immediately access a new view (audio waveform edit view for audio events and piano-roll for MIDI events) by double-clicking on the graphic of the event. In addition, searching for the right synth voice is now much faster with the new Patch Browser that even allows search strings across multiple banks of voices.

CWPA 8 makes major demands on your PC. The large amount of on-screen business that occurs during recording and playback, including: audio levels for recording tracks and master outputs, audio waveform display, timer displays, fader updating, etc., create real-time switching and fader moves [that are] out of sync. Moving a fader on an audio track may not create an audible effect for another bar. This is far worse on slower PCs or if other applications are running in the background. However, even on a Pentium II-400 with no other major applications running, the fader delays can be noticeable. The Ad-

vanced Audio Options tab offers access to the Buffer Setting that adjusts to optimize between audio dropouts and latency of the controls. Except with a very fast PC, this latency can make it difficult to judge a fade or level dip by ear while recording the moves. In any case, playing back the prerecorded moves will return to the timing of the original move. As with any computer hardware used for audio production, the maximum number of audio tracks and the feel of the interface will still depend on the configuration and processing power of your PC.

The 8.01 version, which was the current version while I was conducting testing for this review, included support for the new Yamaha DSP Factory. The DSP Factory processing (effects and dynamics from the 02R) is accessed using a Cakewalk DirectX driver (available on output groups only), an excellent approach that enhances the versatility of this hardware. The processing overhead of DirectX plug-ins accumulates with each effect, but the awesome power of the hardware in the DSP Factory allowed a significant number of real-time effects (even reverb and pitch shifting) to run nondestructively during tracking and mixing. The DSP Factory effects are only available on output groups and cause unpredictable behavior (extreme levels, distortion, lockup, etc.) if patched into the input channels of the Console view mixer. I didn't have access to hardware capable of more than 20-bit audio sampled at 48 kHz, so the 96 kHz/24-bit support could not be evaluated.

Cakewalk Professional has always been a powerful sequencer for MIDI applications. Version 8 displays the tremendous progress that Cakewalk has made in bringing this power to audio production. This new version is a must for any current Cakewalk Pro Audio user (there are even variations for those with tight budgets), and this is an application that must be considered by anyone moving into music production on a PC. Cakewalk has produced an interface that requires less effort to record directly into the PC than to thread up a reel of tape and hit Record. That is definitely progress.

*Wade McGregor is a principal consultant for Mc2 System Design Group, a sound system design firm based in North Vancouver, BC. For more info, visit their home page at [www.mc-squared.com](http://www.mc-squared.com).*

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■ **Inserts on all mono channels—** plus submix and main stereo mix inserts.

■ **Double tape outputs eliminate repatching during tracking.** The SR24•4's "double-bussing" feature is a great solution—and a big timesaver.

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■ **Low-noise, high-headroom discrete mic preamps.** Preamps are a critical part of any mixer; they must be accurate and free from coloration—yet be able to handle

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■ **Large, high-current internal power supply** allows us to use VLZ® (Very Low Impedance) circuitry at critical points in the SR24•4 and SR32•4.

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■ **60mm logarithmic-taper faders.** Many conventional faders "give up" about 3/4 of the way down. Ours are audibly tapered to zero. Each fader's wiper surface is derived from automotive sensor technology and won't develop "the scratchies" even after years of compulsive tweaking.

■ **Special pan controls** maintain the same apparent loudness even when you pan a channel hard right or hard left.

■ **Solid steel chassis,** gold-plated internal interconnects and sealed rotary controls keep the SR24•4 working through dust, smoke, moisture and road abuse.

■ **Ultra-high "AIR" EQ** on submix buses centered at 16kHz. As one magazine review put it, "The AIR controls turned out to be effective in adding top end clarity... it's almost an 'exciter' kind of effect, except without the harshness."

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SR24•4

# TC Electronic DBMax

## Digital Signal Processor

TC takes their Finalizer into the broadcast world — with interesting results for all audio engineers

BY EDDIE CILETTI

Your stereo mix is the biggest challenge for any dynamics processor. Processing just a kick, vocal, or bass track is easy, but you can never fully optimize the attack and release parameters for full-spectrum audio program. That's why it's so difficult to find the right processor for a stereo mix.

### ADJUSTABLE COW

When you hear or read the hyper-raves about a vintage Neve or Fairchild compressor/limiter, keep in mind that, while these boxes have a certain magic, they aren't perfect for all mixes. And you can't just take a piece of a circuit, like the gain reduction device — optical or FET or variable-mu — and surround it with opamps. The full-monty magic is the combination of transformer saturation, the characteristic tube or transistor overload, *plus* your mix. Translation: You can tune your mix for a specific compressor, but the reverse is not always true.

### GROVELLING FOR BEADS AND OTHER TRINKETS

If all of this sonic voodoo sounds like a bit of a crapshoot, it is! To increase your odds, you have to be either very

rich, very knowledgeable, or have a multi-band compressor. The last is what made the TC Finalizer successful. By splitting the signal into three bands — low, mid, and high — each compressor/limiter can be optimized for that specific frequency range. It's not magic. It's multitasking for audio.

That's why I was thrilled to snag the broadcast version of the Finalizer, the DBMax, after seeing it at the TC Electronic booth during last year's AES show. It looks like the Finalizer because it's the same basic hardware, but it features software optimized for broadcast purposes. For example, instead of three bands, the audio spectrum is now divided into five bands. This is not new for broadcasting, but doing so in the digital domain means you can save settings. Considering how bad commer-

cial radio sounds, anything that motivates broadcasters to attempt improvement should be encouraged. (See fig. 1.)

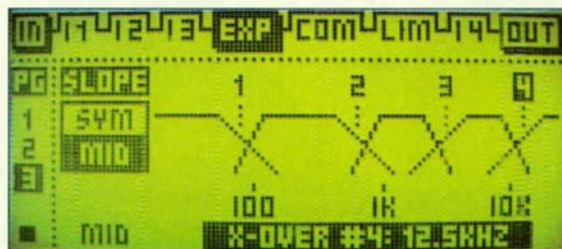
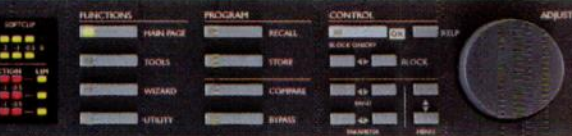


FIGURE 1: The audio spectrum can be divided into five bands with the option of symmetrical or asymmetrical crossover points. Across the top, the signal flow moves from left to right and includes four "insert" points, each section can be toggled on or off.



FIGURE 2: Threshold, Release, Range, Ratio, and more can be independently set for each band.



## LAB REPORT

**MANUFACTURER:** TC Electronic, 790 Hampshire Road, Suite H, Westlake Village, CA 91361-9773. Tel: 805-373-1828. Web: [www.tcelectronic.com](http://www.tcelectronic.com).

**APPLICATION:** (Not "limited" to) Broadcast audio signal processing.

**SUMMARY:** Five-band compression, limiting, and expansion with presets.

**STRENGTHS:** Each band has independent Threshold, Attack, Release, Ratio, Range, and Output settings; manufacturer and user presets; Wizard mode helps you get started.

**WEAKNESSES:** Attack and Release ranges (for the compressor) should be interchangeable.

**PRICE:** \$3995

**EQ FREE LIT. #:** 107





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

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FIGURE 3: Using the high-frequency emphasis along with its dedicated limiter to improve intelligibility.

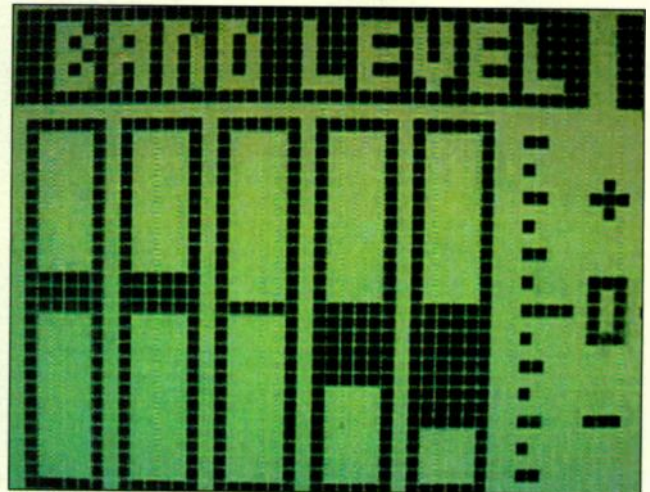


FIGURE 4: Using the individual output level controls to undo the emphasis EQ.

### CROSS DRESSING

Why review a broadcast product in a project studio magazine? Well, if a microphone designated as being "perfect for guitar" can be used on other instruments, so too can the DBMax find life in other environs. Splitting the audio into five bands works great for the Expander. (Funny, isn't it? Here's a box that can bring back The Dead (hello, Jerry?) and I'm getting my jollies playing with the expander....)

By choosing the fastest release time on the "ring" band (centered at about 430 Hz), the DBMax effectively killed the ring in a snare drum without sucking the life out of it. Slower release-time settings on the other bands let the "good leakage" through — the upper-frequency "air" and that dirty low-down womp! I also used the multiband expander along with the equalizer to denoise some old AM radio broadcasts. (See fig. 2.)

### PAYING HOMAGE TO THE MASTER(S)

The biggest chunk of my time was spent using the DBMax to master a recording project for a musician friend, Dina Regine. Every time she fills up an ADAT tape, I throw it into my Soundscape workstation and make a slave reel. Some of the mixes she's been able to do at home, others were done at my place. Her varied material and our very different approach to mixing yielded a wide range of tracks.

All of the mixes initially were transferred to one DAT in the sequence requested by the composer. I then listened to each track to determine which

track needed tweaking. I did nothing to the best-sounding mixes — three out of twelve — the other nine got very special treatment, each saved as a preset and detailed in a log. Like Roger Nichols said in his February column, "Documentation, documentation, documentation!"

### TRIMMING THE FAT

One track sounded perfect in the verse, but the chorus had been over compressed, a factor especially obvious on the lead vocal. For that track, I used just one mid band of the expander — 630 Hz to 3.15 kHz — setting the threshold to trigger expansion in the chorus.

On another track, I needed to extract some high-frequency intelligibility without making the track too bright. There is high-frequency pre-emphasis for FM broadcasts along with a limiter to keep it under control. After turning it on, I then went into the compressor and trimmed away the excess brightness by pulling the level down on the upper frequency bands. (See figs. 3 and 4.)

### SNEEP DOG

After listening to the whole CD burned from the DBMax'd DAT, all of the songs now feel like they came from the

*continued on page 146*

## SAFETY FIRST

It's easy to overuse any dynamics processor, but here's one tip that might help you become a "safe" operator. It seems that modern design engineers have this preconceived notion that compressor attack time should be faster than release time. The Finalizer and DBMax are both guilty of this, as are many other compressors. I don't feel it should always be the case. (The DBMax offers a power-assist "Wizard" mode, but I'm a hands-on guy!)

Try starting out with a slow attack time (50 ms to 70 ms, if possible) and a faster release time (10 ms to 20 ms) to preserve the ear-tickling transients while smoothing out the dynamics. That's what a compressor *should* do. DBMax also has what all digital compressors should have — the

ability to "look ahead." (The TC Dynamizer plug-in for Soundscape also has this feature.) One of three tweaks I'd make to the DBMax would be to correlate the "look-ahead" value with the attack time. Whatever Attack value is chosen should (at the user's option) bump the look ahead to that value.

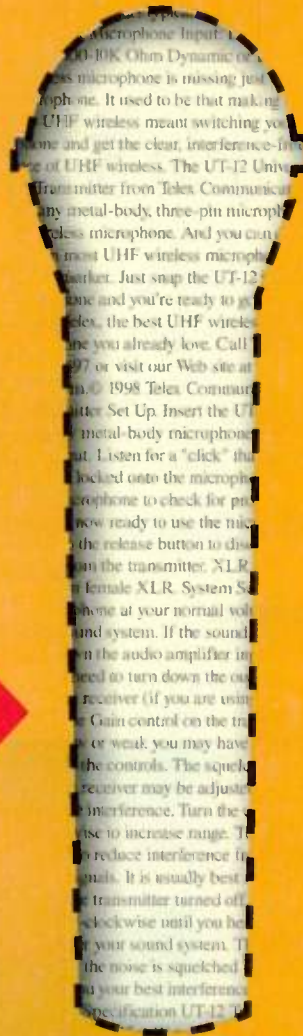
Tweak #2 would optimize the Attack and Release range for each of the five EQ bands. Tweak #3 would integrate the Attack and Release sliders into one control so that there would never be a "bad" setting. (Attack and Release can't both be as fast as possible because doing so yields about the most awful sound since 4-bit digital audio hit the toy market!) For comments, contact Eddie via e-mail at [edaudio@tangible-technology.com](mailto:edaudio@tangible-technology.com).

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# HHB Circle 5 Active Studio Monitors

HHB combines strong speaker components with a quality amplifier for their new "free field" speaker

BY STEVE LA CERRA

The Circle 5 Active from HHB is a two-way, biamped studio monitor designed for nearfield applications. Because the Circle 5A's have been designed for "free field" use (i.e., at least three feet away from any boundaries), they can be used for surround monitoring as well as for traditional stereo applications. Incorporating an 8-inch woofer and a 1.1-inch, Ferrofluid-cooled tweeter, the Circle 5A's cabinet is ported to extend bass response and is magnetically shielded, allowing close placement to a computer or video monitor without harming the screen. HHB also makes a passive version of the Circle 5 for those who prefer to match the monitors with their own power amplifier. *EQ* auditioned the active version.

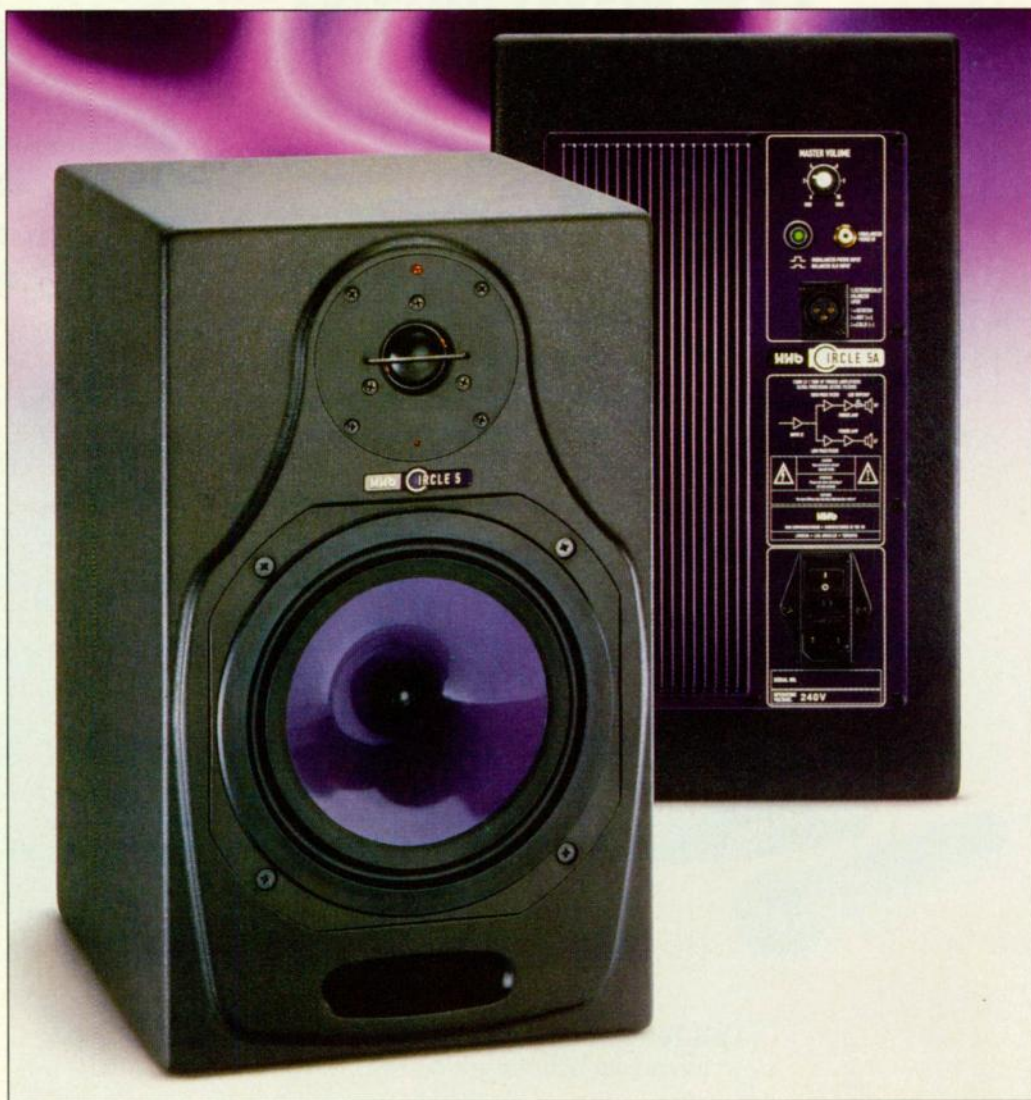
The Circle 5A's have a unique appearance, highlighted by the purple (!) woofer cone. A look at the rear panel reveals a master level control, XLR input (pin 2 hot), gold-plated RCA input, an IEC power receptacle, and a power switch. A small push-button switch next to the RCA jack selects in-

put from either the RCA jack or the XLR jack (a 1-volt input is required for rated output). About two-thirds of the rear panel is occupied by a heat sink, which serves to cool the internal amplifiers. There's also a long metal bar, which appears to be a handle used to remove the circuitry for servicing. The heat sink and handle are painted in purple to match the woofer cone.

We connected the Circle 5A's to our Yamaha O2R for some stereo mixing and tracking sessions and fired them up. HHB has done their homework with the power switch — we never heard a click or pop when turning the speakers on or off (thank you!). A green LED il-

luminates below the tweeter when the Circle 5A is powered, and a red LED above the tweeter indicates that HHB's Polyswitch protection has kicked in. As opposed to a current limiting-type protection circuit — which can compromise sonic accuracy — Polyswitch turns the tweeter completely off until the overload condition ceases. Polyswitch does not affect the woofer.

The input IC on the Circle 5A is differentially balanced and provides true balanced operation when using the XLR jack. When the RCA jack is used for input, the IC is still expecting to see both a hot and a cold signal. The RCA/XLR select switch on the rear panel shorts





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the cold signal to ground for unbalanced operation — making the IC think it's seeing a balanced input at the RCA jack. A byproduct is that the gain of the IC is changed, but we had no problems using either input. Unfortunately, the rear-panel input does not accommodate 1/4-inch TRS connectors. Our suggestion to HHB is to replace the XLR jack with a Neutrik Combo jack — allowing the Circle 5 to accept the three major connectors without use of an adapter.

HHB's brief manual for the '5A suggests that the speakers be set up on stands just behind the console, rather than the more typical on-console-top placement — which can cause comb filtering due to reflections from the console surface. Using that as a guide, we set the cabinets approximately 4 feet apart and equidistant from the listening spot at ear height. HHB makes note of the fact that the '5A should not be positioned near a room boundary because the response has been optimized for free field; placing the cabinets close to a boundary may cause bass response to be exaggerated.

During tracking sessions, the strength of the Circle 5A proved to be in the midrange, where response was smooth and uncolored. This was particularly evident on instruments like piano, snare drum, acoustic guitar, and male vocal. We also found the '5A's had the ability to play *extremely* loud while still sounding clean, and, even at SPLs that could challenge one's common sense, the speakers didn't sound compressed or distorted. At these kind of volumes, Polyswitch didn't kick in, indicating that the monitors still had room to go. These qualities were appreciated during a drum tracking session where the producer wanted a lifelike (i.e., *loud*) volume level in the control room (for our tests, the rear-panel level control was opened up all the way).

Bottom end of the spectrum was tight, but not particularly extended — we'd say it was lean, even when we moved the Circle 5A's closer to the wall behind the console. This became more of an issue on certain types of music than it did on others: for acoustic jazz, folk, or music that generally doesn't slam in the bottom end, it's not a problem. However, we wouldn't recommend doing your next dance remix on the Circle 5A's. For those requiring an extended bass response, HHB's Circle 1 subwoofer is available to complement the Circle 5A's.

The Circle 5A's were very good at revealing sonic detail, which we liked for the tracking process because we were able to hear sonic "defects" such as squeaky foot pedals or buzzes from guitar amps. For mixing, this character proved to be a detriment: when we listened on other systems, some of the high-frequency articulation was lost, most noticeably on cymbals and reverb tails. It'd be nice to have some sort of treble-tilt control to compensate for this character.

Overall, HHB has come up with a monitor that's a strong performer for certain applications, and you get high-quality amplification as part of the deal. Clarity and transparency in the midrange is the Circle 5A's big strength, but don't expect to shake the studio walls with huge bottom end. If those qual-

ities (in addition, of course, to solid construction and reliable operation) are important on your list of monitor requirements, then put the Circle 5A at the top of your audition list.

*During tracking,  
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This was evi-  
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# The Price of Maintenance

How much do you expect to shell out to repair your audio gear?



BY EDDIE CILETTI

This month, let's talk in general terms about one of the hazards of doing business: the price of maintenance. I get so much positive e-mail from writing this column, but sometimes the e-mails roll in as if I had asked, "What is the quality of service you are getting from your gear, the local service center, or the manufacturer?"

One particular e-mail has a frustrated user ready to trade in one set of digital 8-tracks for another brand. The beef is about the projected cost of service. The problem is: "Is it worth paying \$1000 per machine per 1000 hours (of service)?" Here is my view on the cost of doing business.

Today, mass manufacturing techniques can build a product faster and more efficiently than ever before. It's all about two things: volume and the lack of human intervention. Volume reduces per-unit cost and any human intervention adds big dollars to the cost.

## THE LINK

So, what did I tell my trade-in buddy? Same thing I've said before here in print. In 1985,

a synchronizable 1/2-inch analog 8-track cost \$5000, and it took two synchronizers to link three machines together with some sacrifice (to the tune of \$20,000). Three tracks were lost to SMPTE and the three neighboring tracks could handle only low-frequency tasks to avoid timecode contamination caused by crosstalk. Back in the day, the new 2-inch 24-track options might have ranged from \$40,000 and \$80,000. Someone was more likely to purchase a used 2-inch machine rather than sync three 8-tracks together.

By now you should know what I am getting at. That is that today's digital 8-track machines are a bargain — even without converting 1985 dollars into 1999 dollars. They are so affordable that rather than complain about downtime, I highly recommend buying spares. It's a better insurance policy than buying insurance. This can be applied to nearly all of the potential mishaps-in-waiting — with the possible exception of software. For essential items you can't do without, have spares. (This includes: hard drives, DAT machines, cables, power supplies, monitors/drivers, fuses, etc.)

## RUSH UP

Some other questions are: "How much would you pay for rush shipping and service charges?" and "Can you expect rush service to have you back online *and* be as good as when a technician takes a little extra time?" I think the quality of service you get is sometimes the quality of service you allow. If you call up hootin' and hollerin' and in a general crustacean state, I'm not sure I'd wanna take any chances with ya! That is, I'd change every part that came in contact with the part that was causing the trouble — especially when someone's paying for overnight shipping. Remember, the technician on the other side of the phone is often way down on the corporate food chain and is probably more like you than the "corporate they" you've pent-up rage for.

## MULTITRACKS OF MY TEARS

If you are someone who is trying to resurrect gear that's soon to be classified as "vintage" (in the least sexy connotation, I'm talking about cassette anything), this one's for you. A recent phone call came asking, "Do you repair the Tasty-Track cassette deck?" No, I don't do analog things any more. "Do you know who

does?" Did you try Bury-Me-Knot Service Center? "Yes, they want \$80 just to tell me what's wrong." Well, what is wrong? "It won't go into rewind and it flutters a lot in play." Saved you eighty bucks so far!

(Note: The prices quoted for cassette decks are most likely for mechanical repairs and not any audio-related problems like intermittence, scratchy pots and switches, etc.)

## SERVICE THAT STICKS

Seriously though, the "right" service center knows the price because they've done the work. A five- to ten-year old cassette deck needs all new rubber parts and clutches. They're not worth much now — though mechanical construction is probably a factor of 100 higher than current models — and certainly not worth fixing twice. The *over the phone* quoted price doesn't have to be accurate in terms of an itemized detail of the work required, but it is designed to help the customer make a decision.

Here's a quick way to do your own estimate. Factor in two hours labor at between \$50 to \$100 per hour, then add parts. Almost anything will cost between \$125 to \$250. Not too high for a multitrack cassette, if you've got tapes to archive. Perhaps too high for a stereo cassette deck (unless you're in love with it). Now it's your call. And don't think that it will "only take a second," because quick, magical service happens in less than one out of 100 cases.

For most digital tape machine repairs, I start at \$300 (add another \$350-\$450 for a head change). Too high? I'd rather prepare people for the worst rather than tease them with an itemized list. People hear the very first quoted price (in a string of numbers) and it sticks. Everyone I know shops for price. There is *some* psychology involved here! Why else would products be tagged \$499.99? Afraid of getting ripped off? All I can tell you is that I charge \$100/hr for labor and expect to spend 2.5 hours on each machine. If that machine needs more attention, I can't charge much more, though I often spend twice as much time!

Not all of your broken toys want to stay repaired after the first round. If you shopped around and determined the "price window" to fall between \$75 and \$300, you'd probably choose the lower. I



learned one lesson a long time ago, "You can never do anyone a favor that doesn't end up making everyone unhappy." Keep those low prices in mind if repeat service is necessary. Mine is the higher price, but I'll take the "problem child" back with a smile (and only charge for the additional parts, if necessary). Most people expect not to pay extra even to a service person who originally undercharged.

If you need the work done and are willing to accept a higher estimate over the phone, get it in writing and get a detailed receipt. You will more likely be satisfied. If no shipping is required, check the unit's functions before leaving the shop.

#### THE UNDEAD

I also hear this story: "You know that thing you fixed eight years ago? Well, I just

plugged it in and it doesn't work." Huh? Gear that sleeps for several months or more may not work the first time you plug it in, especially old analog gear. Exercise all the buttons. Turn it upside down. Put it in your car and drive it to the mall and back (pretending to take it in for service). Sometimes, broken gear works when I get it. Why? Because the vibration during shipping fixes all the intermittent connections for at least an hour!

I can't speak for all service facilities or for any of your bad experiences. There are, though, a few folks who are still trying to provide artisan-style service in an exceedingly mass-produced, disposable age.

*P.S.: I am purging my shop of old service manuals and analog tape deck parts. Visit my Web site at [www.tangible-technology.com](http://www.tangible-technology.com) for the list.*

### THE REAL ANSWER

It all started with an e-mail about my column on the Boston Pre Party — a mic preamp evaluation held in Boston last summer. (A CD was compiled from the two-day session; visit [www.mercenary.com](http://www.mercenary.com) to order one and check it out for yourself.) The sender had purchased the CD and wanted to know my real feelings about the preamps, "off the record," as if I had hidden my true feelings in my column!

There's no doubt that we who work in the press lean toward diplomacy (of course, that hasn't stopped us from ruffling a feather or two...). But as much as readers would like us to get down and dirty and talk trash, all this comes with a responsibility. We, the EQ contributing editors, have been humbled and tempered by the experience of expressing our views in print. That means that we must remember that every issue is read by a wide spectrum of readers, from old-line pros to up-and-coming rookies. Therefore, we must be equally objective when reviewing a \$150 mic preamp or a \$5000 mic preamp. For example, I reviewed the Fostex FD-4 digital multitracker — a unit with a \$499 street price. When it first showed up I thought, "Why did this come?" But, after playing with it for

awhile, I created a song on it and had fun. That was a reality check. Depending upon your needs, there are lots of "right" products.

Writing reviews is a bit like showing visitors around your home city, in my case NYC. When you do it you start seeing and hearing through the visitors' eyes and ears. That's how you need to think when you write reviews — at least here at EQ. I try to make certain that the more inexperienced readers aren't being told to buy every new product that costs more than \$5000.

Check out some other magazines (slight bias coming here...), and you'll see reviewers are consistently positive, offering little more than glorified press releases. I feel responsible that that doesn't happen in my work. I am happy to play with new toys, but I want to apply the right amount of experience. I'm supposed to know what to look for and try to catch the flaws that might cause you to lose a gig. Sure, we're here to get the word out on new products, but to honestly say, "This is the magic box?" Hmmm. The Boston Pre Party was a good idea because it let users make the sonic decision. The real answer is to take in all the information you can and think about what's right for you at a given moment in time.

—Eddie Ciletti



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130	Benchmark Media Systems	10	800-262-4675	130	MTA America	41	716-589-2100
45	beyerdynamic	78	516-293-3200	68	Musician's Friend	42	800-776-5173
113	CAD	97	440-943-0110	115	NHT Pro	43	707-751-0270
101	Carvin	11	800-854-2235	54	Ontario Institute of Recording	44	519-686-5010
81	Conservatory of Recording Arts	12	800-562-6383	11, 79	Peavey	71	601-483-5365
61	Countryman Associates	13	650-364-9988	94	QCA	100	513-681-8400
102	D.W. Fearn Company	86	610-793-2526	21	QSC	77	714-754-6175
4-5	dbx	74	801-568-7660	14	Rockford/Hafner	46	800-366-1619
77	Digidesign	14	415-842-7900	16-17, 103	Roland	26, 76	213-685-5141
72	Disc Makers	15	800-468-9353	44	Rolls Corporation	47	801-263-9053
72	Discount Distributors	67	516-563-8326	57	SAE Institute of Technology	48	212-944-9121
107	Drawmer U.S.	16	805-241-4443	144	SEK'D America/Hohner Media	60	707-578-2023
121	E-Magic	19	916-477-1051	96	Seer Systems	84	650-947-1915
3	Emtec/BASF	65	800-225-4350	163	Sennheiser	49	203-434-9190
63	Event Electronics	79	805-566-7777	47	Shure Brothers	50	800-25-SHURE
55, 97	EVI Audio Gear	17, 18	800-234-8631	51	Sony Duplicator	XX	800-635-SONY
71	FMR Audio	21	800-343-9976	110	Soundcraft Electronics	73	615-360-0456
82, 83	Focusrite	63, 64	516-249-1399	29	Spirit by Soundcraft	51	916-630-3960
105	Fostex	22	562-921-1112	13, 147, 149, 151	Sweetwater Sound	70, 75, 90, 91	219-432-8176
33	Frontier Design Group	69	603-448-6283	152-161	Sweetwater Sound	93, 94, 95, 96	219-432-8176
27	Full Compass	20	800-356-5844	87	Tannoy North America	85	519-745-1158
37	Generalmusic, Inc.	24	800-323-0280	59	TASCAM/TEAC America, Inc.	52	213-726-0303
130	Geoffrey Daking & Company	23	212-749-4931	123	Telex Communications	34	612-887-5500
61	Graham-Patten Systems	25	800-422-6662	130	Terrasonde	53	303-545-5848
145	Great River Electronics	89	612-455-1846	71	The Recording Workshop	54	614-663-2544
60	Guitar Center	27	818-735-8800	125	Thoroughbred Music, Inc.	82	813-238-6485
41, 73	HMB Communications, Inc.	32, 61	310-319-1111	49	TRUE Audio Systems	55	860-434-5220
51	Interactive Microsystems	66	847-426-1950	35, 95, 127	Yamaha	56, 72, 92	714-522-9011
53	JBL Professional	XX	818-894-8850	88	Zefiro Acoustic	83	714-551-5833
109	Jensen Music	45	425-744-1053	67	Zoom Corporation	57	516-364-2244
31	JOEMEEK	28	877-JOEMEEK				



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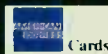
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## DIGITAL MIXERS

# MACKIE

## Digital 8 Bus Mixing Console



Everything you've been waiting for and more!!! The new digital 8 bus from Mackie features 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. See for yourself what the entire industry is raving about.

### 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.



\* monitor, mouse & keyboard sold separately

# Panasonic

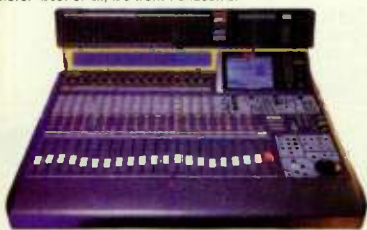
## WR-DA7 Digital Mixing Console



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



\* meter/bridge optional

# 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.



## DIGITAL RECORDING

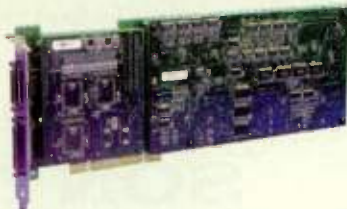
# Lexicon

## Lexicon Studio Recording System

The Lexicon Studio System interfaces with your favorite digital audio software for a complete hard disk recording package. Supporting both PC and Mac, Lexicon Studio can be expanded up to 32 voices from a variety of I/O options. For recording, editing, mixing and DSP, Lexicon Studio is here.

### FEATURES-

- The Core-32 System PCI-Card is capable of supporting 32 audio streams simultaneously. It can also be used as a time code or clock master or slave.
- The PC-90 Digital Reverb daughterboard attaches to the Core-32 providing 2 discrete stereo reverbs.
- The LDI-12T delivers up to 12 channels of simultaneous I/O supporting analog (+4 XLR and -10 RCA), s/pdif, and ADAT.
- Direct support of Steinberg Cubase VST and many other software programs.



### OPTIONS-

- The LDI-16S provides 8 channels of +4 XLR balanced analog I/O, and 8 channels digitally through TDIF. 3 option packages are:  
AES-8, 8 channels of AES/EBU digital I/O  
ADT-8, 8 channels of ADAT digital I/O and sync  
STC-1, Poit option including read and write of LTC, read and generate of VITC, WinEvo-burn, House Sync and a General Purpose Interface for triggering external devices from the system)

## EFFECTS PROCESSING

# t.c. electronic

## Finalizer Express



The Finalizer Express is a fast and efficient way to turn your mix into a Professional Master! Based upon TC's Multi-Award winning Finalizer Mastering Technology, it delivers the finishing touches of clarity, warmth and punch to your mixes, putting the world of professional mastering within your reach.

### FEATURES-

- 24-bit resolution A/D & D/A converters
- 16 & 20 bit dithering
- TC's unique Multiband Comp & Limiter Algorithms
- Boost and cut over three bands with the Spectral Balance Controls
- Soft Clipping and Look Ahead Delay.
- Finalize Matrix for 25 variations in style and rate

- Optimize overall level with the Automatic Make-Up Gain
- Extra compression in each band using Emphasis keys
- Record fades from the built-in Digital Fader or the optional TC Master Fader via MIDI.
- Connections include AES/EBU, S/PDIF, Optical, Toslink & MIDI I/O's
- High Res LED Metering of I/O & multi-band gain reduction

## M3000 Professional Reverb



Incorporating TC Electronic's new VSS-3 technology, the M3000 is a great sounding, versatile reverb that is easy to use. Combining ultimate control of early reflections with a transparent reverb tail, the art of reverberation is brought to a new level. Whether it's a phone booth, cave or concert hall, the M3000 delivers high-quality ambience.

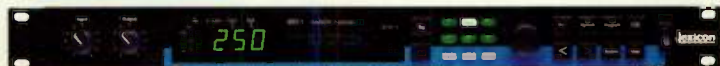
### FEATURES-

- VSS-3, VSS-3 Gate, C.O.R.E. & REV-3 reverbs as well as Delay, Pitch, EQ, Chorus, Flanger, Tremolo, Phaser, Expander/Gate, Compressor and De-Esser
- 300 high-grade factory presets including Halls, Rooms, Plates, Ambience, Gated Reverbs, and more

- Up to 300 user presets in internal RAM and 300 more using an optional PCMCIA card.
- Dual engine configuration featuring 24-bit A/D/D/A's.
- Connections include AES/EBU, Coaxial S/PDIF, Optical Tos-Link/ADAT & analog XLR I/O's, MIDI IN/CUT/THRU, Clock Sync and External Control.

# Lexicon

## MPX1 Multi-Effects Processor



The MPX-1 is truly an outstanding multi-effects device. Using Lexicon's Lexchip, it offers outstanding reverb or ambience as well as a separate processor for effects for awesome power in the studio or on the road.

### FEATURES-

- Intuitive user interface for easy editing, built-in help.
- Balanced Analog I/O (1/4" & XLR)
- 56 effect algorithms
- Digital Inputs & Outputs (S/PDIF @ 44.1KHz)
- 18 Bit A/D; 20 Bit D/A Conversion, 32-bit processing
- >90dB of Dynamic Range
- Intelligent Sorting by Name, Number, Application, etc.
- Parameter Morphing
- Dynamic MIDI patching & MIDI automation

## COMPRESSORS

# PreSonus

## ACP88 & Channel Compressor

Stemming from their popular ACP8, the ACP88 comprises eight channels of compression, limiting and noise gating for a variety of studio applications. It features individual side chain for each channel and it's attractive blue anodized finish lets you show your true sonic colors.

### FEATURES-

- 8 separate compressors/gates with individual controls.
- Servo balanced or unbalanced inputs & floating balanced or unbalanced outputs.
- Individual side chain jacks for spectral compression and a separate sidechain jack for gate processing.

- Each channel boasts full gain reduction metering, compression threshold indication & gate open/close.
- Front panel buttons include hard/soft knee compression, peak/auto compression, bypass, gate range and link.
- Link feature uses a unique summing bus for multiple combinations of master/slave link setups.

## dbx "Silver Series" Compressor

The new Silver Series introduces a 2 vacuum tube circuit design making the 566 no ordinary compressor. Loaded with features including custom designed analog VU meters that monitor tube level, gain reduction, or output levels. Full sidechain functionality, including sidechain monitor, Contour function allows low frequency material to pass through the threshold without triggering un-musical compression effects.

### FEATURES-

- Hand selected Premium 12AU7 vacuum tubes
- +4/-10 operation
- Drive control for a wide variety of great tube effects
- PeakPlus limiter on each channel
- Complete sidechain, OverEasy, and Auto function
- Optional TYPE IV Conversion System outputs
- Separate 1/4" sidechain insert send and return



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## 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 headroom 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.



- 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)
- 12 audio outs: 8x RCA, 2x stereo digital & phones.
- Direct audio CD recording and dda backup using optional VS-CDR-16 CD recorder

## DIGITAL MULTI-TRACK RECORDERS



### DA-88 Modular Digital Multitrack

The 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.

#### FEATURES-

- 1:48 minutes record time on a single 120 min tape
- Expandable up to 128 Tracks using 16 machines
- User-definable track delay & crossfade
- Shuttle & Jog capability
- Auto punch with rehearsals



- SMPTE, MIDI and Sony 9-Pin sync capability
- Options include RC-808/848 Remote Controllers, IF-88AE/IF-885D digital interfaces, MU-Series meter bridge, MMC-88 MIDI machine control interface, SY-88 Sync Card

### DA-38 Digital Multitrack for Musicians

Designed especially for musicians, the DA-38 is an 8 track digital recorder that puts performance at an affordable price. It features an extremely fast transport, Hi-8 compatibility, rugged construction, ergonomic design and sync compatibility with DA-88s.



### ADAT M20 20-bit Digital Audio Recorder

The M20 represents Alesis commitment to meeting the high-standards of world-class audio engineers, producers, studio owners and high-end video and film post production studios. A new professional digital multi-track, the M20 records 20-bit outstanding sound quality. Combined with a host of production features like SMPTE/EBU, the M20 is a powerful tool.

#### FEATURES-

- SVHS Recording format - up to 67 minutes recording.
- 18-XLR connections (9 in and 9 out) as well as a 56-pin ELCO connection.



- 24-bit, 64x oversampling recording, 20-bit, 128x oversampling playback
- Digital I/O
- Includes LRC remote and a digital cable.

### 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-

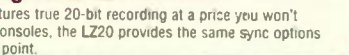
- 10-point autolocate system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.



- Remote control
- Servo-balanced 56-pin ELCO connector
- Built-in electronic patchbay
- Copy/paste digital edits between machines.

### ADAT LX20 Digital Audio Recorder

The most affordable ADAT ever made, the new LX20 features true 20-bit recording at a price you won't believe. Compatibility with all other ADATs and digital consoles, the LX20 provides the same sync options and digital inputs as the big brother XT20 at a lower price point.



## CD RECORDERS



### CR200 Professional CD Recorder

The Fostex name is not all this CD Recorder has to offer. The CR200 features S/PDIF I/Os, balanced XLR analog input, 5 record modes as well as a full function remote. A great choice for burning CDs in any studio or home recording environment.

#### FEATURES-

- Converts any input signal to CD 44.1kHz standard
- Uses both Professional and Consumer CD formats
- S/PDIF Inputs and Outputs for versatile interfacing
- AES/EBU In, XLR Balanced Ins, Unbalanced Ins & Outs
- 5 Record Modes: Records To Red-Book Standards



- Disc Recorded Automatically
- Durable Platter Mechanism Resists vibrations
- Full-function Remote Included

## STUDIO DAT RECORDERS



### DA-45HR Master DAT Recorder

The new DA-45HR master DAT recorder provides true 24-bit resolution plus standard 16-bit recording capability for backward compatibility-making this the most versatile and great sounding DAT recorder available. With support for both major digital I/O protocols plus the ability to integrate the machine into virtually any analog environment, the DA-45HR is the ideal production tool for the audio professional.

#### FEATURES-

- Word Clock
- 24-bit A/D and 20-bit D/A with dither
- XLR balanced and RCA unbalanced analog I/O
- AES/EBU and S/PDIF digital I/O



- Word Sync In/Thru
- Alphanumeric data entry for naming programs
- Independent input level adjustment capability
- Output trim for XLR balanced analog output
- Optional RC-D45 Remote Controller

## Panasonic SV-3800

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



### D-15 Pro Studio DAT Recorder

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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## TUBE MICROPHONES



### SOLIDTUBE TUBE MICROPHONE



The SOLIDTUBE combines the best of solid state and tube technology to provide a "warm" sounding microphone suitable for professional recording applications.

#### FEATURES-

- Large diaphragm condenser
- Integrated pop screen surrounds the capsule, reducing excessive pop noise
- ECC 83 (12AX7) vacuum tube which provides perfect transfer characteristics
- Includes elastic shock mount
- Low-cut switch, Ground lift switch



### audio-technica. AT4060



Coming premium 40 series engineering and vintage tube technology, the AT4060 delivers a versatile and competent studio microphone. Low-noise and high SPL capabilities make the AT4060 a premier vocal mic as well as strings, guitars and other recording applications.

#### FEATURES-

- 20 - 20,000 Hz freq response
- Dual gold-vaporized large diaphragm elements
- Includes the AT9560 power supply, AT8447 shock mount, rack mount adapters and case.

## MICROPHONES

### SHURE KSM-32



The new KSM32 side-address microphone features an extended frequency response for open, natural sound reproduction. Suitable for critical studio recording and live sound production, Shure steps up to the plate with another classic.

#### FEATURES-

- Class A, transformerless preamplifier circuitry for improved linearity across the full frequency range.
- Exceptionally low self-noise and increased dynamic range necessary for highly critical studio recording.
- 15 dB attenuation switch for handling high SPLs.
- Switchable low-frequency filter to reduce vibration noise or to counteract proximity effect.
- Great for vocals, acoustic instruments, ensembles and overhead miking of drums and percussion.
- SL model also features an elastic shock mount which greatly reduces external vibrations.

### BPM CR10



Hand-crafted in East Berlin, the BPM CR10 Studio Condenser Mic features a full frequency response for competition against the best of the best.

#### FEATURES-

- 1" Gold diaphragm
- Suitable for most guitar and vocal recording applications.
- Includes Custom Aluminum Road Case, XLR-cable, wind screen and elastic suspension.

## SAMPLING

# AKAI



### \$5000 & \$6000 Studio Samplers

Akai is proud to announce its next generation of samplers with the introduction of the S6000 and the S5000. Building upon Akai's legendary strengths, both machines feature up-to 128-voice polyphony and up-to 256 MB of RAM. They use the DOS disk format and .WAV files as the native sample format allowing standard PC .WAV files to be loaded directly for instant playback - even samples downloaded from the Internet into your PC may be used. And of course, both the S6000 and S5000 will read sounds from the S3000 library.



#### FEATURES-

- OS runs on easily upgradeable flash ROM.
- 2x MIDI In/Out/Thru ports for 32 MIDI channels.
- Stereo digital I/O and up to 16 analog outputs.
- 2x SCSI ports standard
- Wordclock connection
- Optional ADAT interface provides 16 digital outs
- .WAV files as native sample format

#### \$6000 ONLY FEATURES-

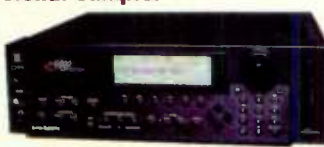
- Removable front panel display
- User Keys
- Audio inputs on both the front and rear panel allow you to wire the S6000 directly into a patchbay from the back and override this connection simply by plugging into the front.



### E-mu Systems, Inc.

### E6400 Professional Sampler

The e-6400 from EMU features an easy interface that makes sampling easy. Automated features like looping, normalizing and more allow you to flexibly create your own sound palettes or access any of the 400 sounds provided on 2 CDs for unlimited sound creation. It is upgradeable to 128MB of RAM (4MB standard) and features 64 voice polyphony, 8 balanced analog outputs, SCSI, stereo phase-locked time compression, digital re-sampling and more. A dream machine.



## MIC PREAMPS

### Focusrite Green 3 "Voicebox MKII"



The Voicebox MKII provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice, and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications.

#### FEATURES-

- +48V Phantom power, phase reverse, and a 75Hz high-pass filter.
- Mute control and a true-VU response LED bargraph are also provided
- Includes a Mid-Parametric band with controls especially designed to enhance vocal characteristics.

- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu
- Dynamics section offers important voice processing functions such as compression and de-essing combined with a noise reducing expander.

### dbx 586 Vacuum Tube Mic Pre

The DBX 586 Vacuum Tube Dual Mic Preamp uses hand selected and matched premium 12AU7 vacuum tubes ensure ideal characteristics for a warm, distortion free signal path. Custom designed analog VU meters monitor tube level insert path or output levels well Line/Instrument and mic inputs make the 586 versatile enough to use with virtually any input source.



#### FEATURES-

- Mic or line/instrument inputs on each channel. +4/-10 operation.
- Drive control for a wide variety of great tube effects
- 3-Band EQ with sweepable frequency
- Optional TYPE IV Conversion System outputs
- Separate 1/4" insert send/return on each channel

### JOE MEEK VC1 Studio Channel

The Joe Meek Studio Channel features three pieces of studio gear in one. It features a transformer coupled mic pre, compression and a professional enhancer together in a sleek 2U rackmount design!



#### FEATURES-

- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- High pass filter for use with large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out & VU/Compression meter
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC

## MONITORS



### M6000/S Studio Monitors

The KRK M6000/S are designed for close-field monitoring. A smooth frequency response in a compact size make these units portable and efficient.



#### FEATURES-

- High power handling
- 62Hz - 20kHz, ±3dB
- Compact and portable
- Low distortion
- Smooth frequency response
- Custom Gray finish.

### Hafler TRM-8

#### Powered Studio Monitors

Winner of Pro Audio Review's PAR Excellence Award

In 1997, Hafler's TRM8s provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an active crossover, and Hafler's patented Trans-nova power amp circuitry.



#### FEATURES-

- 45Hz - 21kHz, ±2dB
- 75W HF, 150W LF
- Electronically & Acoustically matched

## MACKIE

### HR824

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



#### FEATURES-

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

### TANNOY Reveal

The latest playback monitor from Tannoy, the Reveal has an extremely detailed, dynamic sound with a wide, flat frequency response.



#### FEATURES-

- 1" soft dome high frequency unit
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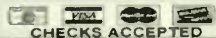
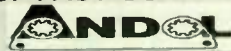
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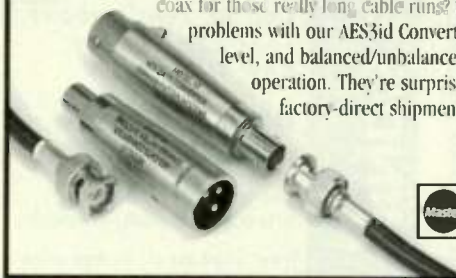
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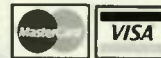
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# Why MP3 and For How Long?

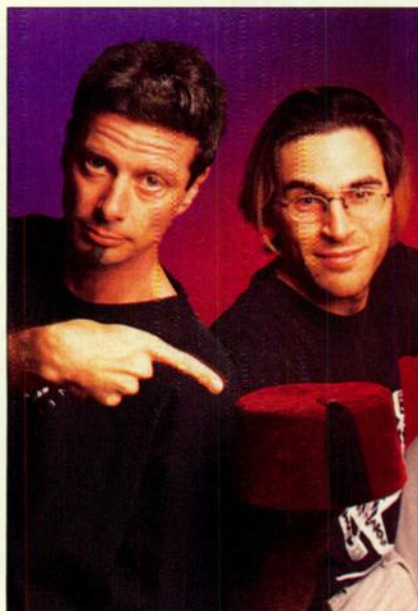


PHOTO BY STEVE JENNINGS

## The real truth about MP3

BY JON LUINI AND ALLEN WHITMAN

You've probably been hearing a lot about MP3 lately. Maybe you've downloaded or encoded music in that format, maybe you (like so many other people) entered the phrase "MP3" in a search engine looking for new sounds. Maybe you received a cease and desist letter from a downtown New York law firm on expensive linen letterhead demanding, ever so politely, that you shut down your Web site. Or maybe you read the papers and notice that even the most cursory glance at the consumer electronic industry will reveal any number of new products that play MP3-encoded music in your car or as a portable "Walkman-like" device. Does MP3 really deserve this much attention? Is it worth your time to learn about and use this codec? Well...yes and no. Obviously, most hype is built around a kernel of truth. To get to that kernel, let's ask a few questions. Maybe we can get the birdseye low-down on this caper.

First, a moment for full disclosure: we FezGuys think that investing your time and energy encoding your music with MP3 is, for the time being, a good idea. Let's face it, it's popular — more popular than any

other digital music download format. We think you should educate yourself about the format and its many uses. There's millions of people with players looking for MP3-encoded music on the Internet. Why not take advantage of the situation? That said, let's shine the Bat Signal on the cloud of information.

**Does MP3 sound that good?**

Yes, but not necessarily better than other codecs. Focusing on audio quality alone reveals that MP3, MP2, and Dolby Digital all sound roughly the same at higher bit rates (128 kbps throughput or above). This is the standard defined by that much-abused phrase: "near-CD quality." Also, the recently released RealNetworks G2 codec sounds a smidgen better than MP3. The new AAC (sometimes mistakenly labeled "MP4") codec (as of this writing still untested in the research labs of FezOps) holds a lot of promise. Given that AAC is the next-generation open standard of MP3, it stands to reason that this new codec could take the place of MP3 as the most efficient and good-sounding digital music download format. So, yes, MP3 sounds good enough to use, but there are other options. Your choice should take into consideration exactly what your needs are. Consider your audience and the application of your audio. Not everybody is using audio codecs merely for music. There's a wide array of educational and industrial audio, as well as audio books, taking advantage of Internet distribution. Why choose MP3 instead of MP2, RealAudio, Dolby Digital, AAC, or Liquid Audio? The fact is there isn't necessarily a best codec. MP3 has recently gained the lion's share of the market and media exposure, and that's what really matters to independent musicians. Since more people seem to have MP3 players for direct

downloads than the other kind, we'll certainly benefit from encoding our material in this format. Independent filmmakers don't release their work on Betamax cassettes at the consumer level. Nobody could view it. So it's all about audience size. MP3 is in the press, it's on people's minds, and millions of listeners have a player of one kind or another. For now, the popularity of MP3 is like a glacier: an elemental force of nature. We can't stop it, so we might as well enjoy it.

**What key factors differentiate MP3 from other formats?**

We don't see any consumer electronics manufacturing giants creating hardware playback devices for RealAudio (or any other format) encoded music. A common complaint about downloadable music seems to be that you can't listen to it in a car. MP3 (with a little help from those same manufacturers) has changed all that. With the release of the widely recognized Diamond Multimedia RIO MP3 portable music player and the expected release of many more such devices for the home or car, all indications are that the consumer electronics industry supports the technology. Once again, where there's money to be made, form follows content. It's also important to remember that MP3 is no longer primarily a streaming technology. Its most common use is download-only.

**Is MP3 going to last as the number one public digital audio format?**

No, nothing ever does. (This philosophical message brought to you by Nothing Ever Lasts, Inc., a wholly owned subsidiary of ButThatsOk.com: "Napping For Peace.") Though MP3's audience will drop off eventually, it's clear that, for the time being, the format continues to grow in popularity. MP3's marketshare could be eclipsed if major labels actually agree and

*Focusing on audio quality reveals that MP3, MP2, and Dolby Digital all sound roughly the same at higher bit rates (128 kbps throughput or above).*

implement a functional digital download format that benefits not only the big guys, but consumers and musicians as well. But we're not holding our breath. When it comes to online distribution of their music product, they can't agree on anything, except that it's coming. **What about the crackdown on illegal MP3 sites and the image of MP3 as a tool of pirates? Will I be a criminal if I use this format?** Many uninformed lawyers, politicians, and major label board members would like you to believe that. Hey! If you're

lucky...imagine how much money you can make selling the rights for the story of how you were wrongfully accused...an innocent in a den of sharks! It'll be big, big, BIG! Actually, the closing of "illegal" MP3 sites (pages that offer encoded music files of copyrighted music without permission from the rights holder) has a hidden benefit of sending people to the (legal) independent musician sites. Very few mainstream musical acts provide MP3-encoded music files. That leaves you and your sound a lot of room for

now. Don't wait too long, though. Before you know it, entire catalogs of smaller labels may be online in MP3.

**If MP3 is so great why doesn't the music industry adopt it?**

Indicators point to the eventual adoption of some tweaked form of MP3 by mainstream music labels. That news is good and bad. Good because industry alliances are being formed around MP3 downloadable music. Bad because when large organizations co-opt an idea or technology to fit their own needs, the original intent (and more importantly backwards compatibility) often becomes buried beneath layers of profit-driven expediency. What good is the industry adopting MP3 if the millions of free players can't play the files because they're trapped behind a wall of encryption?

Some indicators that the industry is taking a close look at MP3: The Harry Fox Agency (they represent the big music publishers) issued a license for GoodNoise.com to place downloadable MP3 files on their Web site. GoodNoise.com also signed an agreement with Rykodisc to put files from their catalog on the GoodNoise.com Web site as pay-per-download. Though no one has mentioned it officially, we can only assume the deals are related.

Also, The Madison Project by IBM will encode more than 2000 albums and singles (with the blessing of the large music labels) in encrypted MP3 and other formats. The music, liner notes, and artwork will be available, for a fee, to 1000 subscribers of Time-Warner's RoadRunner cable modem network. If those 1000 test cases buy lots of stuff, the Project will be expanded to regular dialup modem users. The audio will be high quality and the price will be around the same as purchasing the CD at a retail outlet. It's always amusing to watch how companies pretend to offer extra value and privilege while actually masking a thinly veiled sales pitch. Sort of a sideways version of "the more you spend, the more you save!"

Another indicator of MP3's undeniable percentage of the marketshare is the announcement by industry darling Liquid Audio (winner of the "Riding the Horse in the Direction It's Going" award) that they are planning to add MP3 capability to the next generation of their products.

For more information on MP3, try out [www.mp3.com](http://www.mp3.com) or [www.wirednews.com/news/mpthree/](http://www.wirednews.com/news/mpthree/).

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## ACROSS THE BOARD

continued from page 162

risk as there was five years ago. If the CD failed to cut properly, it would only take 7 minutes and cost 49 cents. If the artist wants to make the CDs himself, he just buys the CD recorder, plugs it into his PC, and the ten CDs will average about \$30.

Now the same thing is happening to the mid-level guys that happened to the big guys ten years ago. The next lower level of entrepreneurial CD duplicator guys are trying to get all of the business. The big difference here is the level of experience in the different situations. To get the highest quality product, you need the experience of the mastering engineer to help you out of the rough spots. The mastering engineer has mastered hundred or thousands of albums and knows what the sonic qualities need to be to compete with the high-budget record company releases.

If you want a bunch of good quality CDs, this is what you should do: Go to a real mastering facility run by a guy who has the experience and knows what they are doing. Have them do the EQ'ing and leveling and spacing that is needed to make your project stand out in the crowd. They will cut you a CD reference disc that includes all of the enhancements. If you want to eventually get 500 CDs pressed at a CD plant, let the professional make the CD master that goes to the CD plant. This will guarantee that the CD will not be rejected on technical grounds by the CD plant.

With the CD that you have approved, you can go to one of your friends, or the guy down the block, and have him make 10 or 20 CD copies for you using your CD as a master. It is, however, up to you to make sure that the guy down the block does it right. The copies should be digital clones of your original. Are you sure they are? The blank CDs used should match the drive used to burn them. Some generic CD blanks have low error rates near the center, but can become unplayable toward the end of the program. Are you sure he is using the good CD-R blanks, or just the cheapest? Maybe you would be better off letting the professional guy cut you additional copies. They may cost a little more, but you know that when you send it to that big record producer you met, it will play back on his CD player.

### NOT JUST CDS

A friend of mine has a little postproduction studio in Miami. He made a

pretty good-sized investment in Pro Tools, professional digital video decks, digital consoles, ISDN lines, acoustic treatments, and professional multi-track machines. He wanted to fill the niche just below the high-end audio post houses. He was a songwriter, a good engineer, a good musician, and a great drummer. Clients came to him to get their jingles cut and their sound design done for their commercials. Business was good. Recently, each of his clients decided to buy their own Pro Tools systems and put them in an empty office at their own locations. Each client grabbed the closest staff person who was willing to learn Pro Tools and

make them the in- quality is lower, it tak do, and my friend has clients.

Until clients realize that has a value, and a price, this tr going to continue. Your edge is that you know that quality makes a difference and, when that producer hears your compact disc, it is going to sound ten times better than all of the others he just listened to.

Russell Bracher (he said if I mentioned his name that I could stay at his house when I'm in L.A.), another friend of mine has a motto: Buy Cheap, Buy Again! I think he is right. **EQ**

### left brain

Discrete solid-state class-A topology; Jensen input transformer into FET input circuit.  
Noise: EIN < -129 dBv unweighted, 20 Hz to 22 KHz, 150  $\Omega$  termination resistor; Frequency response: 5 Hz to 50 KHz  $\pm$  0.5 dB (mic input) 2 Hz to 80 KHz  $\pm$  0.5 dB (Hi-Z input); Distortion: CCIR-DFD2 (1K) method = < -72 dBv @ 8V rms into 150  $\Omega$  load. (all measurements @ 40 dB gain).

### right brain

Silky sound noiselessly dazzles with sparkling clarity & stunning dynamics. Yee-ha.

### no brainer

The price: \$1250 for the MP-2 (2-channel). \$1975 for the MP-4 (4-channel). No matter how you look at it, it's the mic pre-amp you've always had in mind.



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## PROD'N CONCEPT

continued from page 62

unusual for you to start a project as a techno-pop/dance crossover thing, and have it end up as the ultimate underground/trash/metal crossover thing ever created.

Sticking with a production concept is really quite easy. Just keep asking yourself: Is this what I started out to do? Is this an honest effort? Is the emotional content real? Am I on-concept? Write your production statement down. State it for your clients. Share it with your production team and with your artists. The mark of a truly professional producer is his or her ability to state and create a production concept.

For your next project, do yourself the honor of stating and sticking to your production concept. I think you'll be surprised at just how big a difference it makes. Gear is great! High-tech gear is even better! But nothing is as good as using your ears, your heart, and your mind to execute a production concept that you believe in. It is truly what separates the pros from the hacks. Good luck!

*Shelly Palmer is a two-time ASCAP award-winning composer. His television theme credits include Spin City, Live with Regis & Kathie Lee, MSNBC, and NBC News. He is also president/creative director of Shelly Palmer Productions. The company specializes in music for advertising, film, television, and radio.*

## BLUE MIC AUDITION

continued from page 114

Unlike an output pad, this control actually changes polarization voltage at the capsule membrane from a minimum of 34 volts to 60 volts (typical) at the "0" position, and up to 90 volts at the maximum.

There was one characteristic of The Bottle that puzzled us. Tapping on the exterior of the mic produced a distinct resonance in the vicinity of 100 Hz. It could not be heard acoustically, but was present in the audio output of the mic regardless of which capsule was used. In fact, it was even present in the audio output when there was no capsule on the preamp. This resonance could be excited in a high-SPL situation and skew the low-frequency response of the

mic. Perhaps BLUE can come up with a way of dampening it.

Although The Bottle has a nostalgic look to it, make no mistake that this is a well-executed, modern design (inside and out) using premium parts such as WIMA and Multicap capacitors. Exterior finishing is beautiful — even the brass screws look good. A lot of attention was paid to the finer points of design, such as the manner in which the tube/socket combination is shock-mounted within the body. A similar shock-mounting concept is applied in the capsules, mechanically isolating the diaphragm/backplate from the shell.

Obviously BLUE's The Bottle isn't going to be for everyone, particularly those with a shallow bank account. However, The Bottle presents a higher level of craftsmanship than most mics, and with the various capsules available, it really is a microphone system. It's a precision instrument and an investment. Like a Rolex watch or a Lamborghini auto, that craftsmanship comes at a price. For engineers who'd rather wear a Rolex than a Timex, The Bottle could be the next family heirloom.

**MANUFACTURER:** Baltic Latvian Universal Electronics, 14435 1/2 Dickens Street, Sherman Oaks, CA, 91423. Tel: 818-986-BLUE (2583). E-mail: blue@bluemic.com. Web: www.bluemic.com.

**PRICE:** The Bottle, \$4500, complete with one capsule, 9610 power supply, Champagne cable, and flight case. All capsules retail at \$950, except for the B4: \$1400. Champagne cable: \$99.95/20 feet; \$5 per foot additional.

**EQ FREE LIT. #:** 109

## TC ELECTRONIC

continued from page 122

same neighborhood. My sonic herding instincts were good, even though I burned the oil that night. Had I made a big mistake, my notes and the presets were all in order.

### TAKE ADVANTAGE OF TECHNOLOGY

Now, more than ever, I understand why mastering engineers are up in arms about the excessive use of compression. Listening to all the mixes, with fresh ears, on great monitors — Dynaudio BM15A's — excessive processing is more than obvious, it's annoying. If you're guilty of dynamics

abuse, the ability to record 24-bit could change your life.

Rather than play the carnival game of trying to get as close to 0 dB Full Scale without hitting the digital "over" gong, you can now be more conservative during the mixing process. Unlike the magic processors of old, TC's DBMax (and Finalizer) can be tuned to your style of mixing — after the fact — so that you can comfortably record to 24-bit without relying on a dynamics processor to maximize the signal. Then, use the DBMax during the premaster phase, customizing it to the specific needs of each piece. After that, if necessary, use it to dither the 24-bit mix down to your 16-bit destination of choice, allowing you to keep a clean Hi-Fi master.

Granted, broadcasters will assume the lowest common denominator — a car stereo with 5 watts per channel (plus wind, engine, and road noise) or a similarly powered boom box. Radio broadcasts need to squish your 16-bit mix into about 3 bits, 4 bits on a good day.

### DIGESTING CROW

I often listen to Sheryl Crow's *Tuesday Night Music Club* while writing. Sure, it's a bit overcompressed, and that is part of her sound, even several albums later. Just for fun, I put the CD through the DBMax and "expanded out" some of the compression. The results were surprising. All of a sudden, ear-tickling transients gave localization cues — I could hear space in the mix — instruments seemed more present and three-dimensional.

Perhaps it seems odd to take a device designed to make things as loud as possible and go the other way, but the DBMax is surprisingly effective in both directions. If you need a stereo signal processor that can be transparently gentle or seriously aggressive, the DBMax can live in both worlds, making it both a sonically and monetarily effective solution.

### FINAL-IZED COMMENTS

The Bypass switch (naturally) does not hard wire the input to the output. Doing so could actually cause major glitches because this is a digital box and clocks get upset when they get interrupted! Instead, it makes a soft transition from "Process IN" to "Process OUT." My beef is that the transition time is too long and that the sound of the transition is too obviously "digital." It should be faster and, if real estate permitted, I'd like to see a real Bypass switch and the current switch relabeled as "Process: In/Out."

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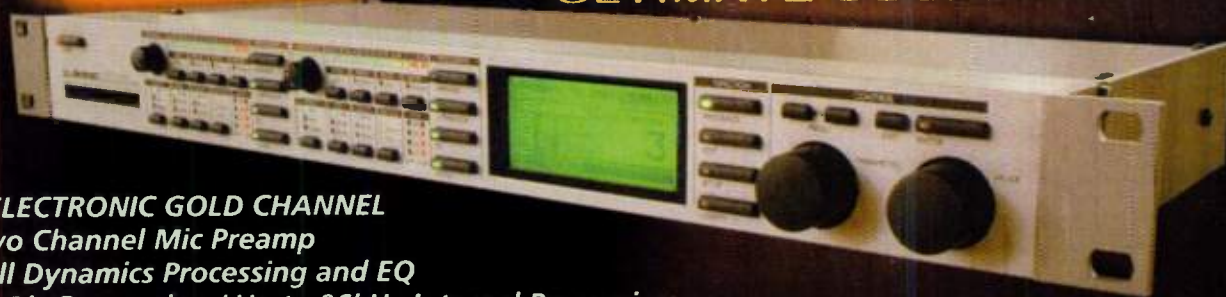
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## KORN LIVE

continued from page 96

tioned that you were going to try and get Jonathan Davis to use personal monitors.

He's tried them and he's interested in using them, but with the amount of jumping around that he does, he doesn't feel comfortable with the pack banging around. I do have a feeling that he's going to work his way towards using them. But, right now, he's not using any wedges at all — the only thing he's using is what he gets off the house and the side fill. Head and Monkey are also interested in going to personal monitors as well. We had very little rehearsal going into the Family Values tour, and they didn't want to try something new on a tour where we had no soundcheck and we didn't even do line checks until right before the show.

**As a whole, how bad is the band's actual stage volume?**

The stage isn't that bad. The guitar rigs are totally reasonable. Even in the rehearsal space, where we did band rehearsals in L.A., the guitars weren't even that loud. The guitar cabinets are never really a problem because Head and Munky are offstage far enough and they're not that loud. Like I mentioned before, Fieldy has cleaned up his click and the wedges have gone away from David. The only real stage volume that I'm getting that's really not what I want to have is the amount of cymbals and snare drum that come through the vocal mic. That's just a necessary evil that has to be there because David can't play softer and that's where Jonathan sings. I'm really not getting killed by backline noise other than the drums. The monitors are also real reasonable.

**How are you handling Head and Munky's guitar rigs?**

Both guys run regular Mesa Boogie heads with Marshall cabinets. I'm using a Beta 52/Beta 56 combo that works really well. Munky has a separate amp that is just for his clean sound, and I run a Beta 56 on that. It's all straightforward and clean. There's nothing really funky going on there.

**Do you have a solid technique for miking Jonathan's bagpipes?**

There's a Shure UHF rig on the bagpipes with the 798 mic on there. We're going to go to two mics so we can get the chanter and the drone, but right now it's just the chanter. We've been doing this for the last couple of years, and it has

worked fine. It's hard to mic something that has so many sources of sound and then have a guy walk around on stage with it. I don't think we're ever going to achieve exactly what we want until we get Jonathan to stand in one place, but that's not going to happen in this kind of rock show.

**Where are the bagpipes sitting in the mix?**

Right now, on "Chutes and Ladders," he comes out and does the intro by himself and I'm laying in a hall reverb on top of it and a little bit of delay as he does tonal changes. It's pretty loud, and I just lay it where I think it's going to be right when the guitars come in on the heavy end. Most of the time I'm pretty much there. It's pretty loud — when it's by itself you'll hear people say, "Damn, that's loud." But, when the guitars come in, it really fills in around it and they realize it's really not that loud.


**Both Head and Munky are using detuned 7-string guitars and Fieldy's got more of a midbass tone — how are you handling the low-end mix?**

I'm rolling the high-pass up on the guitars to around 130, but that allows enough meat there so they definitely sound fat, especially with the low string on the guitars. The high-pass filter on the bass all depends on the room. So between the guitars and the big fat kick drum, even if I have to play with Fieldy's bottom end, there's plenty there for it to be good and fat. Now that Fieldy has mellowed out the amount of 4k-area, it's a lot more pleasant to deal with. Last year there were some days where it was just too much — now, there's plenty there and his tone's there. There are a couple of spots where he's doing some distortion things where I'll boost something in the upper mids just to make the distortion really jump out — kind of like an accent.

**Are you processing the guitars at all?**

That's all Head and Munky. I really run stuff pretty much flat, as much as possible. The Harrison EQ is really good, and with these guys' guitars, they sound like they're supposed to sound. All of the funky sounds that you hear is them and their pedalboards.

**What are you pushing through the subs?**

The way we have the Showco rig set up is a normal five-way stereo configuration. A lot of guys will do separate aux sends for their subs, but I don't. If that frequency is in the instrument and it's in the input, that's where it goes. I don't route stuff specifically to the subs — if that frequency range is there, it goes there. 

## WOMAN'S TOUCH

continued from page 83

it doesn't need it, leave the compressor off. Many times I use compressors like I use instruments.

**Jen: Like as effects or as a part of the sound?**

Sylvia: Yes, as an effect or as a part of the sound. It's the selection like the Gretsch with the Matchless through a compressor. That can be a good combination, too. I love BA6A RCA compressors on vocals and overall compression on the mix with a Fairchild 670. If you can get it.

**Susan: [Long sigh.] I'm in Pittsburgh.**

**Jen: You're making her drool now. Don't talk about that kind of stuff.**

Sylvia: The LA3A's are real nice, too. And dbx 160's, overall, I think are really great-sounding compressors.

**Susan: Especially for guitar.**

**Jen: I like those on vocals, too.**

Julie: I've had very good luck with the dbx 165A. On vocals especially, but also on acoustic guitars. I find it to be very vocal friendly. Obviously, compression came to be because of the limitations of analog and we're not in that world generally very much anymore. So, it is something that can be used more for its sonic qualities rather than as a fix.

**Jen: That's a really good point.**

Sylvia: Do you record digitally a lot?

Julie: No, although I've done several projects using digital 8-tracks and I've been learning Pro Tools. I would say that for anybody coming up now or learning engineering, that it's essential to learn about hard-disk recording because that is absolutely the way the future is going. Whether we like it or not. That's what we're all going to be working with, so it's important for everybody to get experience in that realm.

Sylvia: Yeah, that whole Pro Tools thing. Hanging over a video monitor. *[Big sigh.]*

Julie: Yeah, it's going to be different.

Sylvia: But, it's good. *Parts* of it.

I'd like to thank Sylvia, Susan, and Julie for participating and being willing to reveal some of their trade secrets. At press time, Barenaked Ladies have been nominated for a Grammy. I guess that mono drum thing really does work!

*The author wishes to thank Ocean Way for the room and to Mom and Tris for transcribing. Jen can be reached via e-mail at JM24@aol.com.*

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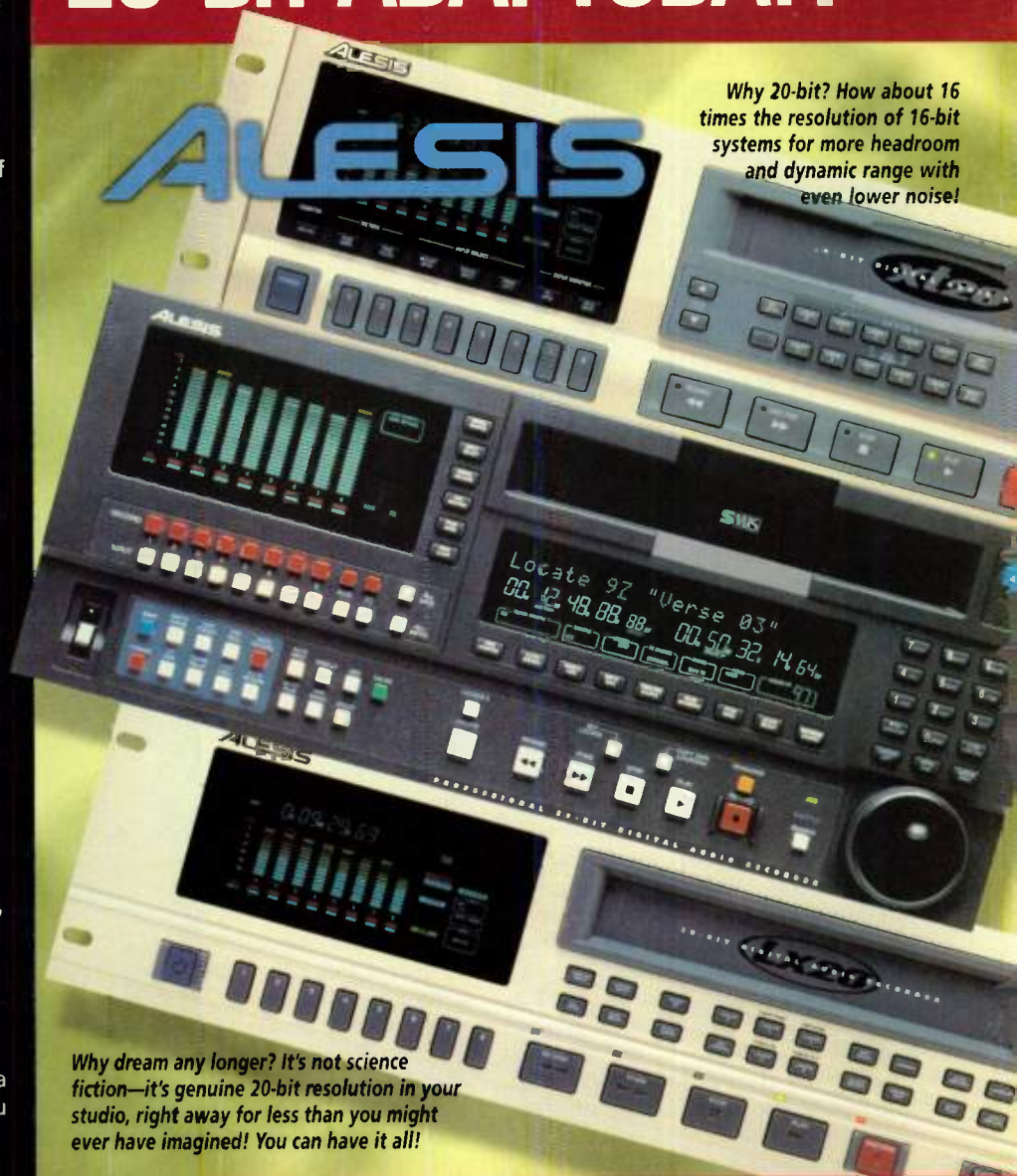
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# Taking Stock

A place for  
everything and  
everything in its place



BY MARTIN POLON

How many times has a recording specialist entered a studio to set up for a session, only to find that something crucial — or not so crucial but still needed — is missing. This precipitates the quaint practice of someone screaming, "Where the 'blank' is the 2-channel frammer jammer!" Chaos ensues while no "stone remains unturned" in the studio complex.

Accusations fly through the air faster than anti-aircraft fire hurled at an Lockheed F-117A stealth bomber headed for a "So Damned Insane" Iraqi barbecue! "It was Jeff and his band, they must have taken it," proclaims one studio staffer. Finally, after accusing everybody but Bubba and Monica, the offending device is found in the basket of old *EQ* magazines waiting to be read in the men's bathroom.

That this is no way to run an airline, let alone an recording studio, goes without saying. This is the one area where more recording operations get into logistics trouble than any other single studio practice.

The answer is to have a viable and clearly defined inventory of everything — and that means everything — that belongs in a given studio. This inventory is to be used as the basis of performing an accurate check after every recording session or other usage of each and every facility.

What is important to recognize here is that this is not necessarily pointed at clients or their potential for "studio lifting," but simply to prevent items from being lost or misplaced in any way

shape or form within the studio.

The following steps will help to make this inventory process as painless as possible while maintaining the accuracy.

1. Conduct an accurate inventory of each room in your facility. Everything should be listed, including XLR shunts for ground lifting and phase changing, microphone cables, mic stands, adapter boxes, etc.

2. Use a state-of-the-art computer database for the inventory. Whether you use a Macintosh or a PC, there is well-designed software for this purpose.

3. Use the first draft of the completed inventory to identify items already missing and replace them — so that for each room there is a "zero" base inventory of what should be there!

4. Each item, whether it is a Cannon XLR-type phase changer or an outboard compressor, should have your studio's name engraved on it or on a printed metal tag adhered with an unremovable epoxy or other mastic.

5. Each item should also have a clearly visible color-coded letter or number affixed for the appropriate studio.

6. The item should also have a unique number to itself. So an outboard equalizer might be identified as 4-56 for Studio 4 (or Room 4), item 56.

7. One way to ease the burden of taking inventory is to automate the process with a palmtop personal device

and a program that reads from a digital wand. The affixed barcode stickers that you install, which conform to the assigned studio item numbers discussed above, will make this all possible. The


palmtop and its inventory program also connects to the PC with the equipment inventory database and reports the compared outcome.

8. If there is any concentration on remote recording, create a dedicated suite of portable equipment for that role without "cherry picking" from equipment in other studio facilities and rooms.

Now, this is not a task that anyone looks forward to doing. Taking inventory is not fun. But, even in the smallest project studios, the need to have each and every device associated with recording available for every session is very important.

As to what to do about "things that disappear in the night," with an inventory process in place one can formulate a response with the full knowledge of when something ceased to be available in a given studio. The recommendation here is to not blame groups recording in your facility, especially if the loss is under \$50. The inventory process does identify when something disappears, but it does not deal with small items that inadvertently go home in the pockets of studio staff members or end up in bathrooms,

kitchens, reception areas, or offices.

The advantage of this process is that a permanent record will now be available on computer. 

*One way to ease the burden of taking inventory is to automate the process with a palmtop personal device and a program that reads from a digital wand. The palmtop and its inventory program also connects to the PC database.*

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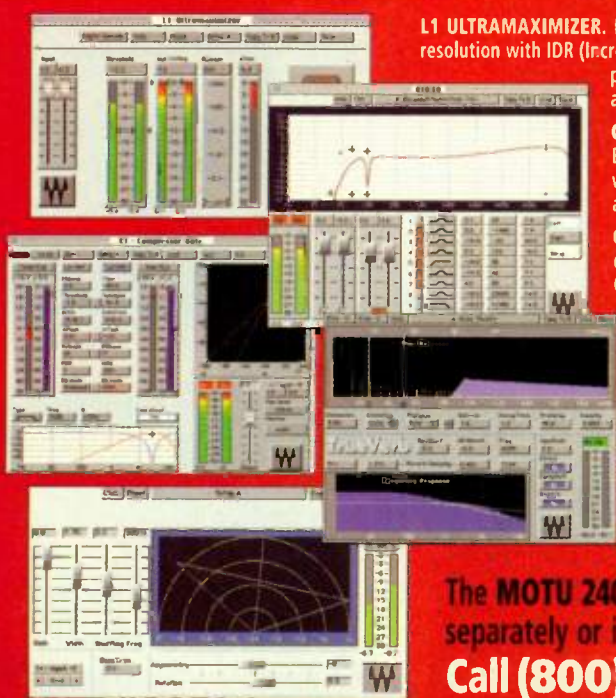


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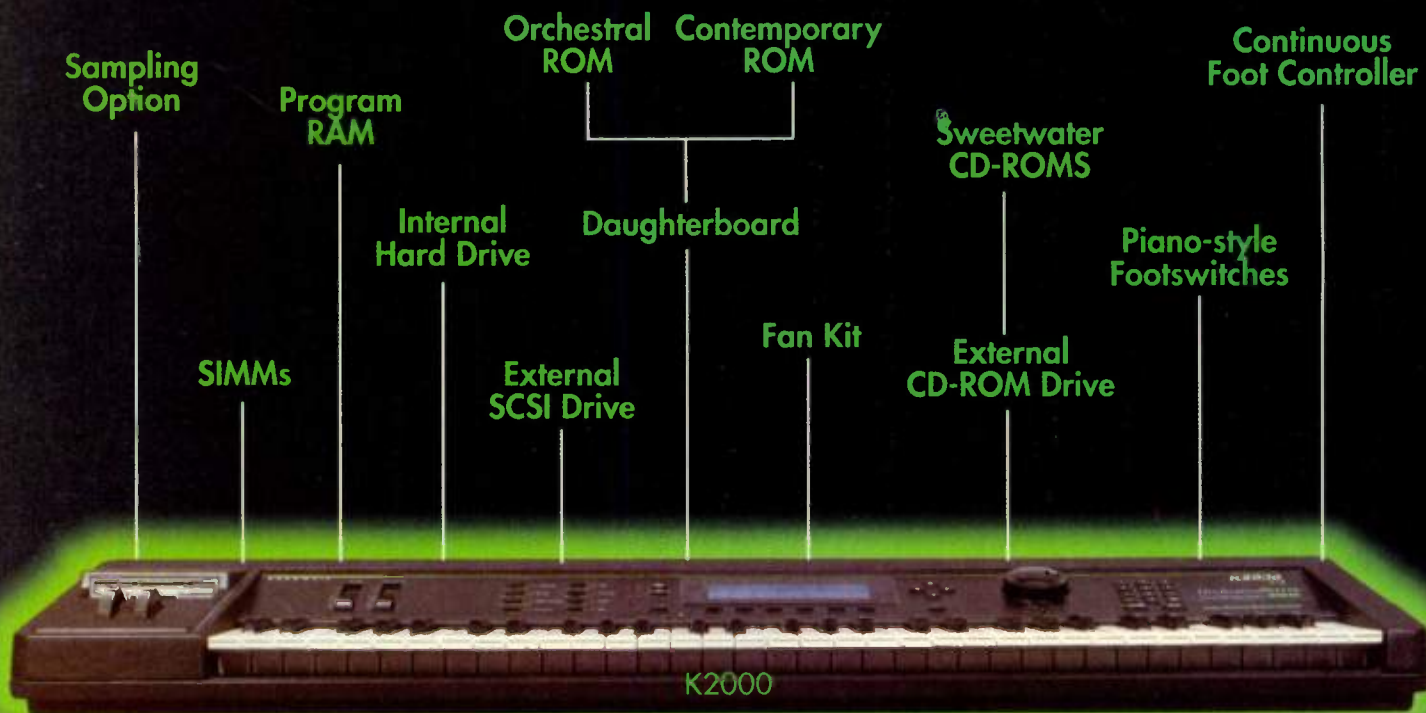
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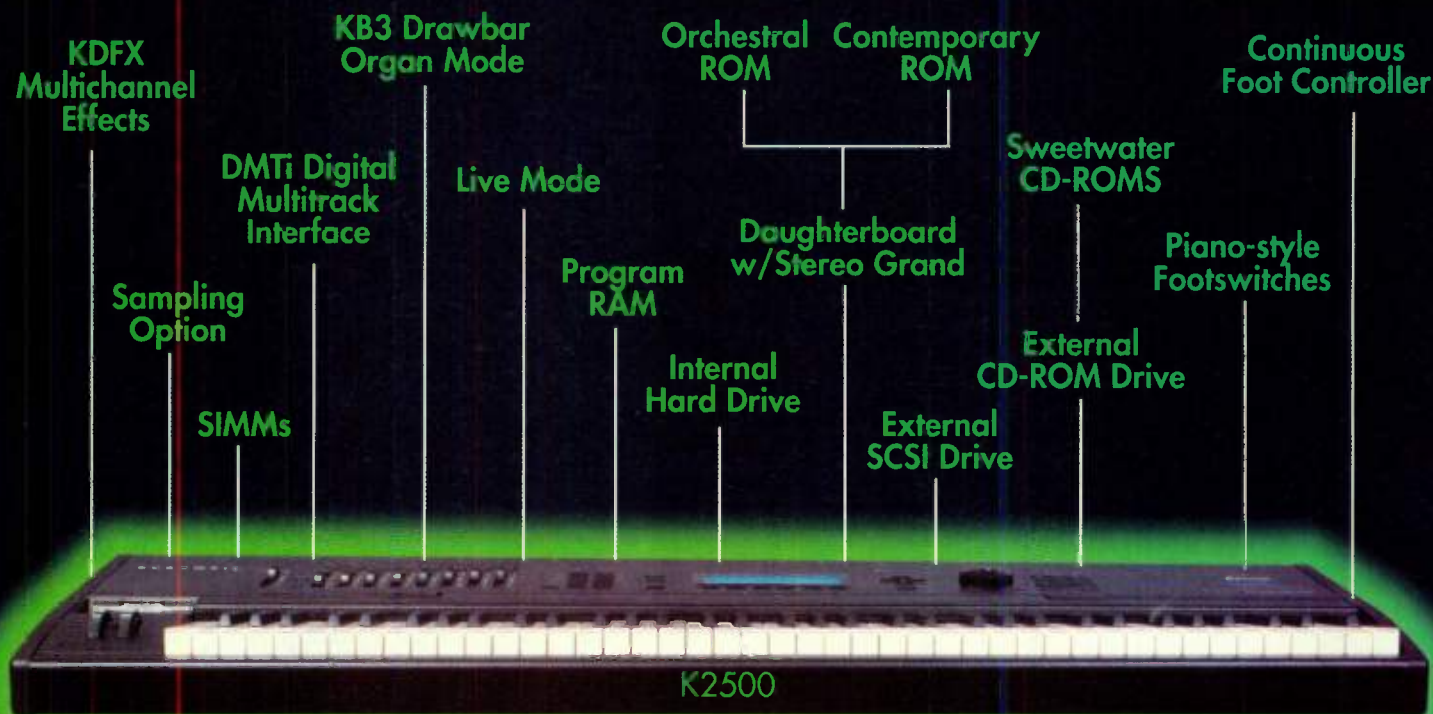
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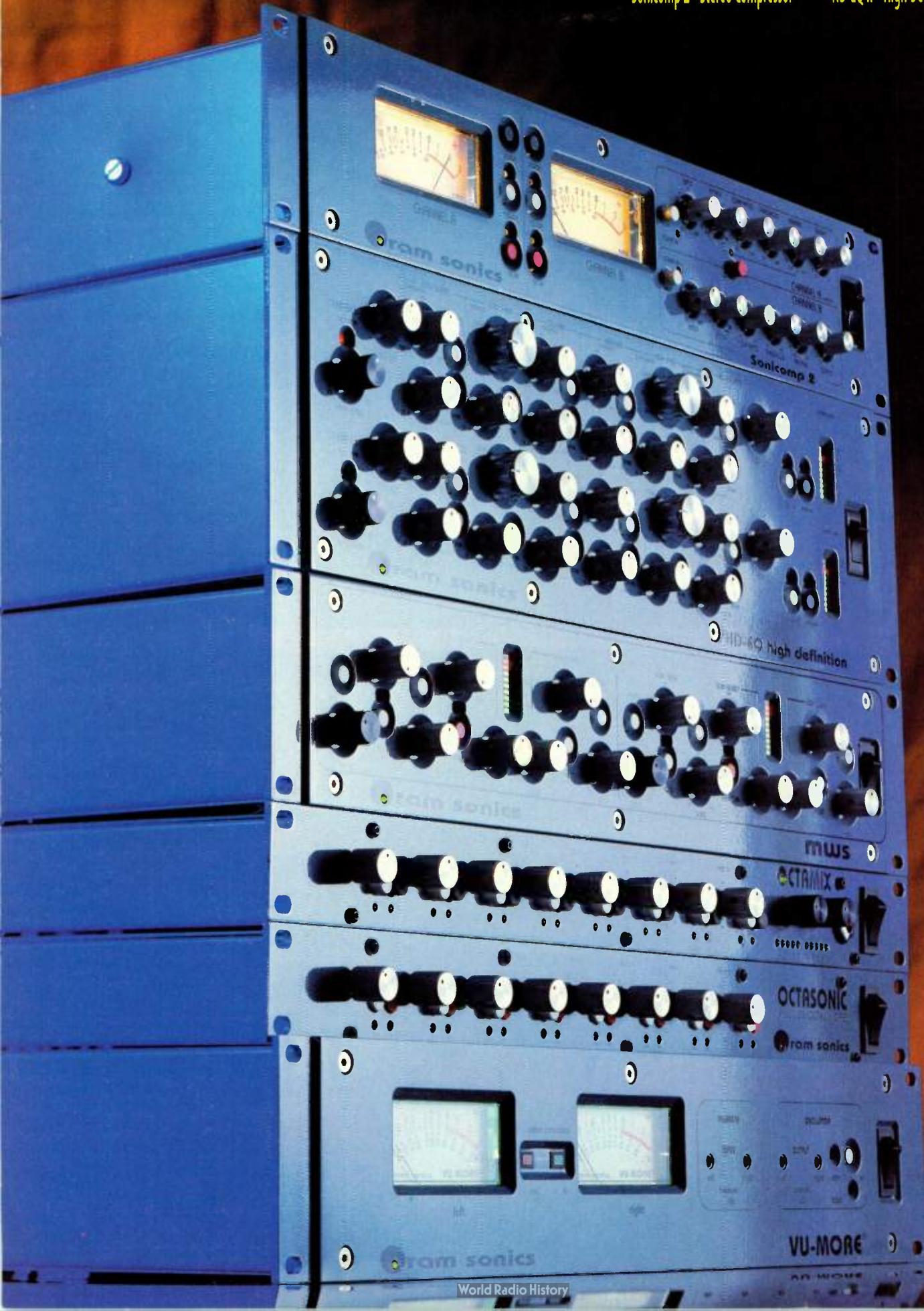
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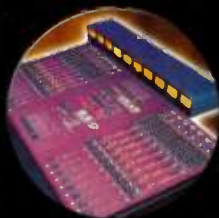
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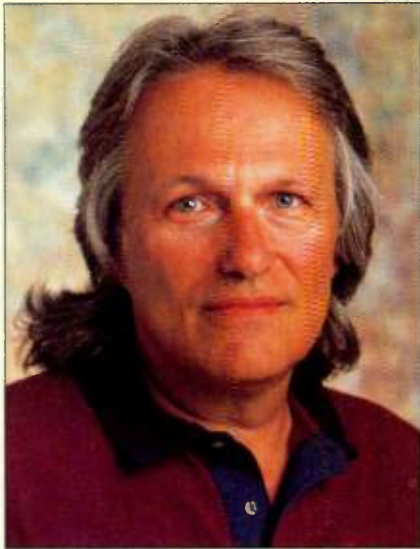


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# Undo Hardships



Wishful thinking and combating the home CD recording business

BY ROGER NICHOLS

The other day I was working with an engineer in the studio who accidentally erased a piece of a guitar solo. When I walked into the control room, he was blankly staring at the Sony 48-track remote. I asked what was going on, and he said, "Where is the Undo button on this machine?"

Wouldn't it be great if life had little Undo buttons along the way? How about:

## SPEEDING TICKET

**Undo Ticket (F3):** Court date is the same day as my first paying Pro Tools gig.  
**Save (F5):** Register for topless traffic school; may be worth it.  
**Print (F6):** Copies of ticket to put under friend's windshield.

## DIVORCE

**Undo Alimony (F3):** Or I won't be able to make my Pro Tools payment.  
**Save (F5):** So I can remember how lucky I am to be away from her.  
**Print (F6):** Fake money on 2400 dpi printer for alimony payment.

## GUITAR SOLO

**Undo Erase (F3):** Or I will lose my job and can't make Pro Tools payments.  
**Save (F5):** That solo was crap, maybe he will do better now.  
**Duplicate (F7):** Make repeat loop of crap solo and burn CDs for friends.

## GIRL PICKED UP IN BAR

**Undo Night of Horror (F3):** I have the shakes so bad I can't use my Pro Tools.  
**Save (F5):** She did have nice [*Undo female anatomical reference (F7) —Ed.*] — all eight of them!  
**Print (F6):** Girls like that should have Hazardous Warning labels.  
 And you get the drift.

## TEMPO CHARTS

I have received a few e-mail questions about where to get tempo charts that convert tempo to milliseconds for setting delays. You don't need a chart. You can almost figure it out in your head. Just take 60; divide it by the tempo, then move the decimal point over three places to the right. This will give you the quarter-note delay time in milliseconds. An eighth-note would be half as much, a quarter-note triplet would be two thirds of the quarter-note value (one third of the half-note value). A dotted quarter note would be 1.5 times the quarter-note value. The rest of the values can be figured out from there. We don't need no stinking tempo charts.

## REMEMBER WHEN

Remember when commercial studios started complaining about project studios stealing their business? Well, we have now reached the payback point. I'll use CD burning in my comparison.

Back in 1989, a 1X CD burner cost \$50,000 and blank discs were \$85 each. You also needed a \$30,000 Sony digital audio editor, and two \$15,000 apiece U-Matic 3/4-inch video decks to prepare the audio. If the artist wanted a few CDs

to give to the band or play in his car, they cost him \$300 each. This was a major investment and the studio hired a competent engineer who had lots of experience mastering. If the CD failed to cut properly, it would take one hour to recut and cost \$85 for a new blank. If you contemplated buying your own equipment to make ten CDs, the average cost per CD would be \$11,085. It was much cheaper to pay \$300 each and have someone else do it.

By 1995, a 4X CD recorder could be had for \$5000 and the price of blank CDs dropped to about \$17 each. Small mastering houses started up and paid about \$10,000 for a hard-disk based workstation such as Sonic Solutions, SADiE, or Sound Designer. They would produce the desired CDs at a cost to the artist of about \$40 each. This was still a substantial investment in equipment. Usually, the guys who started this type of operation were experienced mastering engineers who worked for someone else and wanted to break out on their own. They could supply quality service and a good product for their customers. If the CD failed to cut properly, it only took 15 minutes to recut the CD and cost \$17. If the artist wanted to buy the equipment to cut ten CDs himself, the average cost per CD would be about \$1540 each. Still a better deal to let someone else do it.

Here we are in 1999 (in case you forgot to set your calendar ahead). There are now 30 gazillion places to get your CDs made. A 4X CD recorder costs about \$300. An 8X CD recorder costs \$600. They come bundled

with free CD recording software. Digital audio hardware and software to turn your PC into a digital audio workstation is under \$1000. Blank CDs are 49 cents each. The total investment to start your own CD duplication business is under \$2000, and you don't have to know what you are doing, as there is not as much monetary

*continued on page 145*

*To get the highest quality product, you need the experience of the mastering engineer to help you out of the rough spots.*

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—Sam Tellig, *Stereophile*  
February 1998



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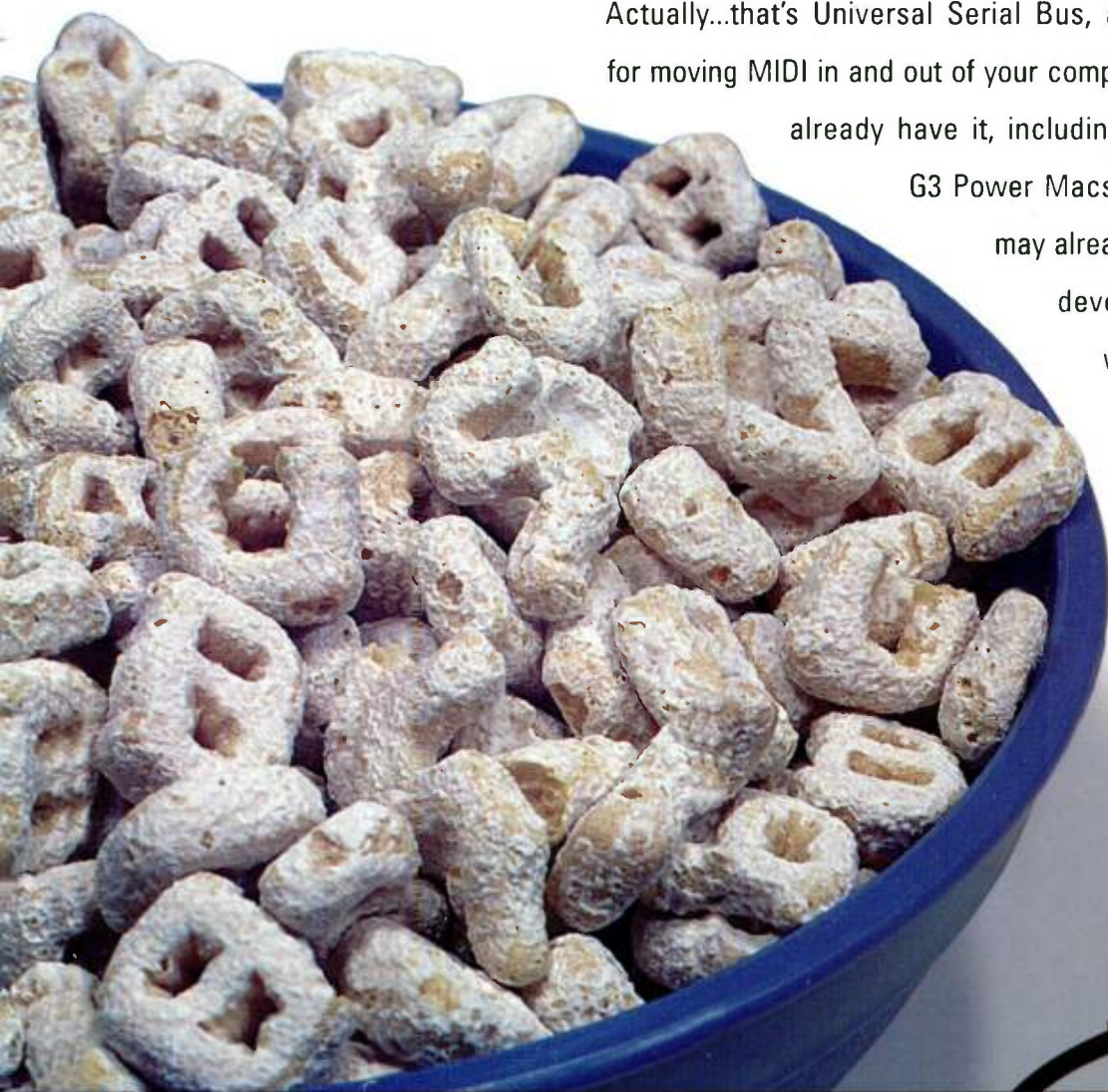
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CIRCLE 37 ON FREE INFO CARD

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