The Roger Nichols Review

Digidesign Pro Tools 24

EQ

THE PROJECT RECORDING & SOUND MAGAZINE

JANUARY • 1998

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Bill Laswell

Adventures in bass recording

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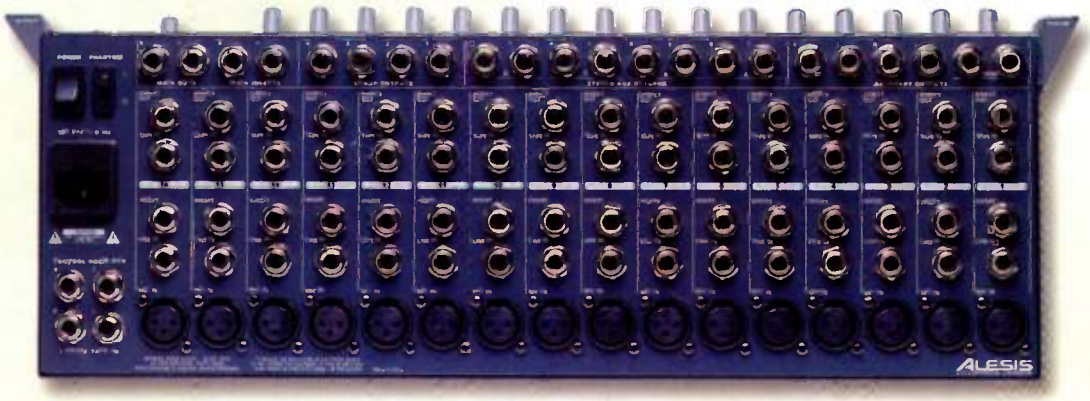
World Radio History

The Recording Console That

The Studio 32's inline design gives you balanced XLR mic inputs and balanced 1/4" TRS line inputs, channel inserts, tape inputs and direct outputs on each channel. Four group outputs, six aux sends (four pre-fader and two post-fader), phantom power for every channel and separate control room outputs are also provided. And since all of these connections are on the rear panel, your studio stays neat and professional-looking.



World Radio History

Looks Sixteen but Acts Thirty-two

The world of small-format consoles seems to be suffering an identity crisis. After all, most of them look alike...and also act alike.

Where can you turn to get the advantages you need?

Introducing the Alesis Studio 32™ Recording Console with Inline Monitoring

The Studio 32 offers 16 hybrid/discrete mic preamps that combine extremely low-noise performance (-129dB E.I.N.) with a wide 60dB range, making them perfect for driving digital recorders. In fact, the Studio 32 offers a wider dynamic range than all of the currently-available "affordable" digital consoles (and it's a whole lot less expensive).

Audio sources in your studio multiply quickly. Instruments, miked drums, vocals, and stereo signals from synth modules keep adding up. Fortunately, the Studio 32 has twice as many inputs as an average 16-channel mixer, so simultaneous recording or mixdown of multiple sources–live or in the studio–is no problem.

It's the world's most affordable 16-channel console that offers inline monitoring capability. Inline monitoring means that each channel can send signals to a recorder and receive signals coming back from tape...*at the same time.* So, unlike your average mixer, the Studio 32 can hook up with sixteen tracks of ADAT® (or any other recorder), instead of just eight. That's *double* the tracks you can access.

Other stuff that makes the Studio 32 stand out from the crowd: fully-parametric midrange EQ and super high-quality mic preamps that are more comparable with the consoles you see on magazine covers than on other compact mixers. 40 inputs available at mixdown...again, twice as many as most other small consoles. All at a price so low that you can afford to get that second ADAT (now that you can use it).

▲ *Above: a 16-track digital recording studio that can fit into a corner of your living room. Centered around the Studio 32 and a pair of ADATs, this setup is a professional-quality, low-cost solution for serious recording.*

The Studio 32's EQ section provides more than just high- and low-shelving EQ. You'll also find a fully-parametric midrange EQ with individual gain, frequency sweep and bandwidth (Q) controls.

The Alesis Studio 32. The console that acts a lot bigger than it looks. At your Alesis Dealer now.

STUDIO 32
RECORDING CONSOLE W/INLINE MONITOR

For more information on the Studio 32, see your Authorized Alesis Dealer or call 800-5-ALESIS.

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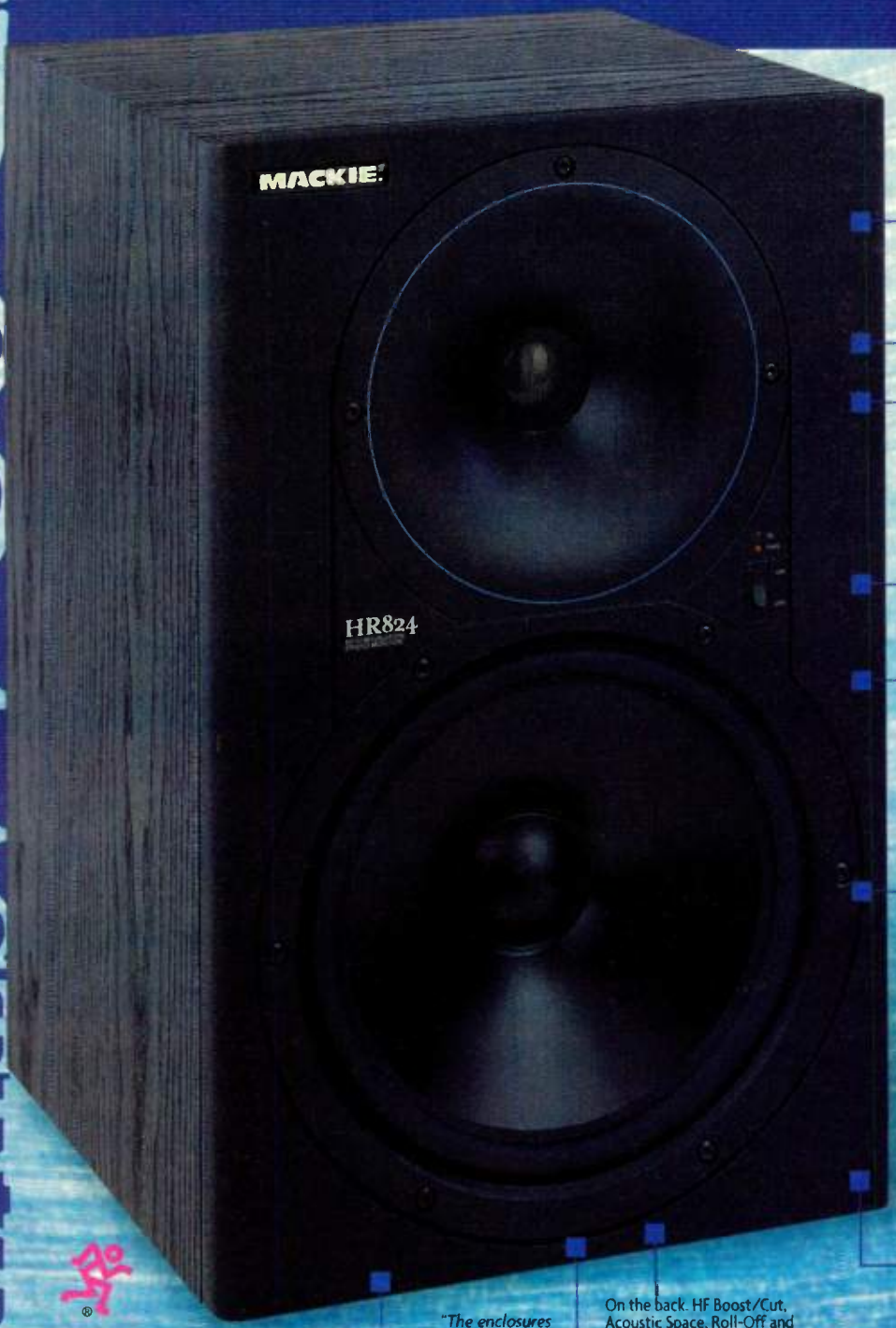
World Radio History

ALESIS
CIRCLE 02 ON FREE INFO CARD

HR824 ACTIVE MONITOR

"Overall frequency was almost hard



Logarithmic wave guide helps accurately propagate high frequencies over a wider area. Result: better dispersion, more precise imaging and a far wider sweet spot.

Edge-damped 25mm high-frequency transducer is directly coupled to its own 100-watt FR Series™ Low Negative Feedback internal power amp.

Alloy dome is free from "break-up" that plagues fabric domes, causing high frequency distortion.

Signal present and overload LEDs.

Instead of a noisy port, a passive honeycomb aluminum transducer on the rear of the HR824 almost doubles the low frequency radiating surface.

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

Specially-designed 224mm low frequency transducer has a magnet structure so massive that it wouldn't even work properly in a conventional passive loudspeaker. But servo-loop-coupled to a 150-watt FR Series™ amp, it's capable of incredibly fast transient response and extremely low frequency output.

Inside: the HR824 cabinet is 100% filled with adiabatic foam. Result: Unwanted midrange reflections from the low frequency transducer are absorbed **inside** the enclosure instead of being reflected back out through the cone into your listening space.

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

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

On the back. HF Boost/Cut, Acoustic Space, Roll-Off and sensitivity controls, balanced 1/4" and XLR inputs. *"The Mackie HR824 is the only system (in the comparative review) that doesn't require the user to fumble around with tiny tools in order to make adjustments."*
EM Magazine*

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

*** Electronic Musician, October 1997, All quotes are unedited.**

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World Radio History

response was so flat that it to believe." Electronic Musican Magazine*

Ready to confront reality? The HR824 Active Monitor is now in stock at Mackie Dealers.

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

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

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

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

> "In fact, all the sonic details that I can discern on a $45,000 reference system were very well reproduced, although not identically, on the HR824s. That was very impressive."

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

But all you have to do to become a believer is to visit your nearest Mackie dealer. When you compare HR824s to the competition, you're going to hear some dramatic differences.

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

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

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

Next, you'll notice low frequency output so accurate that you might look around for the hidden subwoofer (some of the world's most experienced recording engineers have done this, so don't be embarrassed). The HR824 really IS capable of flat response to 39Hz. Moreover, it's capable of **accurate, articulated** response that low. Rather than a loudspeaker's "interpretation" of bass, you can finally hear through to the actual instrument's bass quality, texture and nuances.

Each HR824 ships with its own signed Certificate of Calibration attesting to its ±1.5dB 39Hz-22kHz frequency response.

Next, if you can "unlock" yourself from the traditional, narrow "sweet spot" directly between the monitors, you'll discover that the HR824s really DO live up to our claim of wide, dispersion.

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

Their sweet **zone** is so broad that several people can sit next to each other — or if you work solo, you can move from side to side in front of large consoles — and still hear a coherent, detailed stereo panorama.

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

Finally, let the salesperson go wait on somebody else and enjoy an extended session with one of your favorite CDs. When you're through, you'll discover that when distortion and peaky frequency response are minimized, so is ear fatigue: You can listen to HR824s for hours on end.

> "Stereo imaging and depth were fabulous."

One final point... your monitors are the only part of all your studio equipment that you actually **hear**. Along with good microphones, HR824s are the best investment you can make, no matter what your studio budget. And, like premium mics, HR824 monitors cost more than less accurate transducers.

But if you're committed to hearing **exactly** how your creative product sounds, we know you'll find owing HR824s well worth it.

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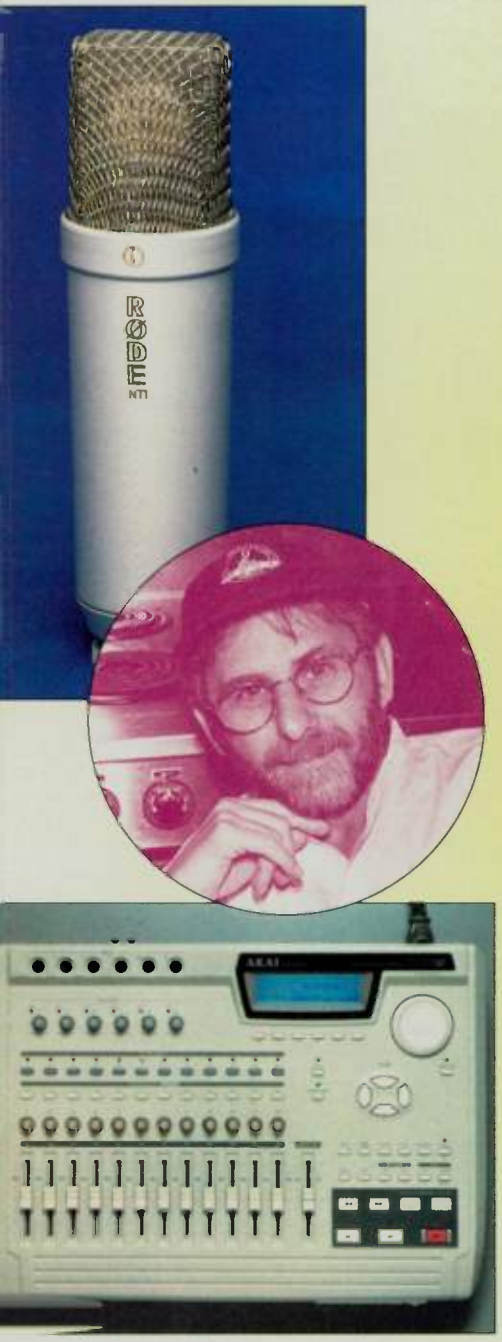

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Bill Laswell has been quietly making records that everybody knows and listens to, and his secrets are finally revealed. Get the low-down on how he gets superb low-end, and also find out his tips on remixing.

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Have you driven a digital console lately? With the new year just upon us, it's a good time to take a look at the big picture in this growing technology. Senior editor Steve La Cerra takes a quick look at what's available now and what's just around the corner.

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Bill Laswell.
Photo by Chris Johnson.

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Miller Freeman

Happy New Gear!

Oops! Sorry. Must have been a Freudian slip. I meant to say Happy New *Year*. It's just that we love new gear so much. We love our old gear, too (more so when it works properly), and many of us rely upon it for paying the bills. So now might be a good time to evaluate the health and condition of your audio tools. How about starting with general cleaning? Get yourself a vacuum and a clean, soft paint brush and dust off that gear, from console to outboard, from tape machines to computers, as well as any keyboards you might own. Don't forget to vacuum the patchbay as well.

The holiday season (when our rooms tend to be a bit less active) is a good time to test every patch point in the bay and make sure they actually work. You don't want to find dead points in the middle of a session, do you? Also test every cable you own with a VOM, and either fix the broken ones or trash them. Otherwise, in '98 you'll be spending your disposable income on aspirin instead of new equipment.

If your gear travels, consider opening up the chassis and making certain that all of the connectors and hardware are tight. Bouncing around in a truck is a sure way to loosen as many screws in your gear, as it would in your head. While you're in there, change the back-up battery where applicable — before the unit dumps all the programs that you've written over the past year.

In rooms where a console remains connected to studio wiring for long periods of time (i.e., the majority of project rooms), oxidation collects on the connectors at the rear/top panels of consoles and outboard gear. Remove each connector and wipe it with a soft, dry cloth to remove any build-up that has accumulated. Do it one connector at a time so that you don't have a wiring mess on your hands. Then check to see if your gear has enough ventilation space to remain happy, especially digital gear. [*See Eddie Ciletti's Maintenance column for more New Year maintenance tips. —Ed.*]

Speaking of digital gear (segue alert), the proliferation of digital consoles continues and is growing in live sound applications. None other than Todd Rundgren is using Yamaha 03D's in his live rig, and we've got the scoop on the how's and why's in EQ Live. We also have an update on what's new out there in the digital console market — from the mixers you can afford, up to the ones you can dream on. Keep those dreams alive and have a great '98.

— Steve "Woody" La Cerra

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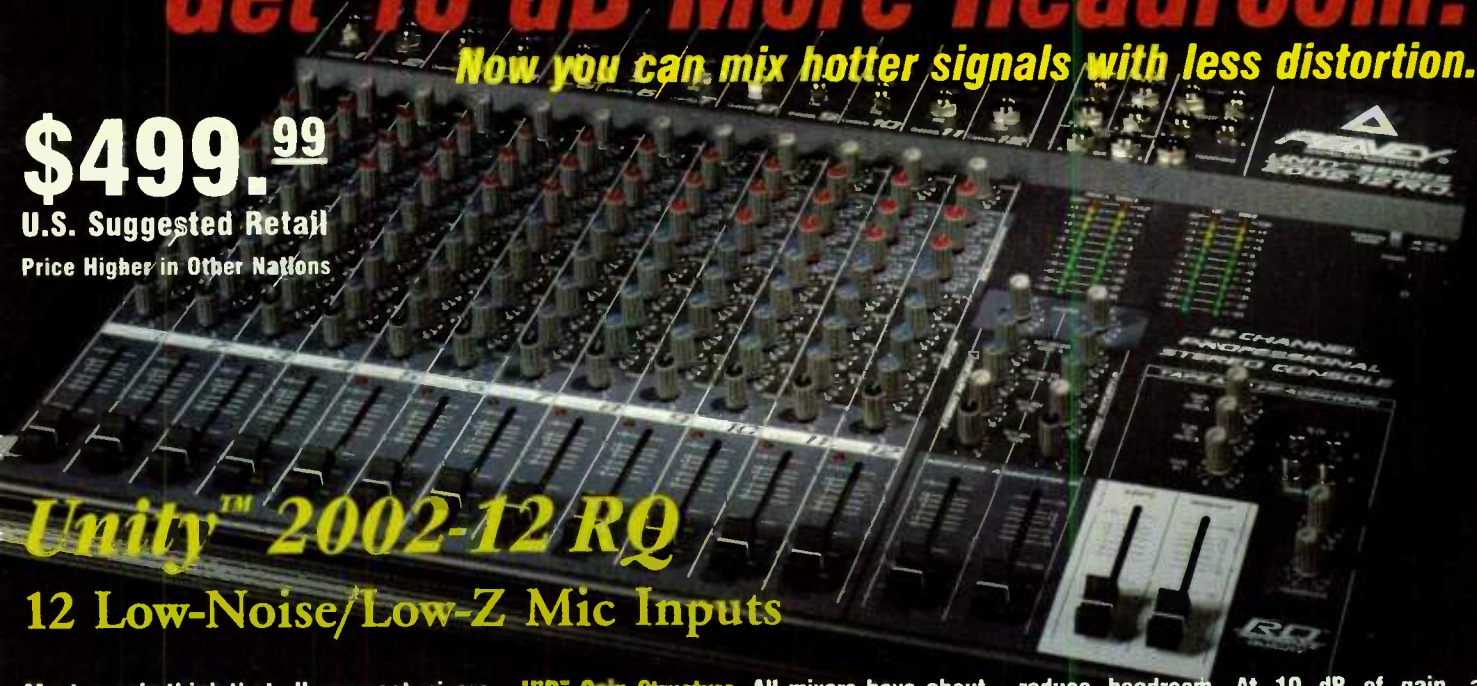


Unity™ 2002-12 RQ

12 Low-Noise/Low-Z Mic Inputs

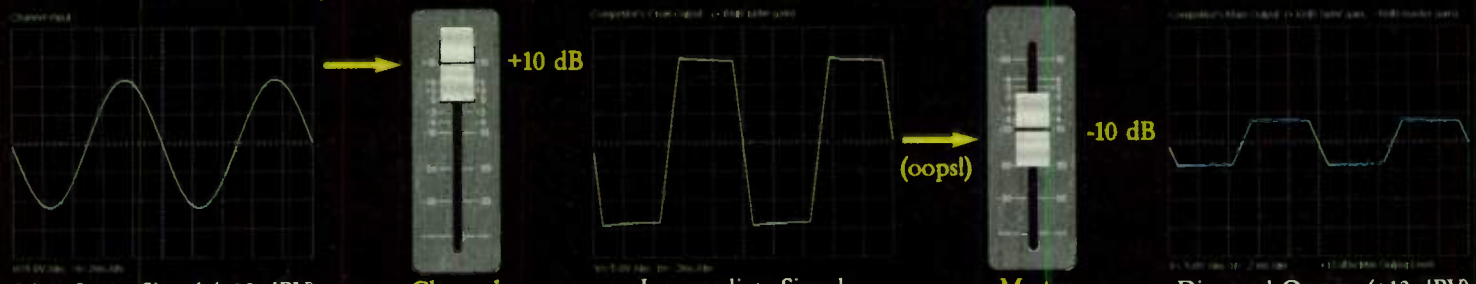
Most people think that all compact mixers are the same. The Unity 1002 RQ and 2002 RQ "Reference Quality" Series Mixers are classic examples of how huge benefits can be realized from small changes in how you connect the dots.

H²B™ Gain Structure. All mixers have about the same total gain between their microphone input and final output, or else they wouldn't work. The Unity RQ Series provides 10 dB more headroom in the channel and at the fader by shifting the fader's voltage gain to "post" summing bus. In conventional gain structures, any fader setting above 0 dB will reduce headroom. At 10 dB of gain, a conventional fader gain stage suffers from electrical overload 10 dB before the channel. The Unity RQ's "High Headroom Bus" structure allows you to use the channel's full dynamic range and all the fader's available gain, while maintaining a distortion-free signal path. **Clean is good.**

Peavey H²B™ Gain Structure

The other guys

(actual scope images from competing "high headroom" mixer)



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PROBLEM SOLVED

I would like to thank Eddie Ciletti for working with Karl Winkler of Neumann on my microphone noise problem. I followed your instructions (see EQ&A, December '97 issue) and am happy to report my RF problem is history. I had all kinds of people trying to sell me voltage regulators and other $1000 devices to correct this problem. All it took was a $0.05 piece of wire and 30 seconds of my time. Thanks so much!

Kenny
via Internet

WAVE CRAVER

Thanks for reviewing Steinberg Wavelab in the November issue. I bought a copy of Wavelab in August from Mission Recording and Audio right off their Web site (at a *very* good price) and have been happily using it ever since.

Craig Anderton gave a fine overview of version 1.6. However, given the limitations of writing for a deadline, he has let a few features slip by unmentioned, and was plain wrong about several points, including two listed as "weaknesses."

For example, all internal audio processing takes place in 32/64-bit word lengths so that cumulative rounding of least-significant bits will never trash your audio. That is a must-have for pro applications (especially mastering). Likewise, whenever audio travels from a higher to a lower bit format (including all internal DSP), you have a choice of dithering and noise-shaping to preserve low-level details. Wavelab is loaded with such professional trappings, which have been almost impossible to find in a Windows-based audio application, and which make it a steal, even at list price.

The "Stereo Expander" plug-in allows you to vary the apparent stereo width from mono to "behind your head" (with a normal stereo source). I record in M/S a lot, and I frequently find myself wishing for more or less separation after mixing. I also frequently put this FX in the last slot, set it to mono, and switch it in and out to check the mono compatibility of my work.

The graphically adjustable dynamics processor is dynamite. It allows you to create as many "knees" as you like and then drag them to any input/output level. I had a live recording for radio broadcast in which the applause was sort of wimpy. I made a little expansion curve that allowed the applause to start at actual levels and then swell to several dB higher than it was. There are some useful presets, like 2:1 or 3:1 compression, etc., and there are presets like "Tube compressor/gate," which sound fabulous on some things.

As I mentioned, some corrections are in order.

1. You *can* save FX settings in most of the real-time and background DSP. You simply select the Presets tab and save your settings by any name you like (which can be the same name as the file you want to use it with, for example).

2. You *can* calculate amplitude to avoid clipping during a gain change, either for a selection or for an entire file. Simply select Change Gain from the Level menu and tell it to "Get Peak Level," and it will tell you precisely what the maximum level is (how many dB below 0).

3. You *can* adjust preroll (0–20 seconds) for auditioning transitions between tracks in the CD playlist. This is done in the Options/Preferences dialog box. I use the CD playlist for burning CDs all the time now, and I have never made a gold "coaster" with it. But I also use the CD playlist to create sequences for other media.

Yes, I have a wish list for future versions, like the ability to store a project with the undo list intact, so that you can pick back up where you left off without making any final decisions (à la Sonic Solutions). I would like to be able to use a track more than once in a playlist, and machine control would be nice. But Wavelab is lightning fast, sonically pure, very intuitive for Windows users, and does everything I bought it for (and more), and does it well. Seldom have I been as satisfied with a purchase. For the money, in my book, Wavelab is untouchable.

Stephen V. Smith
Soundsmiths Mastering Services
Asheville, NC

PEOPLE WHO NEED PEOPLE

I enjoy most of your magazine each month, but please ask Mr. Bonzai to cool it with the "Barbara Walters" questions like those in the Wendy & Lisa interview in the December issue — questions such as: "What were you in a past life," "How long does love last," and "What is the difference between a blimp and an airplane?"

Let's skip the *People* magazine fluff and stay focused on the music and how it's made. Thanks!

Ken R. Deutsch
Ken R. Incorporated
via Internet

WRITE ON!

I am writing in response to Al Kooper's column in the November issue of *EQ*. As a producer, engineer, and mixer (with 150 albums to my credit), I completely agree with his position on remastering old works for CDs and compilations and how important it is for the producer or engineer to be present. I would have actually liked him to have taken it a step further, or maybe consider this for a future article: For some reason, whenever a record is finished these days, the first thing these "guys in the cubicle" (as Al called them) do is go: "Who should we get to remix it?"

Now I can understand that now and then a record may have to be looked over again by someone else, however, that is what major labels try to do with almost every record that comes up. Lots of times this is done without the producer of the artist present, so how can this mixer — coming in fresh to the tracks — know where all the channel mutes are or the internal balances that were planned on by the producer, to say nothing of where all the bodies are buried. I've seen this happen a lot — even to the extent where one of these mixers went in and used the wrong lead vocal. Can you imagine how pissed the singer was when he heard it?

Isn't this a bit like editing a movie without the director there? What would that be like? Don't they know that someone had a vision of what was to be at completion.

That column really touched a nerve in me. Keep up the good work.

Godfrey Diamond
New York, NY

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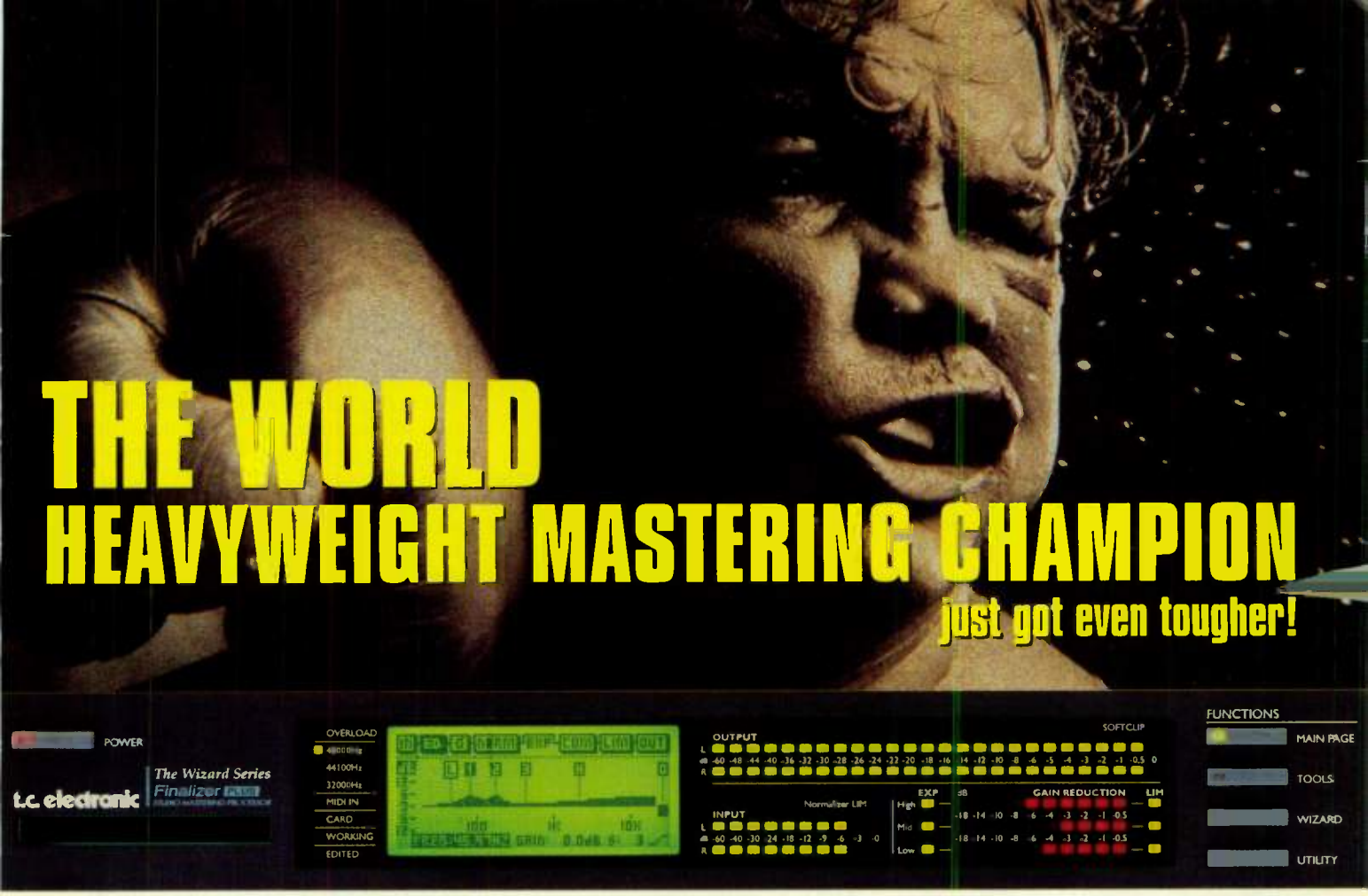

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Inserted between the stereo output of your mixer or workstation and your master recording media, the Finalizer *Plus* dramatically **rounds** out your material, creating that **"radio ready"** sound - previously unattainable outside a professional mastering house.

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World Radio History

CIRCLE 75 ON FREE INFO CARD

VIDEOPINION

Q *I found the Maintenance article on digital video [September '97, pg. 146] very helpful in untangling the pros and cons of the various formats. My work always involves sync'ing audio to video, and I currently have a fairly reliable (but not very elegant) system for doing so. I'm constantly on the look out for a reasonably inexpensive way of getting the video into my workstation and am considering one of the miroMotion cards. Specs are: 640x480 resolution with adjustable compression ratios from 5:1 to 32:1 (mail-order prices seem to hover around $775 or so, generally bundled with Premiere LE). What do you think?*

Anonymous
via Internet

A Having worked in the video industry, I know that nothing looks as good as film, followed by the original format of HDTV and, more practically, 10-bit/4:4:2 component digital video before being turned into composite NTSC (4:2:2 refers to the oversampling of the luminance and two color difference signals).

The Adobe-sponsored DV seminar, held last summer, presented many of the hardware and software options for PCs and Macs. All have their pluses and minuses. The ticket is to be willing to accept the compromises of the more affordable products. That said, I have a very cheesy (Videologic) capture card that, at the very least, allows me to learn Adobe Premier.

Just like mixing on small speakers, the flaws of compromised video are "exposed" when transferred to a high-resolution format (BetaSP or digital video) and displayed on a component video monitor. I am sure the Miro card is more than acceptable as a faster-than-tape video source while posting sound-for-picture.

Eddie Ciletti
Contributing Editor
EQ magazine

CRIMPING YOUR STYLE

Q *I am thinking about making my own +4 dBu balanced connectors for my Alesis ADAT. Is it as easy as soldering and crimping? Does the commercial cost come from the better wire (Mogami) and connectors? The wire seems so thin; does it have two conductors and a ground? What does Alesis mean when they say that it is "Servo Balanced"? I haven't been able to find any tech specs about the harness anywhere.*

Brad Armstrong
Toronto, Canada

A You have numerous questions about the multipin balanced connector found on the original Alesis ADAT, the ADAT-XT, and the new high-end ADAT Type II 20-bit recorder, the M20. Let's answer them.

The connector to which you're referring is known as either an ELCO or EDAC connector, depending on the country in which it's distributed. When wiring this connector, you need a mixture of patience, time, and the right tools. The connector itself is pretty inexpensive, about $25 in the U.S. In order to wire it correctly, though, you'll need a crimping tool. The proper tool for ELCO/EDAC connectors will run about $125, which is what stops most folks from taking this on themselves.

Most of the work in wiring your own harness is, as you refer to it in your question, as easy as soldering and crimping. A novice can, with the proper tools, perform this task in just a few hours. Does the cost come from better wire and connectors? Yes, but when you compare the price of purchasing the equivalent 16 XLR connectors and cables (with good XLR connectors costing $5 to $10 each), the cost doesn't seem so prohibitive. Also, keep in mind that the cost of the cable wire for your harness should be less than that of preassembled store-bought cables.

In the ADAT's wiring scheme, each channel does indeed offer a separate positive, negative, and ground connector. Finally, the meaning of "Servo Balanced" in this connector is that the balanced outputs of the ADAT can be interfaced with both +4 dBu and –10 dBV gear. Using a servo balanced output, you can connect to a mixer that operates at unbalanced levels without a –6 dB signal loss.

If you need more specific help with this project, I suggest you check the Tech Notes area of our Web site (www.alesis.com) or call 800-5-ALESIS and speak with one of our knowledgeable tech support representatives.

Jeff Slingluff
Alesis Corporation

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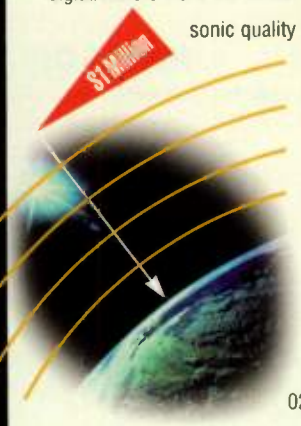
Digital Mixers Hit Earth.

Announcing 02R V2 and 03D mixing consoles. The incredibly affordable Yamaha digital mixers make the world a much more productive place. From the start, the 02R has delivered spectacular sonic quality with 32-bit processing, 20-bit digital/analog conversion and direct digital interface to your digital recorder. It has also allowed you to save and instantly recall all of your mix settings and the movements of 02R's motorized faders, EQ, effects and limiter/compressor/gates. **Now, 02R V2** adds more stellar features including ► DIGITAL AUX SENDS ► 6-channel SURROUND SOUND ► REMOTE MIDI CONTROL of external devices (like multitrack and hard disk recorders) ► INPUT PATCHING so you can assign tracks from a recorder to alternate inputs ► 24-BIT RECORDING on your 16-bit multitrack ► and new automation features including TOUCH SENSITIVE FADER EMULATION. 02R V2 has 44 digital and analog inputs and lots of outputs. For the more down to earth but ambitious 8-track digital studio working with MIDI gear, the **Yamaha 03D** offers the same features in a smaller format, plus brand new 32-bit effects processors. Whether you choose 02R V2 or the new 03D digital mixer, your mixing power will take off and your mixes will sound incredible. To understand why Phil Ramone, Roger Nichols, Tom Jung and Hans Zimmer rave about Yamaha digital mixing, see these products today at a Yamaha Authorized Dealer or call **1-800-937-7171 x 645** now for literature.



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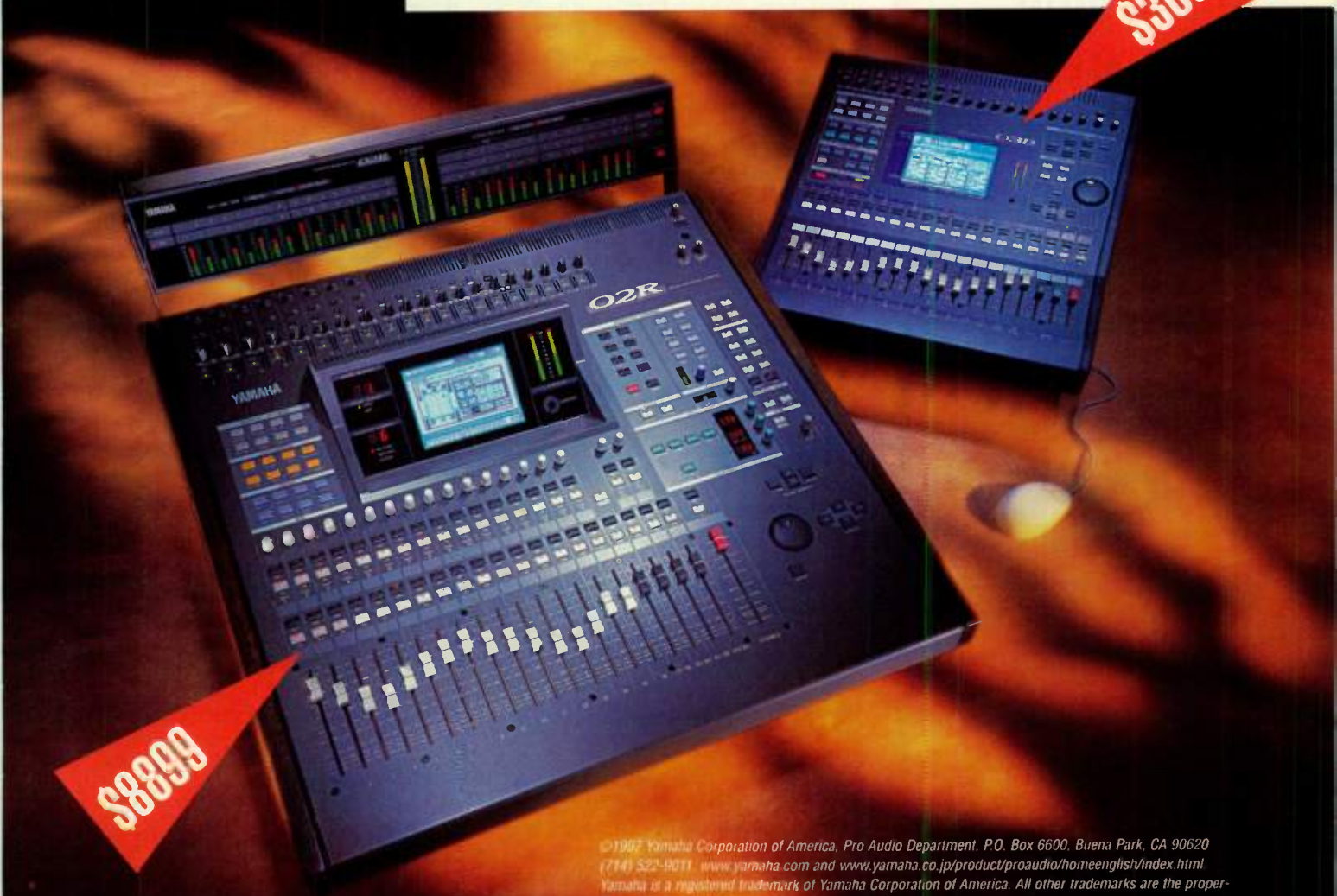

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CIRCLE 59 ON FREE INFO CARD

World Radio History

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HEADS UP: TABLE 1

Deck	Serial #	Head Hrs	Search Hrs	Cleaning Tape	Version	Servo	SY88
1	110936	370	30	64	3.10	1.03	3.06
2	320044	198	25	5	3.03	2.02	—
3	200383	171	24	15	3.03	1.03	—

HEADS UP

Q *I have three TASCAM DA-88's that get regular use in my studio. After about three manual cleanings, I discovered Eddie Ciletti's Web site (www.tangible-technology.com) as recommended by Craig Anderton. Thanks for all of the great info, but now I am concerned. I not only rotated the heads counter-clockwise during cleaning, but may have also spun them clockwise. How will I know if I killed the heads?*

The only noticeable problem is that a tape recorded in deck one plays with occasional clicks and pops on itself with more frequent problems on decks two and three. This was confirmed by checking the error rate — which varied from machine to machine — but all agreed the problem was related to the "B" head (as displayed on meter two). For what it's worth, tapes recorded in machines two and three play fine in deck one. Is this related to my cleaning? Do you think it's time to clean the "rabbet"? (I've included a machine history; see Table 1.)

Help!

Keith in Chicago
via Internet

A Cleaning the "rabbet" (see Eddie's column in the August '97 issue) requires complete unrestricted access to the head, which is only possible after taking the transport out of the chassis and then removing the loading mechanism. Also, keep in mind that while manual head cleaning is part of a healthy maintenance program, it is not a panacea.

Two of your machines have seen the cleaning tape too many times. Use a cleaning tape no more than once every fifty hours because each five-second cleaning removes five to ten hours of head life! (A machine with 500 hours should have *only* ten cleanings via tape.)

Machine one may have an extremely dirty "rabbet," but I suspect one of the record heads has expired from excessive cleaning. (Sixty-four cleanings would age the head 320 to 640 hours.) Take machine one (SN 110936) in for service, make machine two (SN 320044) the master. As the newest deck (i.e., the least cleanings), it will make life easier for the slaves. Make serial number 200383 the #2 slave.

As for the error-rate display, meters 1 and 2 indicate errors on the A and B heads, respectively. There are two sets of A and B heads, one pair for record and one pair for playback. The displayed errors of a tape recorded and played on the same machine are the combination of record- and play-head errors. A single bad or dirty head (one of four, record or play) can ruin your whole day. Unfortunately, when a "head" goes bad, the entire drum has to be replaced.

Eddie Ciletti
Manhattan Sound Technicians
NYC, NY

SURF CITY

Q *I spend a fair amount of time searching the Internet for sites that will help me in my music and recording business. The problem is that it takes a lot of time to find good, useful sites, and so sometimes I feel as if I'm wasting time and hurting my business more than helping it. Any tips?*

Christian Butler
via Internet

A The Internet is either a fabulous source of information or a black hole of time and money — depending on your luck and direction on any given day. Fortunately, *EQ* now presents a semi-regular feature by our Prince of Print, Craig Anderton, where he does the homework for us all. Check out his Web site picks in our next issue and the September '97 issue. It'll save you time and energy. Also be sure to check out the monthly Web advice doled out by the Fez Guys.

Hector La Torre
Executive Director
EQ Magazine

Send questions to:
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World Radio History

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a product of hundreds of environments

The Sonic Foundry Acoustics Modeler is a revolutionary new DirectX Audio Plug-In that adds the acoustics of real environments, effects processors, and microphones to your recordings.

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CIRCLE 8 on Reader Hi-Fi CARD

EQ PRODUCT VIEWS

FLEX APPEAL

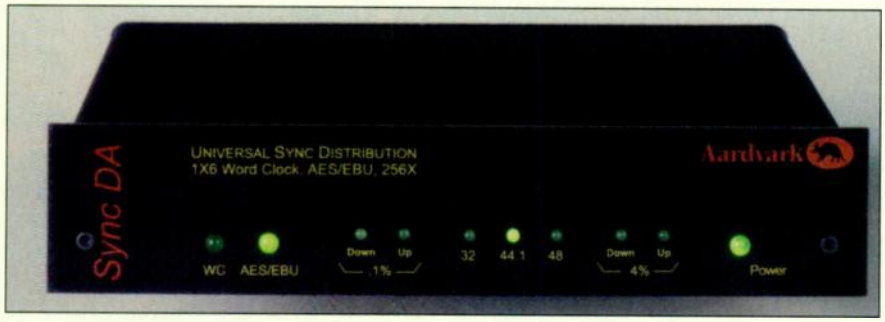
Line 6's three new Flextone combo amplifiers — the Flextone 60 Watt 1 x 12 ($799), the Flextone Duo 100W Stereo 2 x 10 ($949), and the Flextone Plus ($899), a 1 x 12 combo that can be run in 60 W mono or 50 x 2 stereo mode when used in conjunction with the single 12-inch Flextone Cabinet — join the AxSys 212 to create a family of fully software driven digital guitar amplifiers. Each of the Flextone series amplifiers feature a stylized "retro" look along with a classic top-panel configuration. Sixteen Tube Tone Amp Models, as well as an equal number of digital effects setups, are at a user's disposal. The selected combinations can be stored in one of four user-programmable bank locations. For more details, contact Line 6, A Division of Fast Forward Designs, 11260 Playa Court, Culver City, CA 90230. Tel: 310-390-5956. Circle EQ free lit. #101.

HAPPINESS IS A WARM EQ

Utilizing a hand-selected 12AX7a vacuum tube, ART's Tube EQ offers four bands of parametric equalization in a convenient table-top design. The frequency bands on the Tube EQ overlap and the two mid-bands sweep from 20 Hz to 20 kHz, offering enhanced coverage without any "holes" in the audio spectrum. The compact unit offers switchable high and low shelving bands, ±12 dB cut and boost, balanced XLR and unbalanced 1/4-inch inputs and outputs, and an internal power supply. For more information, contact Applied Research and Technology, Inc., 215 Tremont Street, Rochester, NY 14608. Tel: 716-436-2720. Web: www.artroch.com. Circle EQ free lit. #102.

GIVE AND TAKE

The MX-5000THX Mark II from Miller & Kreisel utilizes M&K's new Active Balanced Push-Pull Dual Driver amplifier with the Headroom Maximizer IV, three low-pass filter options, and state-of-the-art subwoofer drivers. The sub's Deep Bass design produces a minimum in-room response flat (±2 dB) to below 20 Hz. The MX-5000THX also offers users an additional choice of bass response — one that is anechoically flat to below 20 Hz, which helps to produce a rising bass characteristic below 30 Hz to achieve enhanced deep, bass. Three switchable low-pass filters are available: M&K's standard variable 36 dB/octave low-pass filter, which is continuously adjustable between 50 and 125 Hz; a bypass for Dolby Digital Processors with built-in low pass filters that lets the user employ the control unit's internal filter; and the same fixed 80 Hz, 24-dB/octave low pass filter used in THX controllers that, when combined with the M&K HP-80 High-Pass filter and M&K Satellites, forms a fourth order Linkwitz-Riley crossover to optimize the subwoofer-satellite speaker splice. The MX-5000THX Mark II powered subs have a suggested retail price of $2695. For further details, contact Miller & Kreisel Sound Corporation, 10391 Jefferson Blvd., Culver City, CA 90232. Tel: 310-204-2854. Circle EQ free lit. #103.



WORK ON THE CLOCK

Offering distribution of word clock and 256 Superclock, the Sync DA from Aardvark allows users to use one device to clock an entire digital audio studio. The Sync DA can resolve word clock and 256 Superclock from any AES/EBU signal and can distribute word clock to up to 6 devices. The 1/2-rack unit is flexible enough to distribute word clock and 256 Superclock from any DAT, DAW, or digital mixer. Front-panel LEDs display the user's selected sample rate. The Sync DA carries a suggested retail price of $795. For more details, contact Aardvark, 202 E. Washington, #306, Ann Arbor, MI 48104. Tel: 313-665-8899. Web: www.aardvark-pro.com. Circle EQ free lit. #104.

World Radio History

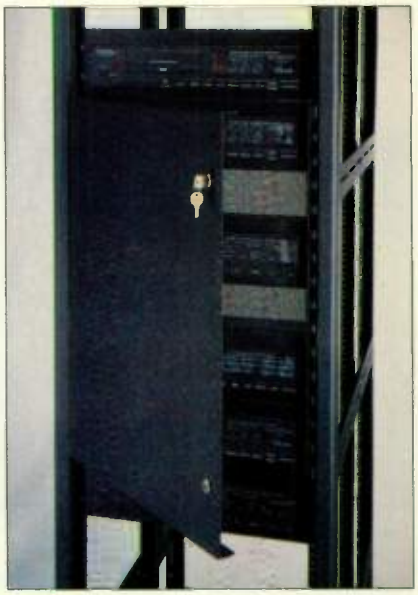
WHAT YOU GONNA DO

Nicknamed the "Bad Boy," dbx's new Blue Series 704 outboard A/D conversion system has been designed for professional tracking and mastering purposes. The 704 utilizes dbx's patent-pending Type IV conversion system, with equivalent performance of 27-bit, and features several word reduction and noise shaping options. The Bad Boy offers users a choice of 8-, 16-, 20-, or 24-bit output. Outputs can be dithered and noise-shaped using one of the many predefined curves offered or via user-defined settings. The unit features a "History" function that allows the user to visually scroll back through several minutes of level and phase data to view time stamps of any anomalies. AES/EBU and S/PDIF inputs and outputs, as well as ADAT and TDIF outputs, are available. Operable sample rates include 48, 44.1, 44.056, 32, and 22.05 kHz, and sample-rate conversion is offered from 44.1 to 22.05 kHz. The Bad Boy's input board can be replaced as higher-quality A/D technology becomes available, and the operating system can be updated from a PC or MAC via its serial port. For more details, contact dbx Professional Products, 8760 South Sandy Parkway, Sandy, UT 84070. Tel: 801-568-7660. Circle EQ free lit. #105.

HELD AT BAY

In an attempt to address the increasingly complex interfaces between digital audio recording, editing, and mixing systems, Fostex has created the DP-8 Digital Audio Patchbay. The DP-8 offers six optical I/Os, which can accommodate Alesis ADAT and related systems, including the Fostex D-80, D-90, and D-160, and any S/PDIF-formatted system. The unit also offers two coaxial I/Os (S/PDIF). Users can route digital signals via a rotary control, or for fast, temporary patches, the DP-8 can be fitted with a convenient front-panel optical I/O. Each input signal is wave-reshaped at a sampling frequency up to 48 kHz and output to each channel. The DP-8 carries a suggested retail price of $359. For more details, contact Fostex Corporation of America, 154331 Blackburn Ave., Norwalk, CA 90650. Tel: 310-921-1112. Circle EQ free lit. #106.

UNDER LOCK AND KEY



Offered in six different heights, Middle Atlantic's new line of solid-steel security doors offers key-locked protection for all, or just a portion of, your rackmount gear. Available in sizes from 8 to 21 spaces tall, the doors can be mounted on virtually any rack to protect select components while allowing equipment that has to be accessed quickly to remain in the open. Two or more doors can be mounted to a single rack. Middle Atlantic offers standard and nonstandard sizes to accommodate just about any application. When used with Middle Atlantic's RK/BRK Series racks, each model can function as a full-height door. Suggested retail prices for the line begin at $80 (model SSDR-8). For more details, contact Middle Atlantic Products, Inc., North Corporate Drive, Riverdale, NJ 07457. Tel: 201-839-1011. Circle EQ free lit. #107.

COME IN AND BURN

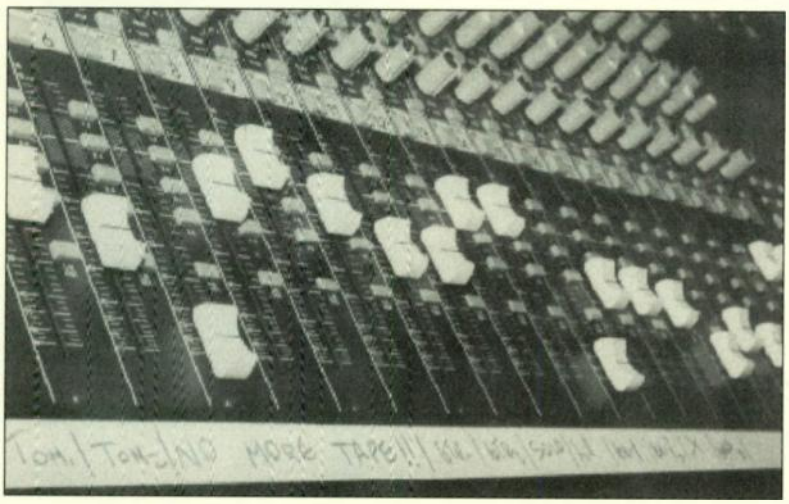
The latest addition to Otari's family of professional digital recording products, the CDR-18, features an on-board digital sampling-rate converter so digital source audio with a sampling rate other than 44.1 kHz can be recorded automatically to 44.1 kHz. The recorder uses 1-bit type A/D converters and features two types of analog inputs — XLR-type balanced inputs (switchable +4 dBu/–8 dBu) and RCA pin-type inputs — and RCA analog outputs. The CDR-18's digital interface is comprised of three types of digital inputs: AES/EBU, IEC958 (coaxial type), and optical connectors. Digital output is via either an IEC958 (coaxial type) or optical connectors. Other features include: Digital Synchro record mode; automatic track numbering; digital fader function; copy bit selection; parallel remote control interface; wireless remote controller; and EIA standard rack-mount. For more information, contact Otari Corporation, 378 Vintage Park Drive, Foster City, CA 94404. Tel: 415-341-5900. Web: www.otari.com. Circle EQ free lit. #108.

World Radio History

EQ PRODUCT VIEWS

THE BIG GUNS

The Sanken CS-3 Short Shotgun microphone features a low-frequency roll-off switch that allows the mic to operate as both a traditional shotgun microphone or with increased high-directivity in the low-frequency ranges. Measuring only 10.6 inches in length, the CS-3 utilizes an array of three newly designed directional condenser elements, based on the five-capsule technology of the CSS-5 Shotgun Stereo microphone. The new PPS (Poly-Phenylene Sulfide) diaphragms, developed in conjunction with NHK, provide enhanced response and optimum humidity/temperature stability. The mic's 19 mm diameter accommodates all standard accessories. For further information, contact Audio Intervisual Design, 1155 N. La Brea Avenue, W. Hollywood, CA 90038. Tel: 213-845-1155. Circle EQ free lit. #109.



THIS IS NO STRIP TEASE

Tired of the sticky residue left on your console thanks to the adhesive tape you're using to label your channels? Recording Console Concepts offers a solution to this sticky situation in the form of the "No More Tape" Recording Console Channel Labeling Strip. "No More Tape" is a thin magnetic strip that fits into the tape well of your console and utilizes a "write and wipe" design so it can be reused over and over again. Each package contains one "Strip," one marker, and one instruction sheet. "No More Tape" is available for a number of different consoles and extra markers can be purchased in two tip styles — bullet ($1.80 each) and fine tip ($1.50 each) — and in four colors (red, blue, green, black). The ink from the supplied marker is easily removed with a water-moistened cloth or paper towel. "Liquid Strip Cleaner," for removing embedded residue and "ghosting," is also sold separately for $3.50 per 8 oz. bottle. All Strips are $18.95 each, with the exception of the Mackie SR40 and SR56, which are $22.95 each. For more information, contact Recording Console Concepts, P.O. Box 6268, Minneapolis, MN 55406. Tel: 612-588-6430. Circle EQ free lit. #110.

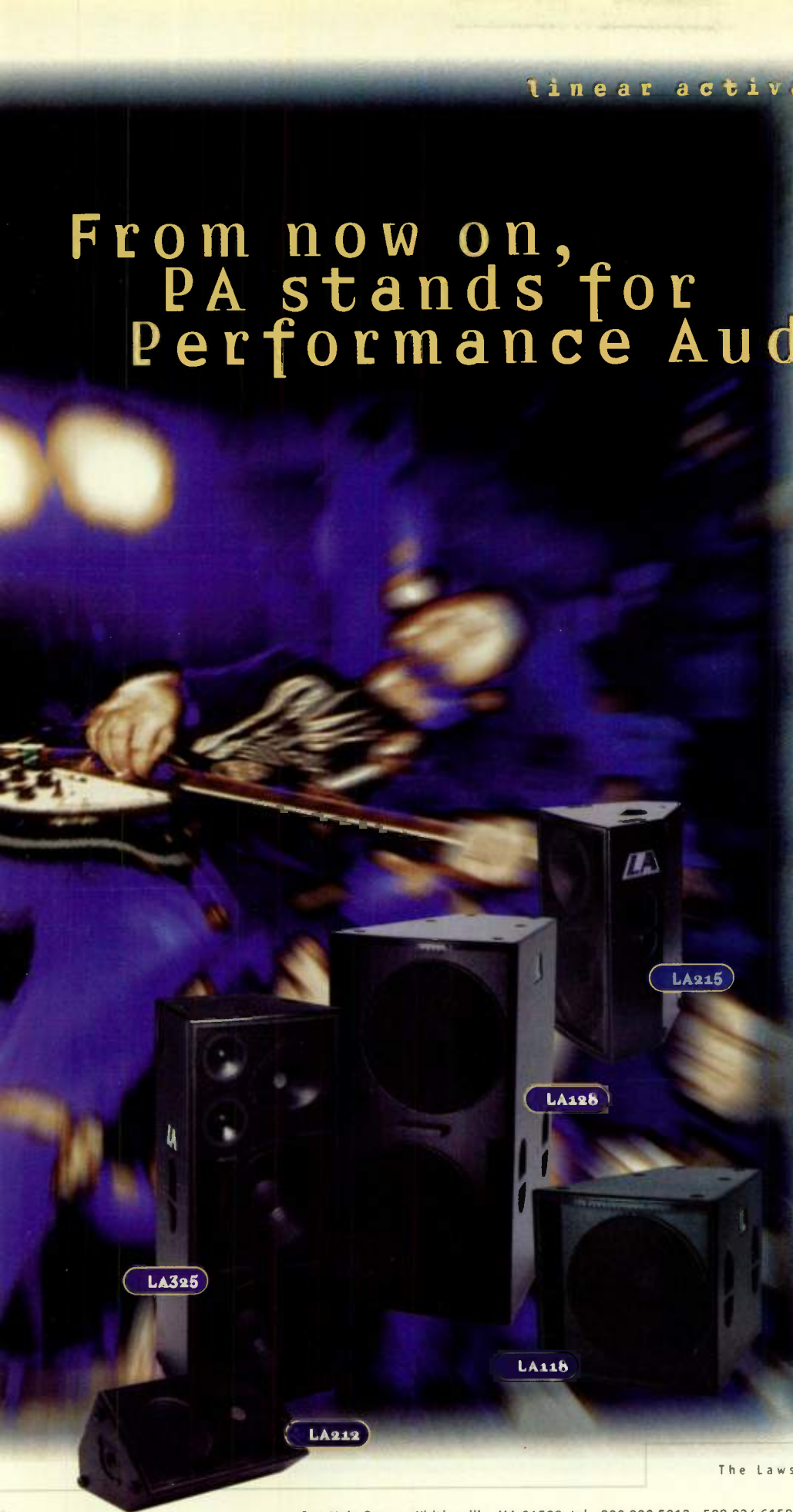
THE BIG SQUEEZE

Furman's C-132 single-channel limiter/compressor offers comprehensive controls for compression ratio (2:1 to 50:1), attack (.05 to 50 milliseconds), and release time (adjustable from 50 milliseconds to 5 seconds). A ten-segment LED meter indicates the amount of gain reduction. An output level control with up to 12 dB of available gain enables the C-132's output to be restored to the system level. The unit features three function modes: Compress, De-Ess, and Sidechain. Other features include a Low Level input that allows the unit to be driven directly by an electric guitar or bass, LED overload and power indicators, and rear-panel ground-lift and on/off switches. Two C-132's may be linked together as a stereo pair via a standard 1/4-inch patch cord. Suggested list price for the Furman C132 is $269, while Model C-132B, with XLR-balanced input and output, is $303. For further information, contact Furman Sound, Inc., 1997 South McDowell Blvd., Petaluma, CA 94954-6919. Tel: 707-763-1010. Web: www.furmansound.com. Circle EQ free lit. #111.

World Radio History

linear activation

From now on, PA stands for Performance Audio



The truth is that most PA systems are not designed for live performance. They borrow cone drivers from instrument amps and crossovers from home hi-fi sets. They can't handle the power and they don't disperse the sound evenly. Basically, they're useless.

Linear Activation from EAW is not just another PA. It redefines the word.

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Kenton G. Forsythe, Exec. VP, Strategic Product Development (right), and Gary Hardesty, VP, Engineering, demand that EAW innovations use fundamental laws of acoustical physics in new ways.

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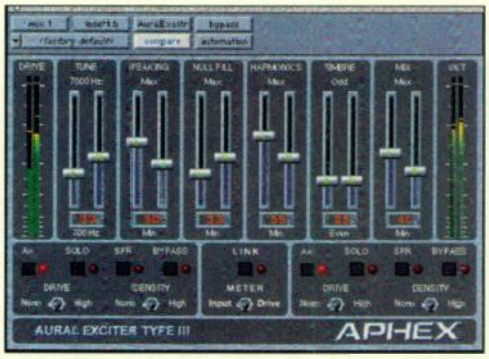
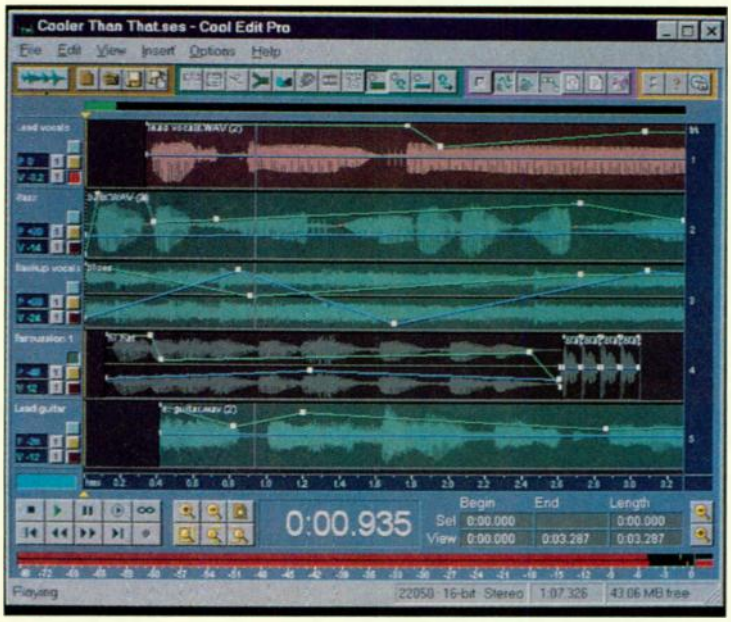
EQ STUDIO WARE

AURAL GRATIFICATION



Modeled on the popular, fully professional Model 250 Aural Exciter, the Aphex Aural Exciter Type IIIpi TDM plug-in ushers in Aphex as a manufacturer of digital signal processing products. The Type IIIpi features include controls for Drive, Tune, Peaking, Null Fill, Harmonics, Timbre, and Mix. Aphex has also added a new feature called "Harmonics Density" to the comprehensive control of the Type IIIpi. Suggested retail price is $495. For further information, contact Aphex Systems, 11068 Randall Street, Sun Valley, CA 91352. Tel: 818-767-2929. Web: www.aphexsys.com. Circle EQ free lit. #112.



OH SO COOL

The latest version of Cool Edit Pro, v. 1.1, from Syntrillium Systems offers users faster DSP processing than version 1.0 and improved SMPTE support, as well as larger file-handling capacity. A number of major new features have also been added to the program, including a "Grouping" function for associating waveforms (i.e., putting all of the drum tracks into a "Percussion" group) and Vocoder and Envelope Follower functions for creating special effects within the multitrack environment. The Windows 95 and Windows NT application also offer broader compatibility with third-party DirectX (ActiveMovie) plug-ins, and now supports DirectX effects. Cool Edit Pro 1.0 offers 64-track mixing capability with Record/Solo/Mute controls, Crossfade, Punch-In, Splice, Loop, Multiple Takes, Amplitude and Pan envelopes, and Zoom and Snapping features, as well as a full arsenal of 30-plus DSP effects. Users of Cool Edit Pro 1.0 are able to download a free upgrade patch from Syntrillium's Web site at www.syntrillium.com or can request a patch on disk directly from Syntrillium for a nominal fee. For more information, contact Syntrillium Software, P.O. Box 60274, Phoenix, AZ 85082-0274. Tel: 602-941-4327. Circle EQ free lit. #113.

ANY WAY YOU WANT IT

The Unitor8 is a 19-inch, single rack-space, synchronizer, and MIDI interface for MacOS or Windows 95 computers. Each unit offers eight MIDI inputs and eight independently addressable MIDI outputs. In addition, the Unitor8 can also read and write SMPTE as LTC and VITC. The unit can also read LTC from 1/4 to 4x normal speed. With VITC synchronization, Logic will support freeze-frame and reverse playback from Version 2.6 (Windows 95) and 2.7 (MacOS) upwards. Unitor8's SVHS I/O allows users to insert a timecode display on the video screens and the built-in click input allows any percussive input to be used as a sync reference. Up to eight units can be stacked, allowing a maximum of 1024 separate MIDI channels. The included control software provides stand-alone operation by allowing MIDI input/output routing. The unit ships with a Windows 95-compatible MIDI-driver and supports OMS via MTP emulation on MacOS systems. Unitor8 can be connected simultaneously to both a MacOS computer and a Windows 95 computer. For more details, contact Emagic Inc., 13348 Grass Valley Ave., Building C, Suite 100, Grass Valley, CA 95945. Tel: 916-477-1051. Web: www.emagic.de. Circle EQ free lit. #114.

World Radio History

We Want To Make Something Perfectly Clear.

You've recorded the best performances yet. Captured on the finest digital recorder. Collected with the ultimate microphones. You're almost done. The only thing left is the mix. You need a great mix, because without it your project is lost in a fog. Stay crystal clear with the **20/20bas Direct Field Monitors** from Event.

Clarity. True, it does take the right ingredients for a monitor to reproduce with clarity. Each **20/20bas** cabinet has the right ingredients, put together by pros with years of studio monitor design experience....Bi-amped with 2 hi-powered amps, an extra-large, front-mounted bass port, an active 4th order crossover, calibrated trim controls, circuit breaker, 8" woofer, natural silk dome tweeter...we could go on.

But these are just features. The sound these monitors deliver is the important thing. A sound truly pleasing and amazingly accurate.

"The sweet high end and the massive tight bottom made me think I was listening to a much larger cabinet."—**FRANCIS BUCKLEY, EQ MAGAZINE**

"I heard details in imaging and ambience that I had never noticed before. ...the 20/20bas is exceptional."—**ROB SHROCK, ELECTRONIC MUSICIAN MAGAZINE**

"The Event 20/20s turned out to be damned fine monitors."—**PAUL WHITE, SOUND ON SOUND**

"If the 20/20 monitors are any indication of what we can expect from Event Electronics, this is a company worth keeping a close eye on."—**LOREN ALLDRIN, PRO AUDIO REVIEW**

The 20/20bas Monitors from Event... Make your next mix perfectly clear.

TEC 1997 Nominee

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CIRCLE 35 ON FREE INFO CARD

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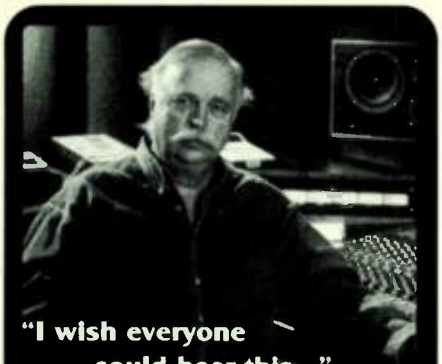

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TRACKING

Surround your talent and mic with *Studio Traps* and turn any room into a great sounding studio. Our Quick Sound Field iso system can be set up to get the traditional dead studio sound or simply rotate the traps to dial in that bright and clear, high presence effect of live sound.

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Enclose your monitors, console and mix position with *Studio Traps* and convert any room into a world class control room. Our ATTACK Wall iso system creates an acoustic subspace that delivers a very accurate and powerful bottom end, along with precise detail and pinpoint imaging. Your mix will truly hold together.

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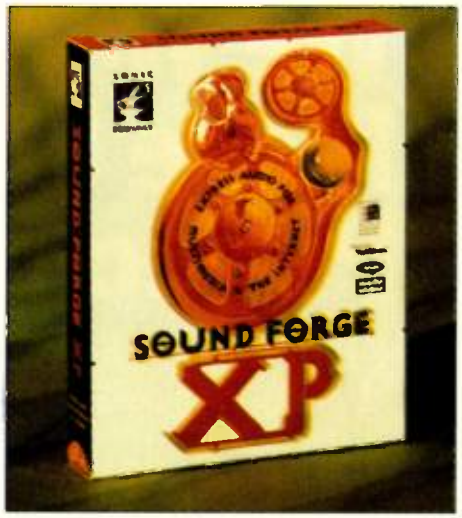
CIRCLE 01 ON FREE INFO CARD

EQ STUDIO WARE

ARACHNOPHOBES NEED NOT WORRY

DSPider from DUY is the first modular processing and synthesizing software for the Digidesign TDM Bus. It consists of 40 different modules that can be linked by the user in a number of different ways, providing a completely new approach to the creation of user-defined synthesizers and processors. DSPider allows users to create virtually any type of processing or audio-generating device. For further information, contact DUY, Spain. Tel: 93-217-45-10. Web: www.duy.es. Circle EQ free lit. #115.

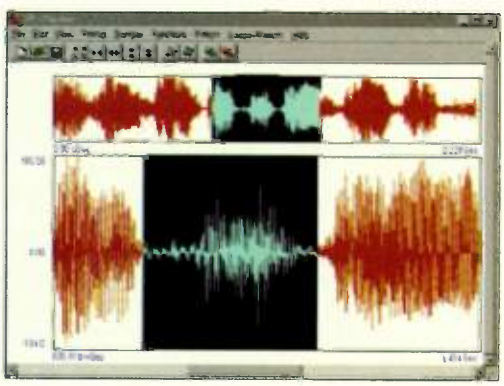
XP FILES



Sonic Foundry's Sound Forge XP 4.0 is specifically tailored for multimedia and Internet users and is essentially a streamlined version of the company's pro-audio editor, Sound Forge. Sound Forge XP runs natively on the Windows platform, and turns the average PC into a virtual sound studio with only a Windows-compatible sound card. The user-friendly design of the program employs common Windows shortcuts such as drag and drop, and copy, cut, and paste functions. Sound Forge XP can be used to record, edit, and process mono or stereo audio files, and delivers over 25 digital audio effects and processes including reverb, ten-band EQ, distortion, and fade in/out. Sound Forge XP supports an extensive set of file formats, including Microsoft WAV, NeXT/Sun Java AU, Video for Windows AVI, RealAudio RA, RealVideo RM, and Macintosh AIFF. For more details, contact Sonic Foundry, 754 Williamson Street, Madison, WI 53703. Tel: 608-256-3133. Web: www.sonicfoundry.com. Circle EQ free lit. #116.

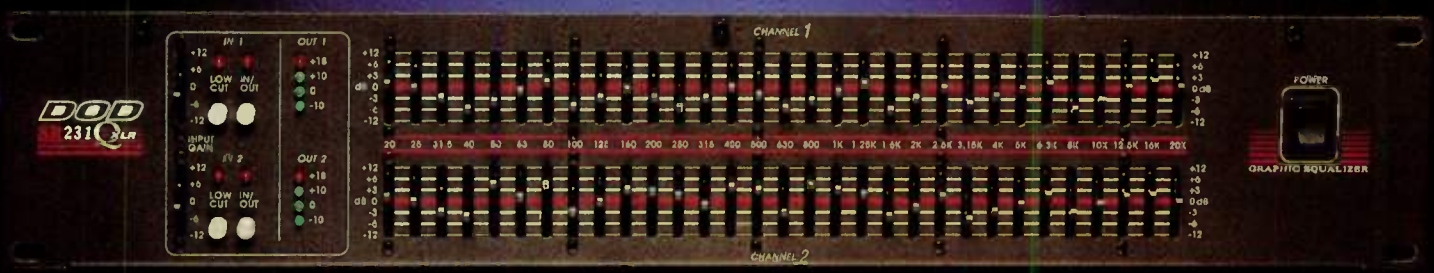
A WRENCH IN THE SYSTEM

Combining the graphing capabilities of Sample Wrench with a number of useful sonic effects into an easy-to-use package, Sample Wrench XE is designed with the musician, multimedia artist, or Internet publisher in mind. Sample Wrench XE includes fully adjustable effects with both built-in and user presets. Sample Wrench XE supports a wide range of file formats including WAV and AIFF, along with RealAudio and AU for Internet use, and a number of other formats, including 8SVX, VOC, SND, and RAW. Currently, both 12- and 16-bit Sample Dump Standard (SDS) devices are supported, and special drivers are included for the Ensoniq EPS and ASR series, Korg DSS-1, Akai S612, and Sequential Prophet 2000 series. SMDI is available for high speed transfer. Sample Wrench XE carries a suggested retail price of $129. For more details, contact dissidents, 10325 Woods Road, Utica, NY 13502. Tel: 315-797-0343. Web: www.dissidents.com. Circle EQ free lit. #117.



World Radio History

sr series equalization



power clarity control

Power to tackle any job that comes your way. Clarity from superior Constant Q technology and low noise design.
Control over the audio spectrum with 1/3 or 2/3 octave models featuring short or long throw sliders.
DOD SR Series EQ's excel in any situation where low noise, high performance and rugged reliability are essential. DOD has the tools you need at prices that make sense.

SR 430Qxlr

Dual 15-Band Constant Q Graphic Equalizer
15 - 2/3 Octave Standard ISO Center Freq. Bands Per Channel

Dual 31-Band Constant Q Graphic Equalizer
31 - 1/3 Octave Standard ISO Center Frequency Bands Per Channel

SR 231Qxlr

SR 431Qxlr

Mono 31-Band Constant Q Graphic Equalizer
31 - 1/3 Octave Standard ISO Center Frequency Bands

Dual 15-Band Constant Q Graphic Equalizer
15 - 2/3 Octave Standard ISO Center Frequency Bands Per Channel

SR 830Qxlr

SR 410

PA / Monitor processor is ideally suited as the final EQ/Feedback
Control System for the monitors. Notch Filters & Dual Limiter

Mono 31-Band Constant Q Graphic Equalizer
31 - 1/3 Octave Standard ISO Center Frequency Bands

SR 831Qxlr

SR 405E

2 Input, 2 Output, Full Bandwidth, Digital Room Delay with up to 2
seconds of delay for each channel

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Built in Pink Noise Generator and Calibrated Microphone (included)
Five LED's per band

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Audiowerk8 Home Studio Kit

The success of any music production is always contingent on the harmonious integration of the components used in its creation. The Audiowerk8 Home Studio Kit delivers this level of integration by providing an exceptional quality PCI Digital Audio Recording card and cutting edge sequencing and DSP software all in one package. With this combination even very complex musical compositions become a no hassle reality. You deserve the best and here's the deal.

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Audiowerk8, ...

the powerful 7" PCI recording card with 2 analog inputs, 8 discreet outputs and digital I/O (S/P-DIF format). Equipped with the latest PCI busmaster technology, it optimizes the performance of your system by reducing the load on your computer's processor. The Continuous Sample Rate Calibration allows for perfect synchronization, even when using very long audio files. This card gives you all of the advantages of non-linear recording technology on Windows 95 and MacOs.

- 8 analog Outputs
- 2 analog Inputs
- Stereo Digital Input and Output (S/PDIF)
- Professional Quality A/D D/A converters
- Sample rate variable up to 50 KHz, Res. 1 Hz
- 8 track playback during 2 track recording

Audiowerk8

Mac OS

Syntrillium

Full Cross Platform Compatibility

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Audiowerk8

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Logic Audio Discovery...

is designed for your home studio and offers integrated MIDI sequencing, basic scoring and audio recording/editing. With its unsurpassed resolution of 960 ppqn, it simply guarantees the best timing of all software sequencers available. A virtually unlimited number of audio tracks in an arrangement can be played back on 16 physical tracks. Real Time DSP Plug-Ins give you additional creative options.

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- Audiotracks editable with 2 bands of EQ
- 2 effect Sends for Reverb, Delay or Chorus

Logic AUDIO

and Cool Pro Edit LE.

As a user of a PC with Windows 95 you will be delighted by this special bonus application. In cooperation with the Syntrillium Software Corporation we have included a new 2 track version of their sample editor, Cool Edit Pro. Just a double click on an audio track in Logic Audio Discovery and you can start Cool Edit Pro LE, giving you additional DSP effects plus Active Movie Plug-Ins support.

Plus ZAP for MacOS!

With Emagic's Zero Loss Audio Packer you can compress your audio files up to 60%. When expanded from the compressed files, the original audio is restored with 100% bit accuracy. ZAP is the proper tool to prepare digital audio files for archiving or transmission via the internet.

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CIRCLE 16 ON FREE INFO CARD

Postal Service

A team of postproduction pros call this California-based studio home

STUDIO NAME: Lerios and D'Andrea Musicworks
LOCATION: Woodland Hills, CA
KEY CREW: Cory Lerios (left), John D'Andrea (right), Matthias Weber, Tom Harriman, Moira Marquis, Troy Hardy
CREDITS: In addition to composing and producing music together for film and television, including eight seasons of *Baywatch*, *Crayola Kids*, *20,000 Leagues*, *Trojan Horse*, *Gulliver's Travels*, *Baywatch Nights*, *Shadow Warriors*, *Flipper*, and *Max Headroom*, as well as the themes for *CBS Sunday Night Movies*, *Days Of Our Lives*, and *Hard Copy*, Cory Lerios and John D'Andrea have also composed, produced and recorded separately for the *Dirty Dancing* and *Boiling Point* soundtracks, Belinda Carlisle, and Air Supply. Cory Lerios was a founding member of Pablo Cruise. Moira Marquis has worked on *Baywatch* with Lerios and D'Andrea, as well as Public Image Ltd., The Tubes, Kiss, Al DiMeola, and Cheap Trick. Tom Harriman's composing and production credits include *Cop Rock*, *Tales From The Crypt*, *Baywatch*, and recordings or performances with David Pack and Rita Coolidge, Natalie Cole, and Richard Carpenter. Composer/orchestrator Matthias Weber's credits include *Baywatch Nights*, *The New Adventures of Flipper*, *Thunder In Paradise*, and *Days of Our Lives*. Troy Hardy has performed guitar and digital editing on *Baywatch*, *Baywatch Nights*, *Flipper*, and several Movies of the Week.
CONSOLE: Speck SSM with extra line mixers (136 channels) in three studios
KEYBOARDS AND SOUND MODULES: Roland A90 controllers, JV-1080's and 880's, JD-800's, JD-990, S-760's, and SP-700's; Korg Wavestations; Yamaha TG500's; Akai S3000XL's, S2800's, and S1000's
MONITORS: KRK Expose (E8), active
COMPUTERS & SOFTWARE: Apple computers; Steinberg Cubase; Opcode Studio Vision Pro; Digidesign Pro Tools and Masterlist CD; Toast CD-ROM.

RECORDERS: TASCAM DA-88's and DA-38's; Sony JH-24 (analog 2-inch)
DATS: Panasonic SV-3800's; Sony PCM-2600
OUTBOARD GEAR: Focusrite ISA 215's; Summit EQF-100; API 550a and 550b; Neve 1079's; Innovonics compressor;

World Radio History

UREI LA-4's, Summit TLA-100's; dbx 160 and 160x's; Lexicon 480L's, PCM70's, and PCM90's; Eventide H3000's; TC Electronic 2290 and M2000; Roland SRV-330 and RSP-550; Alesis Wedge

MICROPHONES: Neumann U87; AKG C414 EB; Neumann KM84; Sennheiser MD 421 and 441; Electro-Voice RE20; Shure SM57 and SM58

STUDIO NOTES: Cory Lerios comments: The development of our studio has been an ongoing event. We currently have three rooms with essentially identical equipment — this makes it easy for any of us to move from one room to another. We want to avoid the problem of moving from one room to another and not having the same sound. Our most important consideration is having a powerful template of sounds and samples that are ready to go in each room. Since we're composers first, these systems have been designed to be extremely musical. EQ

World Radio History

Shure Model 710A

This Shure classic crystal mic made itself right at home

PHOTO BY EDWARD COLVER

MICROPHONE NAME: Shure Model 710A
FROM THE COLLECTION OF: Larry Bentley, Cellar Dweller Productions (www.cellardweller.com)
PRICE WHEN NEW: $10 (circa 1949)
DATE OF MANUFACTURE: 1949 through 1970
TYPE OF MIC: Crystal transducer
POLAR PATTERN: Semi-directional
FREQUENCY RESPONSE: 60 Hz to 9000 Hz
EFFICIENCY: 3.15 millivolts per microbar @ 1 kHz (over a 7-foot cable, across a 1 to 5 megohm load)
INTERNAL OUTPUT IMPEDANCE: Equivalent to a 900 micro-microfarad condenser
RECOMMENDED LOAD IMPEDANCE: 1 to 5 megohms
DIMENSIONS: 3.2 (length) x 2.7 (width) x 1.13 (thickness) inches
WEIGHT: 12 ounces
MIC NOTES: The Shure Model 710A was one of a series of crystal microphones manufactured by Shure over the period of time noted above. In addition to the 710A, Shure produced the 710S, which included an on/off switch. Referred to as the "Rex" Models in Shure literature, the 710A and 710S employed a Bimorph, Rochelle salt crystal for operation. These microphones were intended for use in ham radio and public-address systems, as well as for home recording. Initial retail price of the 710S was $12, and final prices were $13 for the 710A and $13 for the 710S. The Model 710 Series also appeared as the 710G and 710GS in private-label or OEM versions, manufactured by Shure from 1961 through 1964.
USER TIPS: Although the Model 710A may simply be placed upon a desktop for use, its base does include a standard 5/8-inch 27 thread for stand mounting. All models in the 710 Series are high-impedance and should be used with a cable of minimum length. Also note that crystal microphones in general are very sensitive to environmental conditions and should not be kept in places where the temperature exceeds 125 degrees Fahrenheit. EQ

World Radio History

SM58

Roger Daltrey Guns N' Roses Live
Fugees Boyz II Men Beck Prodigy
Iggy Pop Sheryl Crow 311
Michael Brecker No Doubt
Jethro Tull Beastie Boys
Gorky Park Pretenders
Pete Townshend Maná
Little Feat Cyndi Lauper
Herbie Hancock Ramones
Alice Cooper Erykah Badu
LeAnn Rimes Motörhead
Leningrad Cowboys Blur
Blues Traveler Skunk Anansie
Garbage The Cranberries
David Byrne The Tragically Hip
Buddy Guy Al Jarreau Tom Jones
Patti LaBelle Wet Wet Wet Los Lobos
Del Amitri Jonny Lang Morcheeba
Cast Mike + The Mechanics Rammstein
Bobby McFerrin Santa Sabina Therapy?
Manic Street Preachers Gian Marco Korn
Fool's Garden Take 6 Die Fantastischen Vier
David Sanborn Vince Gill Courtney Pine
Billy Cobham Julian Dawson George Fox
Congreso Levellers Os Paralamas Do Sucesso
Ashley MacIsaac Charles Gavin Sugar Blue
Mansun H-Blockx Bill Bruford Aterciopelados
Wynonna Hans Dulfer John Hiatt Rockapella
Dennis Chambers Lee Roy Parnell Rio Faith No More
Mary Chapin Carpenter Charlie Daniels Band
Peter Erskine K's Choice Kirk Franklin & The Family
Wilco Travis Tritt "Weird Al" Yankovic Merle Haggard
Sophie B. Hawkins SWV (Sisters With Voices) Warrant
Simon Phillips Hank Williams Jr. Michael W. Smith Chicago
Ernie Isley Jim Keltner Suzy Bogguss The Power Station
Waylon Jennings Deftones Aforso Nigro Filter Joe Lovano
Adrian Belew funky Meters Mary J. Blige Goo Goo Dolls
Tim McGraw Emmylou Harris Kayros Charlie Alberti Elastica
Marty Stuart Pam Tillis Tracy Lawrence Dr. John Billy Ray Cyrus
Pantera BlackHawk Lonnie Brooks Neal McCoy Craig Chaquico
Stereo MCs Debbie Reynolds Confederate Railroad Los Dukes
Slaughter Lorrie Morgan Julio Revueltas Gov't Mule Black Sabbath
Republica Doug Stone Joe "King" Carrasco Neville Brothers Spinal Tap
Stabbing Westward Oleta Adams Manhattan Transfer Rob Halford
Kula Shaker Gin Blossoms Paul Jackson Jr. Candy Dulfer The Who

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

Duh.

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

For the producer in you, the VS-840's random access recording system allows you to record a great verse and chorus and then simply cut and paste tracks to try out endless song structures and arrangements. Throw in a built-in 12-channel mixer with 20-bit A/D converters, a full-blown stereo multi-effects processor, 64 virtual tracks with scrubbing ability, and you've got an unbeatable package at an unbeatable price.

Head on over to your nearest Roland dealer and see where digital recording is headed. It's an absolute no-brainer.

http://www.rolandus.com CompuServe®: GO ROLAND Fax-Back Information: (213) 685-5141, ext. 271 (Doc. #10237)
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64 Virtual Tracks

You can record up to eight takes on each of the VS-840's eight tracks. Record your solo over and over on the same track, keeping the previous takes. Bounce without fear. Comp the ultimate track. A total of 64 virtual tracks are available.

Built-in Effects

The VS-840 features a world class COSM-based guitar preamp for modeling the greatest vintage tube amps in history. It also comes with digital Reverb, Delay, Chorus, EQs and much more.

999 Levels of Undo

Now you can edit, bounce and record with peace of mind because with the VS-840's 999 levels of undo, operations or mistakes are never permanent.

EZ Routing

EZ Routing takes the fear out of recording by automatically configuring your VS-840 for greatly simplified recording, bouncing and mixing. Recording has never been this easy.

Iomega® Zip™ Drive

The VS-840 uses a convenient built-in Iomega Zip drive to digitally record your music, a first for digital multi-tracking. As simple as a cassette tape, Zip media is inexpensive, reliable, portable and available everywhere.

Roland

VS-840 Digital Studio Workstation

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CIRCLE 78 ON FREE INFO CARD

Akai DPS12 Digital Personal Studio

Akai takes personal recording to a new level with its hard-disk recorder

BY STEVE LA CERRA

It's amazing how far audio technology has come in the past ten years, and Akai's recently introduced DPS12 Digital Personal Studio is a prime example. This unit is a self-contained digital audio mixer with a built-in hard-disk recorder capable of recording up to 250 virtual tracks and playing back 12 tracks of 16-bit digital audio. The DPS12 can store data to an internal hard disk or Jaz drive, or any external SCSI drive.

Akai's engineering team has carefully thought out the design of the DPS12, starting with the mixer's inputs. Six balanced, analog, 1/4-inch TRS inputs are provided on the unit's top panel, and while it will be obvious that they can accept a line-level signal, these inputs also have enough gain to accept a microphone level signal as well.

There are 12 input channels, each with a fader, panpot, channel select, and record select buttons. Since the channels don't have dedicated EQ and aux knobs, parameters are modified by calling up the desired function in the master section, selecting a channel, and then using the cursor and jog/data wheel to make changes. Commonly used functions such as track assignment have dedicated function buttons, while less frequently used functions (aux send 2, for example) may be accessed by one of the six softkeys directly underneath the DPS12's LCD panel.

Digital EQ is provided in two flavors on the DPS12: you have a choice of either 12 channels of 2-band EQ (sweepable high- and low-shelving) or 6 channels of 3-band EQ (sweepable high- and low-shelving with a parametric mid band). These EQs may be assigned to any channel. Two aux send outputs are included, and may be used either via the rear-panel 1/4-inch, TS jacks, or internally with Akai's optional EB2M processor board. This expander card provides two independent effects engines capable of generating reverb, chorus, flanger, rotary speaker, compressor/limiter, and stereo delays of up to 1.5 seconds.

Akai has built a "through mix" feature into the DPS12 that allows it to function as a 20-input console during mixdown. In addition to the 12 main channels (used for track returns), the six mic/line inputs can be routed to the L/R bus, as can the rear-panel, digital stereo optical input.

As you might expect, the DPS12 can store and recall mix scenes as snapshots (up to 99) but in addition, the DPS12's faders and pan knobs generate MIDI controller data. In con-

TAKE IT PERSONALLY: Akai's DPS12 Digital Personal Studio is a digital audio workstation that is capable of recording up to 250 virtual tracks and playing back 12.

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When you think of high quality microphones, your first consideration should be AKG. Since 1947, AKG has been the leader in condenser microphone technology. Our C1000S, C3000 and C535EB are great for professional and home studio engineers, as well as performing musicians.

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junction with the unit's rear-panel MIDI in and out/thru jacks, this feature allows automation of mix moves using an external MIDI sequencer. A backlit LCD screen shows mixer information such as which track is selected, fader level, EQ settings, and aux settings. Master outputs from the mixer section are on both analog RCA and digital S/PDIF jacks.

Probably the biggest strength of the DPS12 is that it records *un*compressed audio to disk, and you have your choice of formats. The DPS12 may be purchased without a drive (in which case you add your own SCSI drive; check with Akai for drive requirements), internal 2 GB hard drives, or with an internal Jaz drive. Up to seven SCSI drives may be addressed by the DPS12.

Working bands will love the fact that the DPS12 can record up to eight tracks simultaneously, making it appropriate for recording live rhythm tracks. Analog-to-digital conversion is 18-bit, D/A is 20-bit, and sample rate is selectable between 48 kHz, 44.1 kHz, or 32 kHz. Akai has given the DPS12 the standard insert, delete, erase and copy editing functions, but also has implemented more advanced editing muscle such as single or multitrack "Move." Edit points can be precisely located and marked using the jog wheel and a graphic waveform display. If you make an error while editing, it's not a problem — there are 256 levels of undo.

Of course, access to audio stored on a drive is instant, and the DPS12 includes autolocate functions. Twelve direct autolocate points may be stored and recalled from the channel select buttons. An additional 100 locate points may be accessed by using the Goto button and the locate window; these points may be named for easy identification. Besides Goto, the transport section has Play, Rew, FF and Stop controls, as well as Playfrom and Playto functions for auditioning edit points. Tracks are armed via 12 record select buttons (one for each channel/track), which double as Solo buttons.

The DPS12 is currently available with suggested prices starting at $1499; the EB2M multieffects processor is priced at $299. For more information, contact Akai at 817-831-9203 or akaiusa@ix.netcom.com. Circle EQ free lit. #118.

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Lexicon PCM80 / PCM90	4.5
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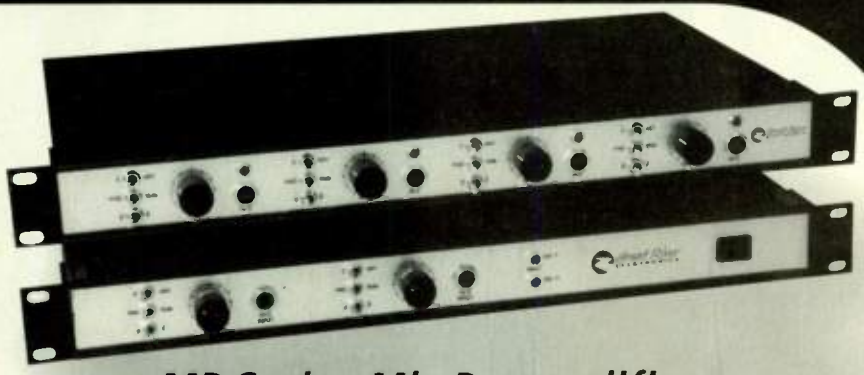

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The Tories "Spaceships In The Sky"

One of the band members tells how this song made it from the basement to record stores

BY STEVE BERTRAND

When The Tories recorded "Spaceships In The Sky" (which is featured on our debut CD, *Wonderful Life*, N2K Music), it was not our intention for the recording to be on the CD. It was actually one of three or four songs that we were doing preproduction on, and the entire song was recorded within about three or four hours. The band has a studio in J.J. Farris's basement (he's our guitar player), and we were sitting around working on songs. At that time, we had a 16-track DA-88 setup with two Mackie 16•8 boards linked together. One of the Mackies was used for inputs and the other for playback. Our setup included Yamaha NS10M's for monitoring and very basic microphones: Shure SM57's, Sennheiser 421's — nothing particularly fancy. Getting most of the track down live seems to work best for us, so overdubbing was minimal.

Drummer Brent Klopp was in a very dead, carpeted room (with an 8-foot ceiling) playing drums. We miked his kit with Shure '57's on snare top and bottom, another '57 on one tom and a Sennheiser 421 on the other, an AKG D112 on kick, and a pair of AKG C1000's for overheads. We really tried to keep the whole thing simple (especially for the kit) to avoid phase problems.

Brent was in one room and the rest of the band was in the next room, which really doesn't even have a doorway. What we would do is make sure that we had signal on the drum mics and ask Brent to play for a few minutes. Then he'd stop and we'd play the tape back to find out what it sounded like and figure out if we needed to move the mics around — a very unscientific approach. Fortunately, his kit sounds great because we felt that we should get the sound at the source, with little or no EQ being the key (if we get analytical, it usually sounds like crap). Brent monitored the band using headphones, and the rest of the band sort of gathered around the NS10M's in our "control room" to monitor. James Guffee (our bassist) would poke his head out through the doorway and play along with Brent and we could all see each other. On the NS10M's, we hard-panned J.J.'s guitar on the left, mine on the right, and just played.

Guitar amps varied throughout the project, but on this song it was a '59 Fender Bassman reissue for the all of the slide parts and most of the dominant guitar sounds, with a Marshall for some additional sounds (the guitar was a Gretsch Duo Jet guitar). Most often, these amps were miked with a '57 jammed in near the cone, but occasionally we used an AKG C414 or a C3000. James's beautiful '64 Fender P-bass went through a Demeter tube DI and also his Ampeg SVT cabinet — which we miked with an AKG D12. These two signals were recorded onto separate tracks (both with a bit of compression from dbx 160x's) and later mixed together. All rhythm tracks were recorded in one take; vocals and J.J.'s slide guitar parts were overdubbed later.

Lead vocals and background vocals were recorded separately, though we did record all of the background parts

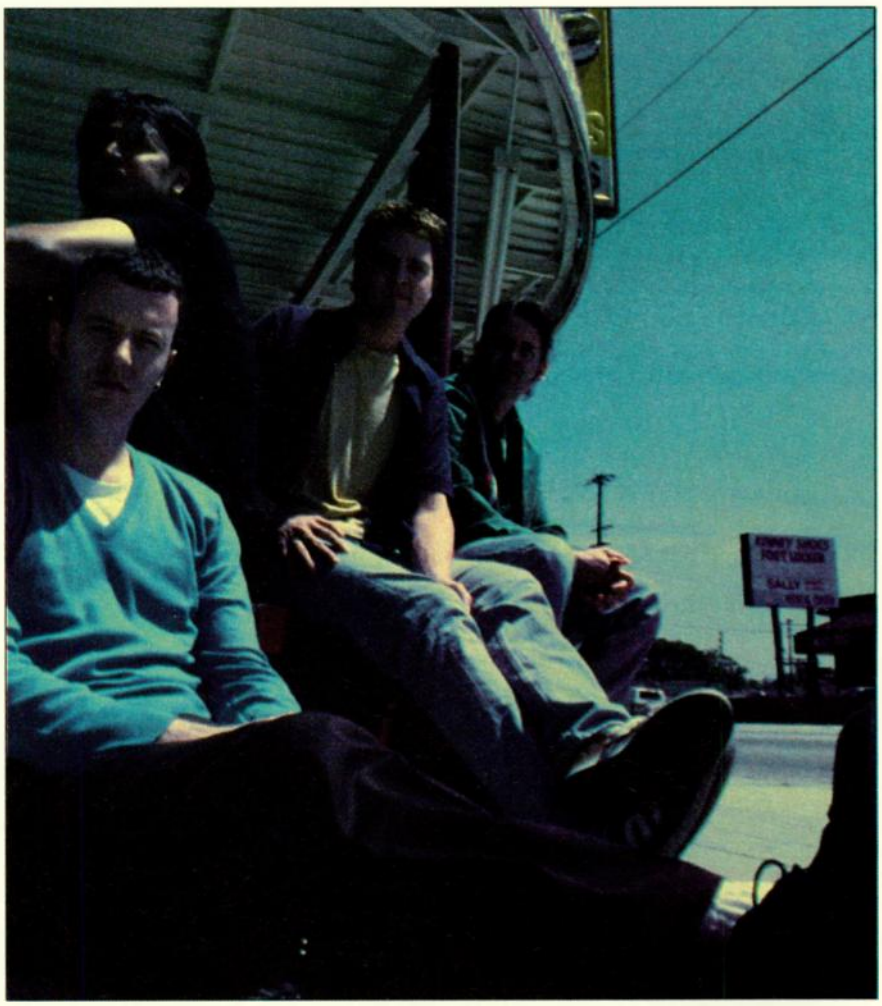

PHOTO BY BILL WESTMORELAND

TORIES STORY: This project-studio-recorded song wasn't even supposed to be on The Tories's album, but it sounded so good that they had to use it.

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at once (we wore headphones for this). Sometimes when we're looking for a trashy sound we'll record vocals while monitoring through the speakers. In that case, we'll run a mono mix and flip the phase of the speaker cable going to one of the NS10M's. By placing the speakers equidistant from the mic and putting one out of phase, most of the sound from the two speakers cancels at the mic position, minimizing leakage. We're all reasonably proficient as engineers, so we swap off studio duties.

Once the background vocals were done, the tracks were finished. Vocals were limited a bit to tape, and then a bit more when we mixed to DAT (sometimes we'd compress the whole mix to DAT). A lot of times, compressing the mix would squeeze the life out of the song because we don't have great compressors, so we found that leaving it alone was generally better. For the intro of the song, J.J. and I were farting around with some weird CD sound effects. We recorded an oscillator from a test CD for one side of the mix and Morse code from a sound effects CD for the other.

After "Spaceships In The Sky" was recorded, it sort of fell by the side until we were mixing at Compass Point in the Bahamas. We had been mixing our tracks to stereo pairs onto DA-88 tapes. One day I happened to pull up "Spaceships...," we listened to it and thought, "Wow, this is cool. Let's use it." We had actually forgotten about the song. Since there was only one DA-88 in the studio, we locked the DA-88 to the 2-inch machine and bumped "Spaceships..." over to 2-inch tape, eight tracks at a time, in two separate passes. In other words, we locked the two machines and transferred the first eight tracks. Then we placed the tape with tracks 9–16 into the DA-88, rewound the 2-inch, and recorded 9–16 to 2-inch, in sync with the first eight. This made it easier to work and we mixed the song in a few hours on the studio's SSL.

Listening to the song at Compass Point, we heard some differences in the sounds we had recorded there versus the sounds we had recorded at home — particularly the vocals and guitars. Primarily the record was done with Matchless and Vox AC30 guitar amps and "Spaceships..." was done with Marshalls. Also, the vocals we recorded at home were brittle compared to the ones we did at Compass Point because when we did vocals at Compass Point, we used tube '47's and C12's. But "Spaceships..." had an attitude and a vibe — it was more about the vibe than how sonically accurate the recording was. There were even a few mistakes in it, but we left them alone because it had a certain attitude to it.

So now we have a song on our record that was done at our convenience and a lot cheaper than the rest of the recording. Oddly enough, it is one of the songs that gets favorable comments about the sound. It's nice to take a break in your own living room instead of being in a studio all wound up and saying, "OK. It's $XXXX a day and we gotta get moving. Tape is rolling and the pressure is on." It's a great vibe to do it at your own pace. If something doesn't work or if the guitar sounds sucks, you can go back and fix it and not worry about the number of days you have left or whether the studio is booked.

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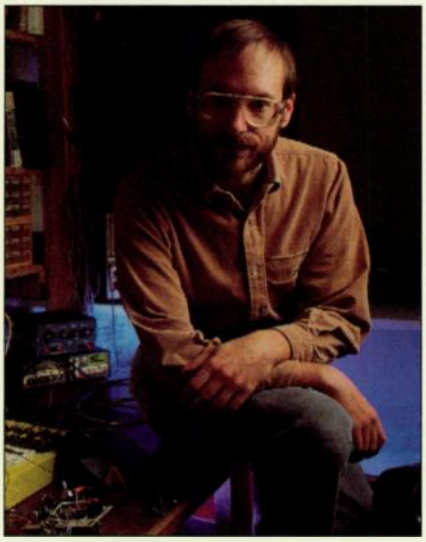

BY CRAIG ANDERTON

Recently, *EQ*'s publisher asked if I'd take a brief break from the usual "techniques" articles and write something about where audio software is heading. After all, everyone's talking about what's going to happen next — Will hard-disk recording take over? Will 96 kHz become the standard sampling rate? What about 24-bit technology?

They're all interesting questions, but I don't think the *real* excitement lies so much with new sound technology. For all practical purposes, we've conquered the world of recording from a hardware standpoint: you can go for digital, analog, computer-based, tape-based, MIDI, or some combination of all the above at remarkably low prices. However, audio software is still in its infancy, and that's where the big changes are going to occur.

The significance of software comes from the fact that it is spearheading a transition from the use of physical devices to virtual ones. Just a couple of decades ago, the only affordable way to process sound was with a hardware box that had knobs and switches. These days, that processor is just as likely to be a software plug-in that runs in a window on your computer monitor.

As a result, the future of software lies in developing interfaces that exploit virtual environments rather than follow the traditions established with physical environments. For example, my word processor defaults to black text on a white background because that's what paper and ink looks like, and word processors are based on typewriters. However, the first thing I do when creating a document is to set a dark blue background with yellow type. Not only does the type stand out better, it's more restful on the eyes (I've recommended this color scheme to other writers, and so far, they all agree it's less fatiguing). So what if typewriter ribbons aren't yellow and paper isn't blue? We're free of those limitations now.

Hardware mixers were designed around mechanical limitations that a computer doesn't have, and can't include features that a computer could easily accommodate.

THE MIXER ISSUE

Part of the reliance on older paradigms is to conform to people's comfort level. Engineers who have worked with physical mixers all their lives presumably have an easier time transitioning to software that looks familiar and arranges objects in familiar ways. But that may not be the optimum way to deal with a task.

Hardware mixers were designed around mechanical limitations that a computer doesn't have, and can't include features that a computer could easily accommodate. For example, why do faders have to duplicate physical mixer faders? A slightly curved fader, which of course doesn't exist in the real world, could fit a longer "throw" in the same amount of vertical space. The fader color could also convey information as well, such as "graying out" if no audio passes through a channel for more than 5 seconds, or flashing red briefly if the channel clips.

Another thought: it might be useful if on-screen EQ boost/cut controls, or the numbers representing those controls, could change color depending on the amount of boost — for example, green for 0 to 4 dB, yellow for 4 to 8, and red for 8 to 12. Cut could be handled with the same approach, but the color would be either grayer or more washed out. That would make it easy to see at a glance if you were maxing out a lot of EQs.

Screen space is another consideration. Mixer functions could minimize to a smaller box until clicked on, at which point a full-blown window would pop up with all your editing options. Again, let's take EQ. If you're not adjusting the EQ, it could take up very little screen real estate by including only 3 small on/off indicators for Hi, Mid, and Lo (or whatever is appropriate if there are more bands) that light if the boost/cut setting is something other than 0. If you clicked on the EQ module, then a full graphic interface would allow for parameter adjustment.

The way panning is handled could also use improvement. As you scan a bank of faders (and, in most cases, you can't see all of them onscreen at the same time anyway), a bunch of pan control settings doesn't tell you much. I'd love to be able to go to a window that analyzed the pan settings for the various channels and drew a "soundstage" that graphically showed the positions of various instruments, using the channel names for identification — sort of like

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an FFT for spatial placement. You could then "see" the overall stereo settings, visually, at a glance.

METRONOMES AND MORE

Here's another example of following an outmoded paradigm. Just about every sequencer has a metronome function, which essentially mimics the way a mechanical metronome works: it produces a series of clicks. Sure, maybe you can drive a MIDI drum unit instead of just having a click come through the computer speaker, and maybe the downbeat has a different tone compared to subsequent beats in a measure, but we're still limiting our computers to wind-up metronome thinking.

Why not have a metronome dialog box that lets you set the tempo, but also has a pop-up window for selecting a drum loop? These could be third-party or user-created loops. That way, if you wanted to work on a blues tune, instead of playing to a metronome you'd play to a basic blues drum part. Techno fans could have a four-on-the-floor kick with 16th note high-hats, and so on. I think most musicians agree it would be more inspiring to come up with a song idea by working with a drum part rather than a series of clicks.

THE HUMAN/SOFTWARE PARTNERSHIP

Most software is relatively passive — you tell it what to do and (hopefully) it does it. Future software will be more of a partner than a slave. As one small example, when a program opens up, perhaps it could ask you if you want to start a new project, work on the most recent project, or find some other project (in which case it would send you to the file selector). With one key press or mouse click, you'd be in the appropriate environment.

I'm not saying all the above examples are necessarily the best ways to do certain tasks; they're meant more to be thought-provoking and support the proposition that the time has come to question every aspect of a program's operation and interface with a fresh attitude. Is a particular feature handled in a particular way simply because that's the way it's always been done? Is there a more suitable way to implement a certain feature that makes more sense? Is the program taking full advantage of the virtual environment to convey information and feedback that creates an interactive software experience?

Software will continue to adapt to, explore, and streamline the new virtual environment. The most important and profound changes will come from understanding how the human brain reads and processes information (including the influence of color, images, and typefaces), which is what computer displays are all about. Right now, we're in the Stone Age of user interface science. I anxiously await the Bronze Age!

Craig Anderton is the author of **Multieffects for Musicians** *and* **Home Recording for Musicians** *(both published by AMSCO). He lectures around the world on musical electronics, has played on, produced, or mixed over a dozen major-label releases, and hosts the "Sound, Studio, and Stage" site on AOL (keyword SSS).*

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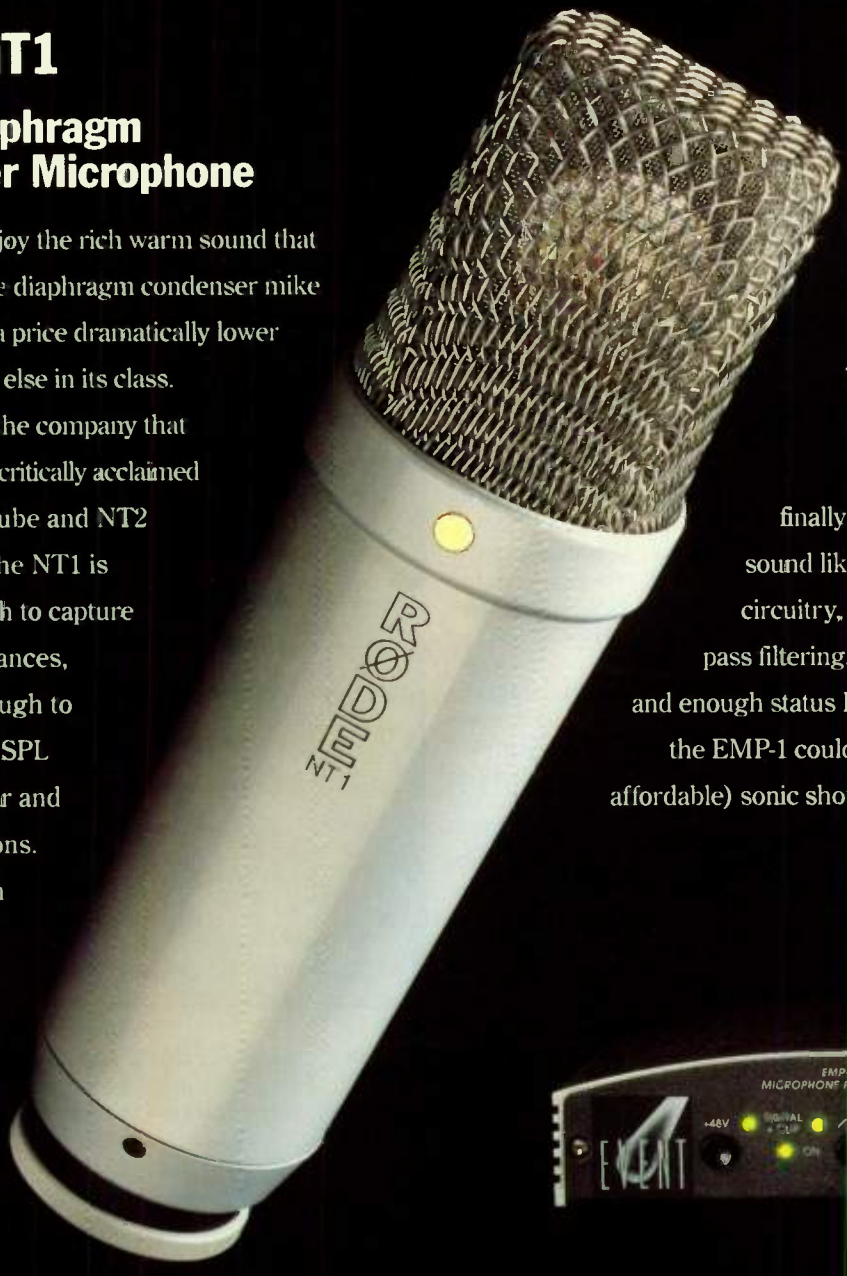

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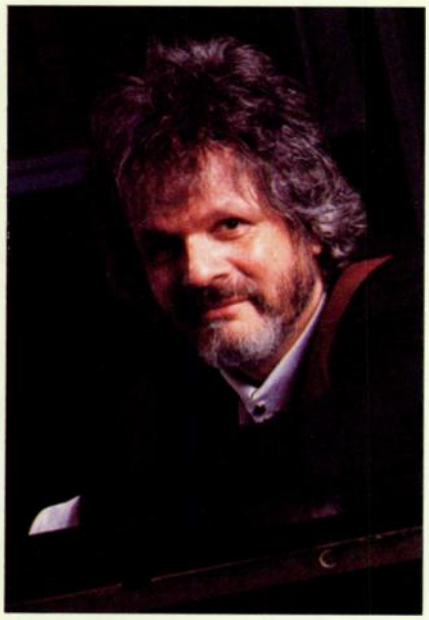

PHOTO BY JIM HERRINGTON

Mary had a little "comp"

BY AL KOOPER

Many years ago, concurrent with the arrival of 24-track technology, some forgotten wonderful person taught me how to comp vocals. It was a life-changing moment in time. It simplified getting a great vocal from an artist; maintaining the artist's dignity by eliminating endless punching in his/her presence. I'm all set to tell you how I've distilled it over the years and how I practice it on myself in my project studio in the basement.

Comping a vocal in a project studio requires either planning or mucho tracks. I have 24 tracks, so the planning is not too intensive. I record four vocals on four adjacent tracks on my DA-88's. Now, if I'm producing someone else, I let them sing two completely uninterrupted takes. Then, on the third take, I'll stop them for pitch errors and punch in. On the fourth take, I suggest various different phrasings and melodic bends they might not have thought of, that I feel might enhance the vocal. Just a few things, mind you, a sprinkling of little things throughout the song. After the fourth take, I'll ask the artist to take a meal break and let me assemble a master vocal from the four takes.

Comping requires precision movements and understanding between the engineer and the producer. Once I was lucky enough to be photographed by Richard Avedon. As RA shot photos, his assistant wordlessly changed the lighting in some small way between every shutter click, handed RA a different camera after a prescribed amount of time, and changed film all at once. It made the session seamless and their lack of conversation impressed me greatly. I look for this kind of relationship with an engineer.

When comping vocals, the engineer will mark the location of the first line of the song. The producer will hear two seconds before the vocal comes in, and then the line he/she is studying. The first line from the first vocal take is played and the tape is immediately rewound. The tape starts in the same place and the second vocal track is played back with the artist singing that same first line. This continues until all four takes are scrutinized as quickly as possible. Then I make a decision about which take has the best performance. Sometimes I'll like two words from one take and three more from another. Either by utilizing the faders, mute buttons, or simply by punching in, I create the master line from the four different tracks and record it on a separate track that will become the master vocal.

Comping requires precision movements and understanding between the engineer and the producer.

As an example, let's say we were combining a version of "Mary Had A Little Lamb." The first line is "Mary had a little lamb, its fleece was white as snow." On take 1, the artist sang an impassioned reading of Mary had a..." and then the pitch went bad; however, on take 2, the performance of "...little lamb" was brilliant. On take 3, "...its fleece was white as snow" outperformed the other three takes.

Here is how I would create the master vocal from those four takes. I would record "Mary had a" from take 1 onto the master track. Then I would punch in "little lamb" from take 2. I would check the punch and continue on by punching in "its fleece was white as snow" from track three. I would then play it back to check the seamlessness of the combined performance: Does it sound like the artist actually performed it that way all at once? If not, I must go back and change the parts until it does. The producer and engineer continue until the whole song is scrutinized and punched in line by line. Yeah, it could take a long time, but it's worth it.

Let me tell you the story of my favorite comp. In 1989, I was producing B.B. King. We had selected the songs and proper keys and I had cut the backing tracks while B was on the road. I had sent him a rough mix with a dummy vocal and a dummy guitar so he would know the vocal and guitar entrances. When he arrived to do the vocals, he was completely unprepared! I busted him and he said he preferred to learn the song right at the session; it created a spontaneity he enjoyed after years of recording that way. So we painstaking went over the song line by line until he had a basic understanding of how to sing it. It was at this point that I began recording. The first two takes were rife with mistakes, but he was beginning to catch on to how to sing it. On the third take he nailed it for the first time. I stopped and made some suggestions to him, and then we took the fourth take. He was tired, and I suggested he go out for dinner and let me sort out the vocals. Happily, he ran out to the restaurant of his choice, and I set about comping. I was actually able to get a good vocal out of the four takes.

When he returned, I hesitatingly played him the "finished" master take. His eyes had a look of confusion in them, but a big grin lit up his face, and he said: "How did you do that? I don't even know this song yet!" I told him I read how-to articles in *EQ* magazine and I thought I'd try it out that night.

Seriously, folks, I'm a professional, but you *can* try this at home.

Hope you had a great holiday season and I'll see ya next month! EQ

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Elliot Scheiner

PHOTO BY ED FREEMAN

Phil Ramone's pupil does his teacher proud — very proud

BY MR. BONZAI

Bonzai: So, how's it going with the new Steely Dan album?
Scheiner: Not bad. We just started — seven days, five tracks.
What's the longest it took to finish a Steely Dan album?
Twenty-two months.
How long has it been since they've had a studio album?
Since *Gaucho*, which was 1981.
What's different this time around?
In terms of music, there is nothing different from the last time I worked with these guys, and they're writing as great as ever — the songs are phenomenal. We're approaching the recording and the music exactly as in 1981. They're using a live band, and, you know, there are very few live tracks being cut today. We have the whole band in the same room, Donald on piano, Walter on guitar, Ricky Lawson drums, Tom Barney bass, John Beazley on keyboards, and Wayne Krantz on guitar. I wasn't ready for this — I didn't expect it to be so great. We'll be done tracking in ten days.
What were your feelings going into the Fleetwood Mac reunion?
I was a bit hesitant at first because I only knew one member of the band: Christine McVie. I worked on her solo record back in 1983. So I didn't know the others, and you hear stories about people, and you don't know if they're true. As far as I'm concerned, there are no rumors. It was so good, and I had so much fun.

Suspect: Elliot Scheiner

Occupation: Producer/Engineer

Residence: Connecticut

Second Vehicle: 1949 John Deere "Poppin' Johnny" tractor used for moving boulders on his extensive private estate

Favorite Airline: American

Diet Highlights: Ben 'n' Jerry's "Cherry Garcia"

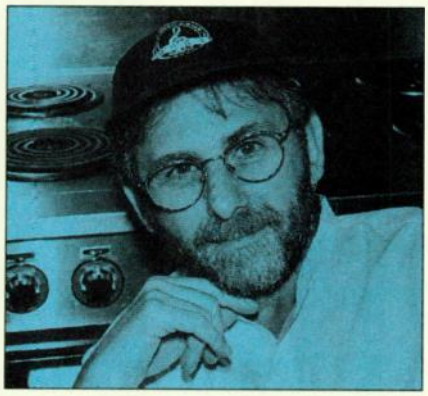
Latest Thrill: Music Producers Guild of the Americas, Chairman of the Producers Committee

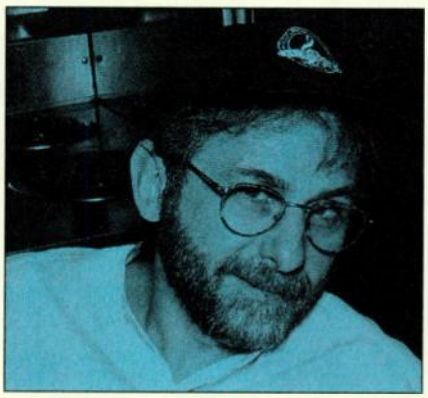
Notes: From *Moondance* to *The Nightfly* and *Songs In the Attic* to *Hell Freezes Over* and this year's *The Dance*, Elliot Scheiner has explored the art of recording with technical bravado and uncanny warmth. As a disciple of the Pope of Pop, Phil Ramone, he is one of the few engineer/producers whose body of work bridges that period of great live balancing to today's refined era of megatrack digital recombination.

Scheiner's work with Steely Dan started when he was making records with Jay and the Americans. Donald Fagen and Walter Becker were sidemen, and played in the road band. A Grammy-winner for his skills in recording the historic *Aja* and *Gaucho* albums, he is equally comfortable in the studio vacuum with artists like Fleetwood Mac or engineering the Eagles live.

Who is the most flamboyant member of the band?
Mick, definitely. The first thing you notice about him — the minute he starts talking — is that he's very wise. He's also a great drummer, and everybody had their contributions.
Any surprises?
Yeah. From the time we recorded for MTV, we had six weeks to finish and master the album. I was shocked that we actually did it, but everybody pulled together and this was while they were rehearsing for the road. It was double duty.
You also took care of the Eagles' *Hell Freezes Over*. Why you on all these top projects?
I've had a lot of experience doing live recordings, I guess. That's the only thing I can think of. Fleetwood called me because I had done the Eagles.

I gotta say, I've been so lucky to work with such great bands. It's completed a trilogy for me. The three great bands of the '70s from South-





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CIRCLE 18 ON FREE INFO CARD

World Radio History

ern California were Steely Dan, the Eagles, and Fleetwood Mac. The only one missing for me was Fleetwood, and then it happened like a gift from heaven.

Do you have a hot new piece of outboard gear?

No, I don't. And I wish I did. I'm looking for a portable piece of gear that would allow me to tune vocals. There's a Pro Tools plug-in called AutoTune, and you can take a vocal off tape, and shove it in. I believe it pitch corrects automatically to the nearest tone. But I need something that I can take on the road with me.

So what do you do now?

If it's not too severe, I use the Harmonizer 3500 and tune it manually, which is very tedious. And how good are your ears? I've also used a Carlton Blake control box that converts fader control voltage to MIDI. I hooked it up to the Flying Faders system and put the pitch shift in automation, so it's written in the program. I wish there was an easier way. But I have found a new speaker that I love. The KRK E-8 self-biamped monitor is slammin'!

If you were limited to only one model of microphone, which would it be?

Probably Shure SM57's, or maybe Electro-Voice RE-20's. I've used the '57 on so many things: guitar, drums — an all-purpose mic. But if I had only one mic, and that was all, I'd pick the AKG C24. I'd find the sweet spot and record everybody that way.

Do you have a console-of-choice?

For me, I like to record on a Neve 8068 or 8078, and the VR for mixing.

What's wrong with the music industry?

[*Chuckles.*] I guess we're all responsible for what's wrong, because we contribute to making records. We've got dis-

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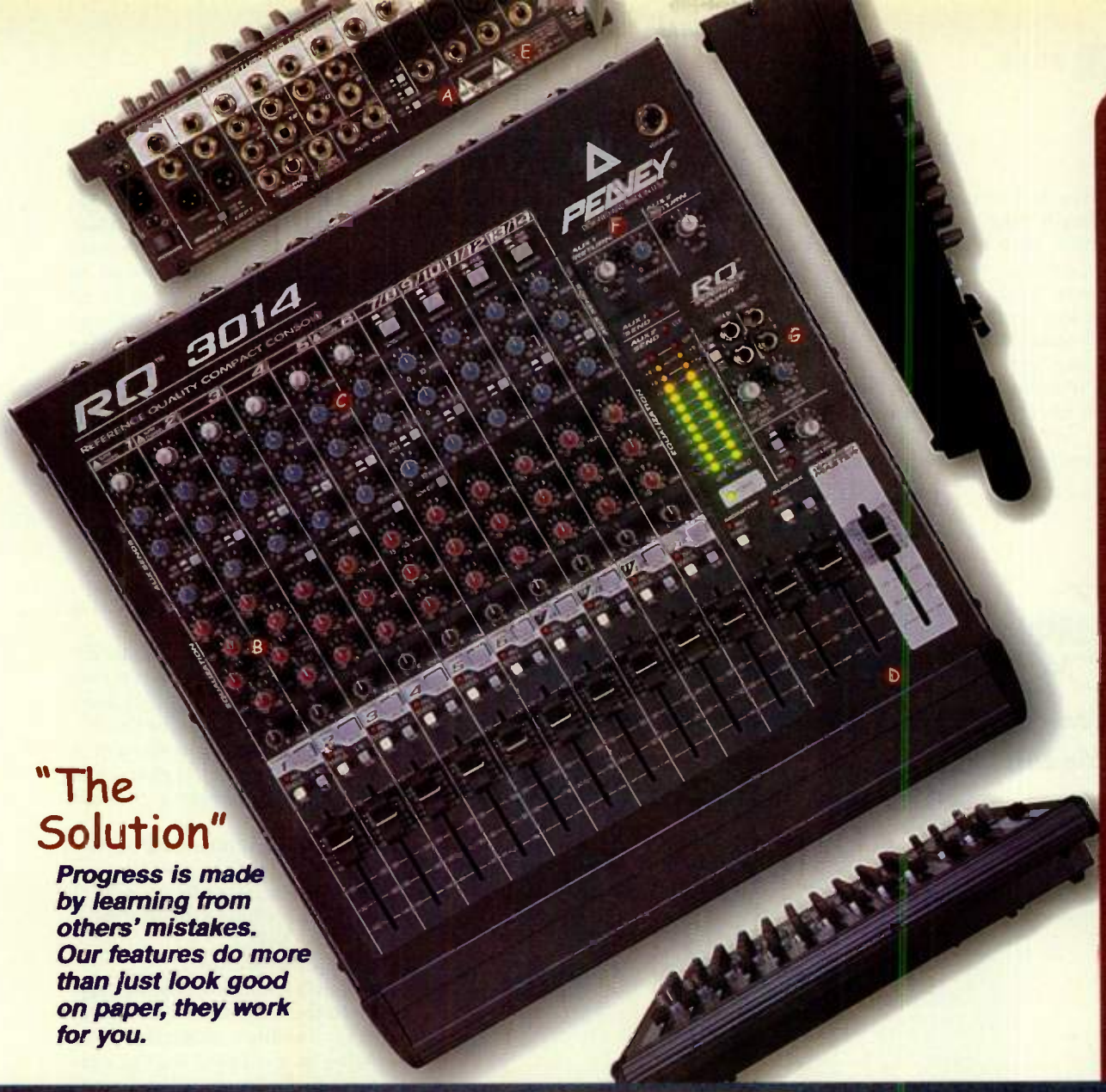

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F **Problem:** You want to send effects return to Main and Monitor without burning extra inputs.
Solution: Aux 1 return has sends to ***both*** Main ***and*** Monitor.

G **Problem:** You want to use a pre-recorded track, *and* hear it in your monitor.
Solution: Tape input with send to Main and send to Monitor

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CIRCLE 77 ON FREE INFO CARD

PEAVEY
IT'S TIME YOU HEARD

World Radio History

posable bands, and record companies are not willing to take the time to develop an artist. They find the newest hottest thing, get what they can, and you never hear from them again.

I hear what everybody is looking for now is the "young" Beck.

Well, Beck has been around for two years now. It's about the end of his career, as far as record companies are concerned.

Are engineers getting more respect these days?

The ones who have been around are getting more respect, but the same problems exist for young engineers as 25 years ago. Unless you've got a name, you're just an engineer.

How do you get a name?

You get lucky. Hopefully you work on something huge and you take advantage of that.

Does every engineer want to become a producer?

I'd like to believe so — that you'd want to go further. Obviously, there is more money and respect as a producer. One of the reasons I'm working with the Music Producers Guild is to get the word out and let people know what we do. As a group, we really need to establish an independent voice that can represent our interests in the music production profession.

What do you listen to while you're driving?

I listen to new tapes sent to me or talk radio. Occasionally, I'll listen to something I just finished to check out the mastering.

Is there anyone in the world you would like to record?

Peter Gabriel.

Do you have any business tips for young engineers?

As an engineer gets more work, he acquires equipment that he needs for his projects. A lot of times they rent it back to their clients. I've never done that because I felt there might be resentment in the end. My philosophy is that when they hire me as an engineer, they get what I have.

Who are the most amazing artists you've worked with?

Buffalo Bob and Howdy Doody. I recorded them live for the very last show at the Fillmore East.

Who is Chauncey Welsh?

My uncle. He's a studio trombone player and he introduced me to Phil Ramone. I started as an assistant engineer at Phil's A&R Studios back in 1968. I was Phil's assistant. He really taught me mic technique — I learned what he wanted and what it would sound like. Phil walked in one day about five minutes before downbeat on a Jimmy Smith record and said to me, "I got some stuff to do — you do it." I panicked, because it was the first time it would mean anything. It was such a shock. "You do it. I'll be up in my office." It made me an engineer. EQ

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CIRCLE 25 ON FREE INFO CARD

Studio Vision And The CD

Opcode's program works well with CDs, both in importing tracks and burning your own

BY TIM TULLY

Like other professional sequencers, Opcode Systems' Studio Vision is so sophisticated that it's easy to miss some useful functions. One of its talents is taking advantage of CDs — both audio and ROM — in esoteric, yet very useful, ways.

For example, if you have some extra hard-disk space and a CD recorder, Studio Vision can record a composition's MIDI and audio tracks to an audio CD without going to DAT first. You can also record the sounds produced by individual MIDI tracks as audio to free up your synthesizers for additional tracks or for use in later compositions. To re-use an archived track, Studio Vision can quickly pull it off a CD and bring it into a sequence.

This isn't the same as CD mastering, which requires tweaking by a competent mastering engineer to put the final polish on a mix. But for demos and archives, here's what to do...

HARDWARE/SOFTWARE ENVIRONMENT

Studio Vision can play and record audio using different hardware and software configurations, including Apple's built-in audio ports with Apple Sound Manager, or Digidesign's Audiomedia card with DAE (Digi's substitute for the Apple Sound Manager). The Audiomedia card has better converters than the Mac, and DAE provides pretty stable operation. To minimize potential conflicts, try using Extensions Manager to disable the Audiomedia's bundled drivers (Digidesign Sound Drivers 1.4.2x11).

TRACKS AND FADERS

Whether recording individual tracks or a whole mix, first set up a Studio Vision fader console to control level and pan. Faders are particularly useful for fading your sequence in or out in preparation for turning it into an audio file and are faster than going into each track and drawing in MIDI volume curves.

To set up a fader console, select the tracks to be controlled by clicking on the triangles to the left of the track names in the Tracks window. Then, from the Windows menu, choose Consoles, and then any console from 1 to 4. A set

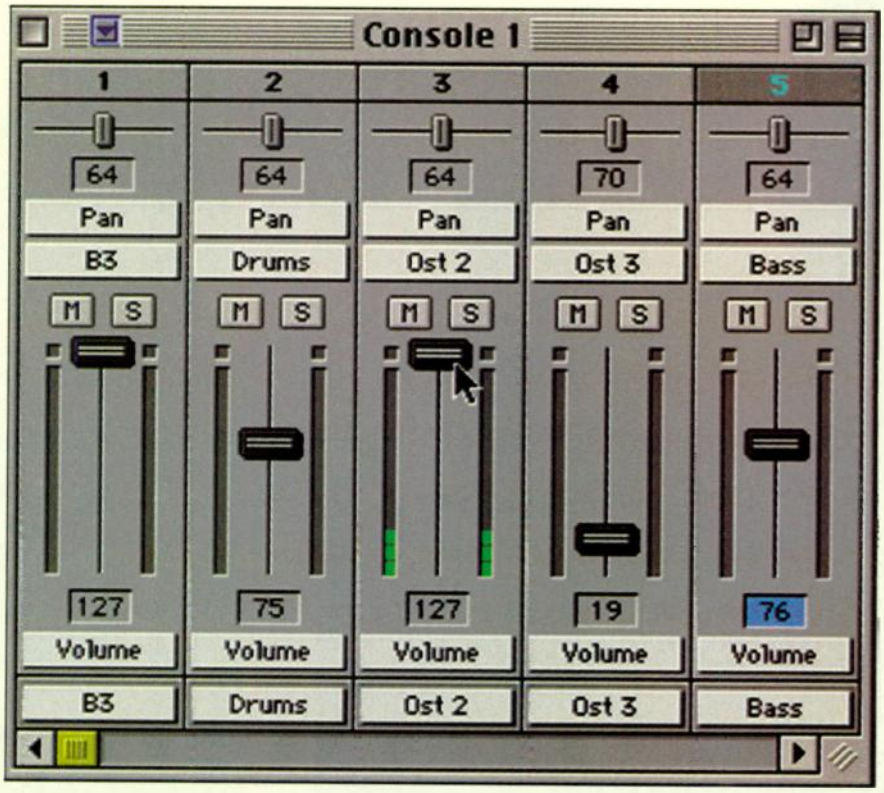

FIGURE 1: You can select all the faders in a Studio Vision Fader Console and move all of them at once.

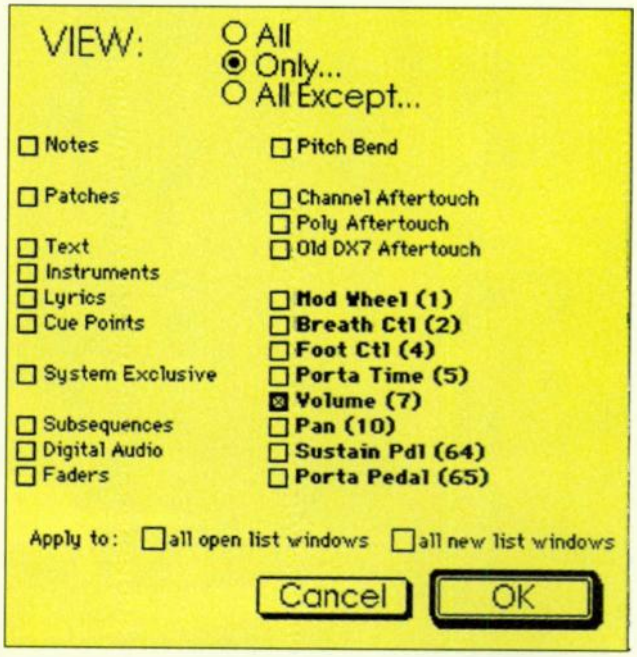

FIGURE 2: The List window can show only volume commands in the View window.

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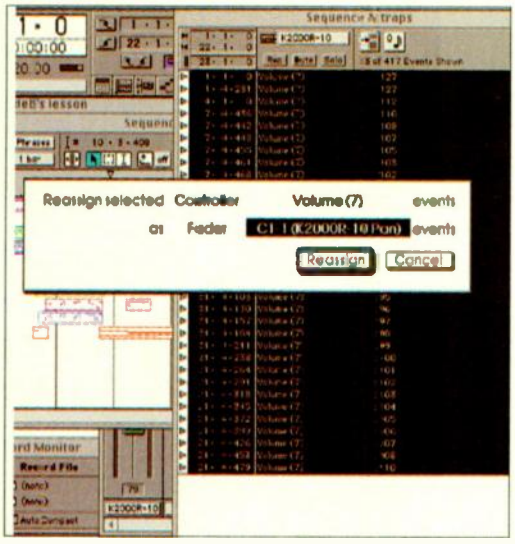

FIGURE 3: Reassign controller values to fader values so the fader positions will reflect all fades and pans.

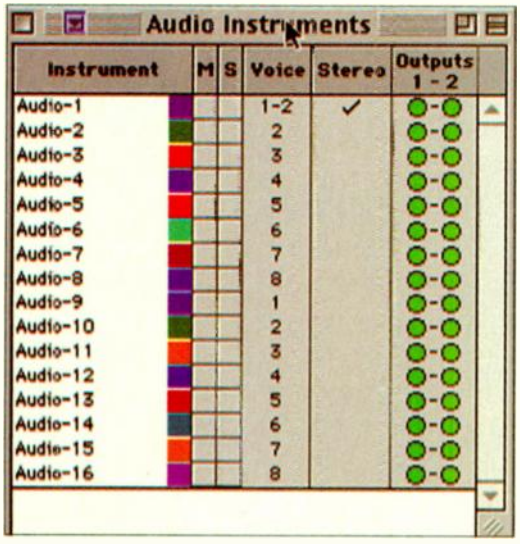

FIGURE 4: Set an audio instrument to stereo with two outputs for a linked pair of mono files.

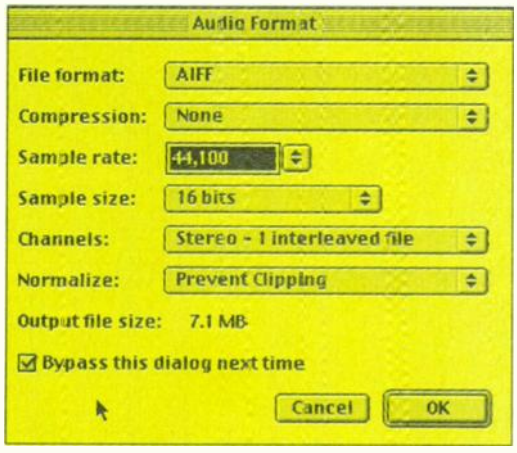

FIGURE 5: Set the various parameters of the file you record in the Export Audio Mix dialog box.

of faders appears. Click the small triangle at the top left of the Console window to pull down the window's "submenu" and choose Build Console From > Selected Tracks. This assigns the console faders to the selected tracks.

Now insert a new track into your composition by selecting the top track in the tracks window, then choosing Edit > Insert Track. The new track appears at the top of the track list. Name the track "Faders" and record-enable it.

The faders default to controlling level and pan. You can take a "snapshot" of the faders' positions at any instant and record automated fades over time. To take a snapshot, make the console active and chose Edit > Copy Faders. Select the fader track in the tracks window, set the current time to the desired location, and choose Edit > Paste. To make the faders easier to work with, go into the Instruments and Audio Instruments windows and rename the instruments you're using to the track names: bass, piano, etc. These names now appear in the faders (fig. 1). Make sure you save your customized console with the sequence. In the Save As... dialog box, click on What to Save, then check Fader Values and Fader Assignments.

To record fader moves in the Fader track and write them to the audio file, record-enable the fader track, start recording, and move the faders. For moves affecting a group of tracks, in the Console window, click on the slider in Fader 1 to select it, then shift-click on the slider knob of the last fader to select them all. All selected faders move together when you move any of them. The niftiest way to use this feature is to Option-click and drag the faders to zero for a fade-out. Even if they're all initially set to different levels, they will each move as necessary to all hit zero at the same moment.

Note that Studio Vision's faders do not use MIDI controllers but instead generate their own fader information. You can convert existing track MIDI controllers to fader data, but this isn't really necessary as controller data can be recorded too. The only reason to convert would be to use the faders to visually indicate a track's status as you work.

To convert, open a track's list view, and from that window's submenu, choose View. Set it to display only the controllers to convert (fig. 2). Then select them in the List window (remember, when selecting multiple things in Studio Vision, you select only those things, not everything in that range of time). From the Do menu, choose Reassign. Click on the dropdown menu here and a dialog box will let you reassign the controller values to values for any of your console's faders (fig. 3).

Incidentally, you can move Studio Vision's dialog boxes around if they're covering up information you need to see. Option-click on the dialog box and drag; when re-opened, it will appear wherever you left it.

ROUTING

Next, set up your signal's routing. You want to play the sequence through your mixing board and patch the board's main outs to the Mac audio inputs (built-in, Audiomedia, or another card). Patch the Mac's audio output into the mixing board so that you can monitor it, but avoid looping back out the mains and into the Mac audio input. One option is to bring the Mac audio out to a pair of input channels on the board, then turn off those channels' output assignments to prevent feedback. To hear this signal, just solo the appropriate channels. On most mixers, this will not interfere with other channels going out the mains, and you'll be able to record the sequence output while listening to the audio output.

When your routing is set up, be sure the board's output is good and hot. You'll want to control it from the Studio Vision faders, and they can't make the output hotter than what comes from the board.

SETTING UP TO RECORD

Open the Audio Instrument window, choose any unused audio instrument and make sure it's checked in the Stereo column, and that both outputs are enabled (fig. 4).

From the Windows menu, open Studio Vision's Record Monitor to see the levels at which you're recording and determine which Audio Instruments you'll record to. Check the "Link Pairs"

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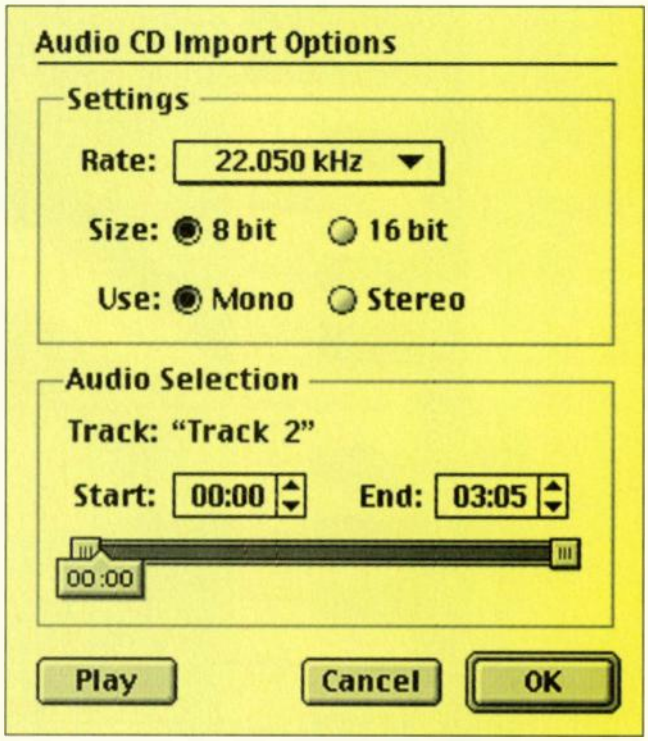

FIGURE 6: You can choose to import a CD audio track and various bit depths, sample rates, and mono or stereo, as well as specify its in and out points.

box at the lower right of the Record Monitor. Although DAE cannot record an interleaved stereo file, this will cause it to record two mono files, "linked" so as to appear in a Studio Vision track looking like a stereo file.

Now, insert a new track in the Tracks window at the top of all your existing MIDI and audio tracks. This makes it easy to see the track you're recording to as you work. Put this new track into Record mode and hit Tab to record the sum of all active tracks as two linked SDII files.

WRITING

To prep your new files for CD, select the desired audio region in the Tracks window. This is different from just selecting a track by clicking on the triangle at its left. The easiest way to do this is to drag in the Tracks window across the region of time you want to record, including the entire length of all the tracks you want included. Choose File > Export Audio Mix, and a dialog box will give you the opportunity to select various file formats (fig. 5). For a CD, save it as an AIFF file at 16 bits, 44.1 kHz sample rate, and a stereo interleaved file. Normalize to prevent clipping. Finally, use the software that came with your CD recorder to burn this file to a CD, and you have a very portable and easily played demo.

BRINGING IT BACK

Studio Vision can import and use audio from your archived files as well as from CD sound effects and loop libraries. To do this, insert a CD into your drive and select an empty track. Click on the File menu, choose Import Audio Using QuickTime, and navigate to the CD. Pick the desired track and set the dialog box file format options (bit-depth, sample rate, mono/stereo (see fig. 6)). It also provides a slider for selecting any portion of a CD track to import. Make these settings, then click OK to copy the audio you chose to your hard disk as an audio-only QuickTime Movie that appears in your sequence (you will be prompted to de-interlace any stereo files).

When bringing in audio to fit an existing composition, it's likely the two won't be at the same tempo. To fix this, zoom in on the new audio track and figure out the desired duration in bars and beats. Select the audio region and choose Scale Time from the DSP menu to rewrite your audio file to fit the number of bars and beats you choose. Too big a stretch messes with the sound quality, but give it a try.

Both writing to and reading from CDs is a natural for MIDI/audio sequencers, and expands their usability. Give it a try, and good luck.

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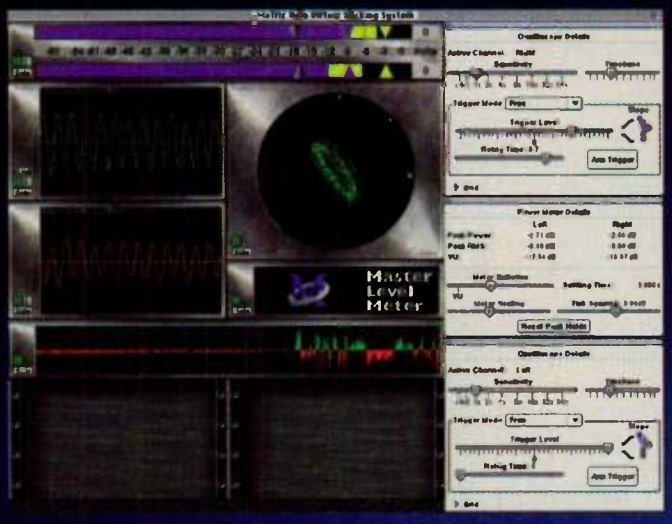

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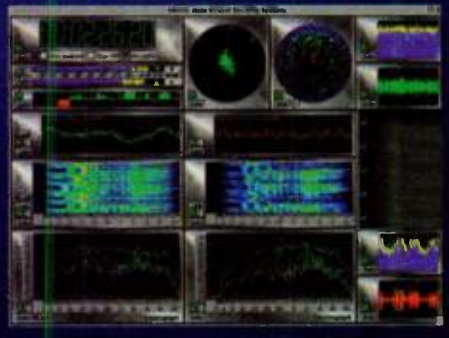

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World Radio History

Priming the Piano

Getting those ivories ready to be tickled — and recorded

BY BARBARA PEASE RENNER

Last issue, Jack Renner of Telarc discussed recording acoustic pianos. In that piece, he mentioned that an important part of any successful acoustic piano recording is a piano that's truly ready for recording. To get a few ideas on what to look and listen for, EQ *spoke to piano technician (and wife of Jack) Barbara Pease Renner. Here's what she had to say:*

I look for a piano that is reliable. That means it must be able to be tuned and stay in tune for the duration of a session. It must not have any flaws or damage that cannot be easily corrected in the allotted prep time — for example, buzzing soundboard ribs or hammers that are so worn that they cannot be voiced. Walking onto a stage or into a studio to see an instrument for the first time, I must quickly decide how to best spend the usually limited time before the first downbeat.

Tuning is always number one on my list. Whatever other maintenance a piano may need is second to the need for accurate, stable tuning (if you must make repairs before the instrument can be tuned, consider looking for an instrument that's in better shape). I tune the piano as many times as possible in the given time. With each tuning, fewer strings will require adjustment, and the more stable the piano, the better it will sound in between touch-ups. During breaks in a recording session my time can be spent making refinements to the sound — not trying to catch up with notes that have slipped noticeably out of tune. Tuning is the first thing an artist will notice — especially if it isn't spot-on.

Voicing is the second thing an artist will notice. Voicing is simply the timbre of the piano, as well as the uniformity of that timbre from note to note. Voicing can be manipulated and adjusted by the technician. Certain elements of the sound are controlled by the design and the materials from which the instrument is manufactured. Many nonmusical noises coming from a piano can be eliminated through careful matching of hammer surface to strings, or through removal of corrosion from string termination points. Hammer hardness is changed by either careful needling of hammer felt or the addition of a hardening agent.

A change of voicing should not be addressed until one is sure that the action regulation is correct. Regulation is the adjustment of all the moving parts, from the key right up to the hammer. These are made from wood, leather, felt, wool cloth, and brass. Pianos go out of regulation from wear and tear, compacting of wool and leather cushions, and changes in humidity. As a testimony to how well-engineered the concert grand piano is, it may be operating at only 50 percent of its potential but it will still be working, and its owner may not even be aware of the fact that there is anything wrong — you push down a key, you get a sound. That doesn't mean that it is not wasting the power of the pianist's fingers, or repeating as quickly as it should.

When considering a piano for a recording project, age is an important factor. Extraneous noises from old,

PHOTO BY JACK RENNER

BE PREPARED: Barabara Pease Renner explains that even the best recording gear can't make up for a poorly prepared piano.

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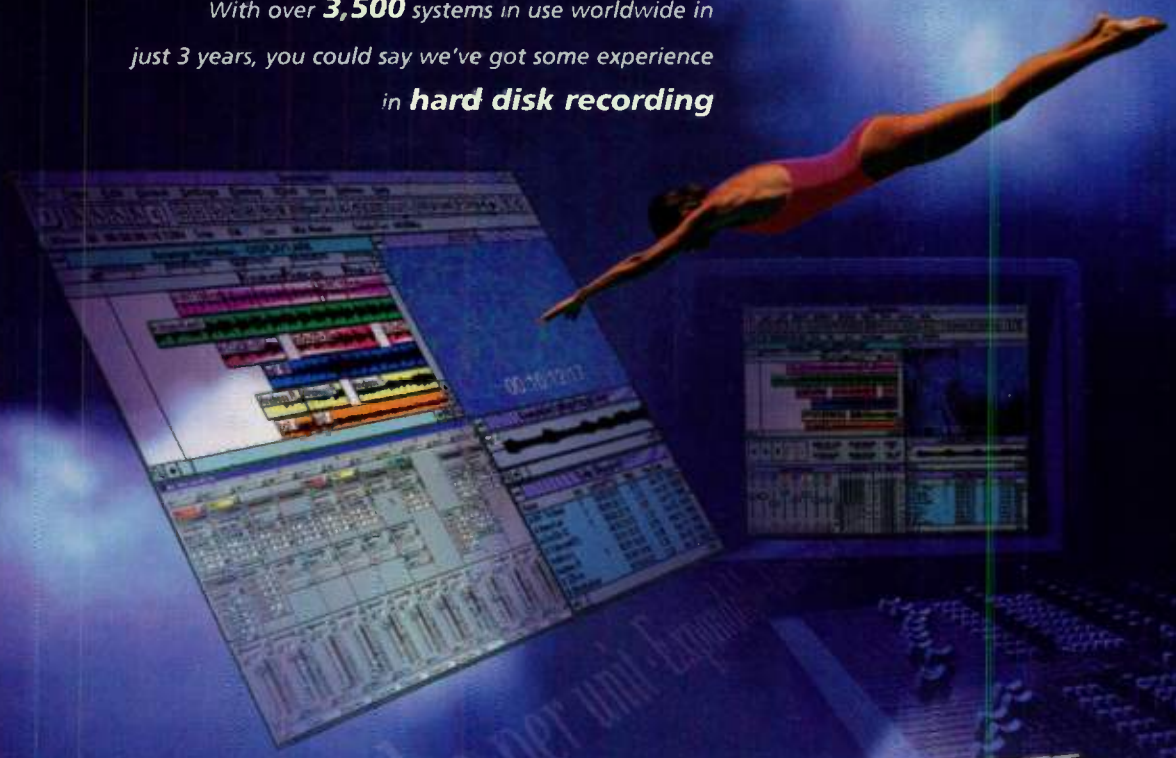

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Music Business Organizations

Sure, you've heard of these guys, but what's behind the name

BY DAVID MILES HUBER

AES, NAMM, NARAS, SPARS, NAB...Most folks in the music business have heard of these high-profile organizations countless times. However, few of us take the time to figure out just what's behind these hallowed abbreviations and acronyms and what they can offer in the form of membership benefits. Therefore, let's take a look at what these organizations do and, more importantly, what can they do for us — the workin' stiffs.

Admittedly, this article is unable to provide a comprehensive overview of *all* the benefits that are available to those of us in the various branches of the music and communications industries. So, please contact the organizations that best suit your specific needs to get the entire scoop. Who knows, you just might find some networking resources, get better medical coverage at reduced rates, or simply grab hold of the valuable industry perks that have been there waiting for you all along.

AES

The Audio Engineering Society was formed 50 years ago by a group of concerned engineers who felt that there was a need for an organization that could foster and continue the exchange of technical information within the pro audio community. Since then, the AES has played a major role in helping pro audio grow into the strong and viable industry it is today. I can vouch that AES shows and conferences have played an important role in my own career development.

Benefits: Discounted admission on registration to the various AES conventions and conferences; subscription to the *Journal of the AES* (a 10-issue subscription is sent to all membership grades); discounts on AES publications; local section activities (subchapters exist in most major metropolitan areas and offer excellent networking opportunities); membership directory (listing all members and member organizations). In addition, the AES offers life, disability income, excess major medical, and Medicare supplemental insurance programs at very attractive rates. (I recently checked the rates and, although the deductibles for me were higher, they were far better than those offered by my current policy. Unfortunately, those living in Kentucky, Maine, New Hampshire, Oregon, Vermont, Iowa, Idaho, Virginia, and Washington states can't be covered...which counts me out.)

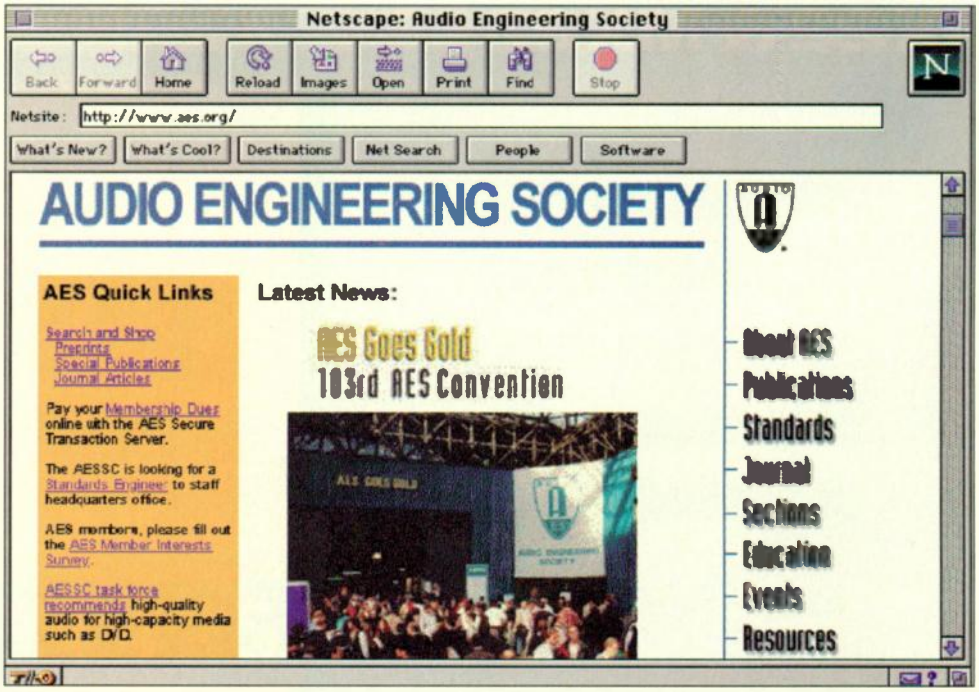
Admission Requirements: A member must be [1] active in audio engineering, [2] have an academic degree or its equivalent in scientific or professional experience in the field or its allied arts, and [3] be familiar with the application of engineering principles. A student member may be any student interested in audio engineering and enrolled in a recognized school, college, or university for training in science, technology, audio engineering, or its allied disciplines. Dues: Full Membership, $70; Associate, $70; Student, $35.

NARAS

The National Academy of Recording Arts & Sciences, is dedicated to improving the quality of life and cultural condition for music and its makers. This organization of more than 10,000 musicians, producers, and recording professionals is internationally known for the Grammy Awards. It's also responsible for numerous outreach, professional development, cultural enrichment, education, and human services programs.

Benefits: Voting rights on the Grammy awards and option to buy tickets to the awards program, receive various annual and quarterly NARAS publications, ability to buy CDs at vastly reduced prices (generally $7 @ disc), educational grants and scholarship programs, archive and recorded media preservation projects, educational outreach programs for teaching music, and industry-related topics to youth.

Admission Requirements: Loosely speaking and, depending upon the category, voting members must have written,



IN THE KNOW: The AES helps you keep up-to-date all year 'round.

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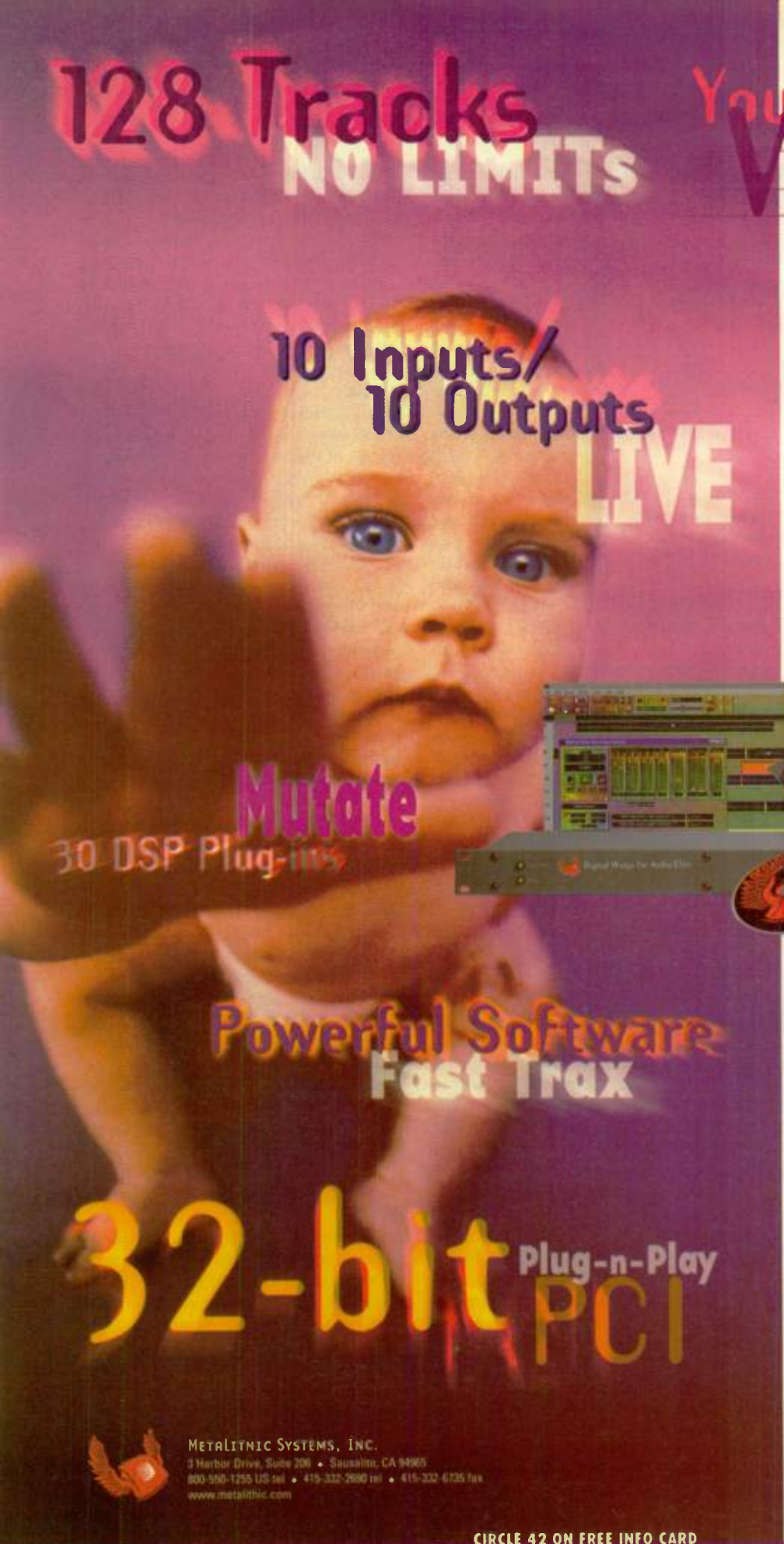

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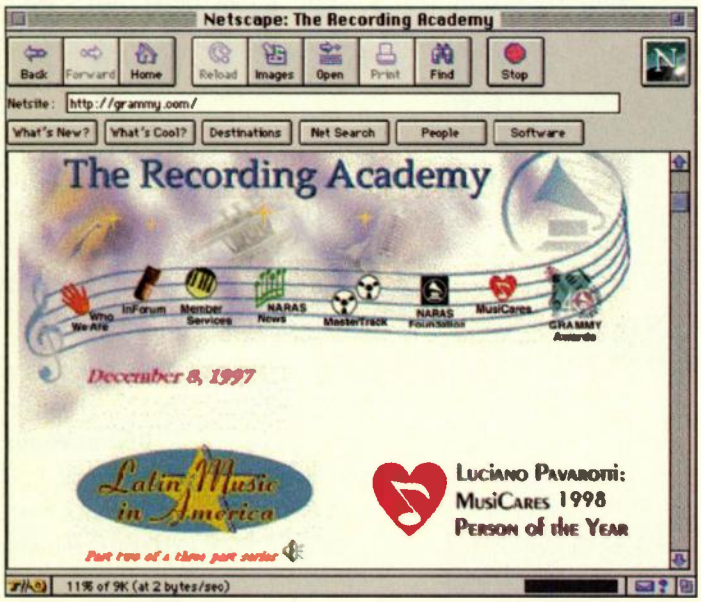

GRAMMYS HOUSE: In addition to the Grammys, NARAS has many other music-oriented programs.

BROADCAST NEWS: The NAB represents the television and radio communities in Washington.

performed, played on, produced, arranged, engineered, conducted, or provided art direction for at least six released recordings (including singles, tracks, or album equivalent) or promotionally released videos or their equivalent. Call the Academy for further details, as the requirements vary with the various classifications. The annual dues are $65, with a one-time initiation fee of $20. (You can supply your own weekend initiation party!)

MUSIC CARES

The Music Cares foundation was established to address the health and human services needs of people in the recording industry. Through services such as a national self-paid health insurance plan, financial assistance grants, and industry referrals, the purpose of the organization is to act as a life-line to music people who find themselves in trouble and need.

Benefits: Offers financial assistance grants, a national health insurance plan, directory of human resources and referral services, public awareness and outreach programs, and a substance abuse intervention program (1-800-MusiCares) for industry professionals suffering from chemical dependency. There are no special requirements or annual dues.

SPARS

The Society of Professional Audio Recording Services is a nonprofit professional trade organization whose goal is to promote worldwide communication among all those who make and use professional equipment, to foster high-quality educational programs for future engineers and producers, to promote specialized industry services among the membership, and promote the well-being of the recording industry as a whole.

Benefits: SPARS programs include, but are not limited to, placing interns, offering business conferences, educational seminars, regional meetings, networking, and consulting.

Membership: Sustaining, $1000 for any professional facility with annual gross billings over $1 million dollars; Regular, $365 for facility with gross billings under $1 million dollars; Associate, $250 for any facility not qualified under the preceding categories; Individual Producer/Engineer, $150 for any individual presently engaged in or utilizing the services of the recording industry, or who serves as a producer and/or engineer on recording projects and who does not qualify in any of the other membership categories.

NAMM

The National Association of Music Merchants represents the business interests of the international music products industry. Membership is comprised of music product retailers, manufacturers, distributors, wholesalers, and publishers.

NAMM's mission is to unify and strengthen the music products industry and increase the number of active music makers. It serves the industry through professional development programs, self-study training media, trade shows, and membership benefits.

Benefits: In addition to the Winter (Los Angeles) and Summer NAMM (Nashville) trade shows, the organization offers low bankcard processing (for cutting the transaction rates on Visa/MasterCard processing); business liability insurance and worker's compensation; group health insurance; overnight shipping discounts (reduced rates on air shipments through Airborne Express and Federal Express); long distance phone savings; and on-call legal representation in Washington (including rental, purchase, and lease contract review services).

NAMM also offers annual educational scholarships, NAMM University (offering educational curriculum to both retail and commercial industry professionals) publishes an annual industry directory, and offers discounts on books, videos, and trade show registration fees. Annual dues are $150.

NAB

The National Association of Broadcasters represents the radio and television industries in Washington — before Congress, federal agencies, the courts, and on the expanding international front. Their stated priority is to maintain a favorable legislative, regulatory, legal, and technological climate for free, over-the-air broadcasting.

Benefits: When reading through their 1997 User's Guide, it quickly becomes obvious that this is a *big* organization, with so many committees, activities, and ben-

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Web: www.nab.org

efits that I can only scratch the surface. Nonetheless, here goes. Beyond the highly-attended conventions (NAB International Convention/Expo and Radio Show), this organization annually sponsors conferences, symposiums, and award programs. Additional services include: newsletters and publications (on legal, business and technological issues), insurance services (including libel/1st amendment, general business, group term life, and long-term disability), the Library and Information Center (for broadcasters seeking info), an employment and equipment clearinghouse, government regulations hotline, long-distance phone discount services...the list goes on. For more info, I recommend you contact NAB's Web site or write for their User's Guide. Due to the vast number of membership categories, I suggest that you call for admission requirements and annual dues that apply to you or your organization.

[*Note:* EQ *encourages the above organizations, as well as other pertinent organizations, to contact us in order to update readers on their available services.—H.G. La Torre*] EQ

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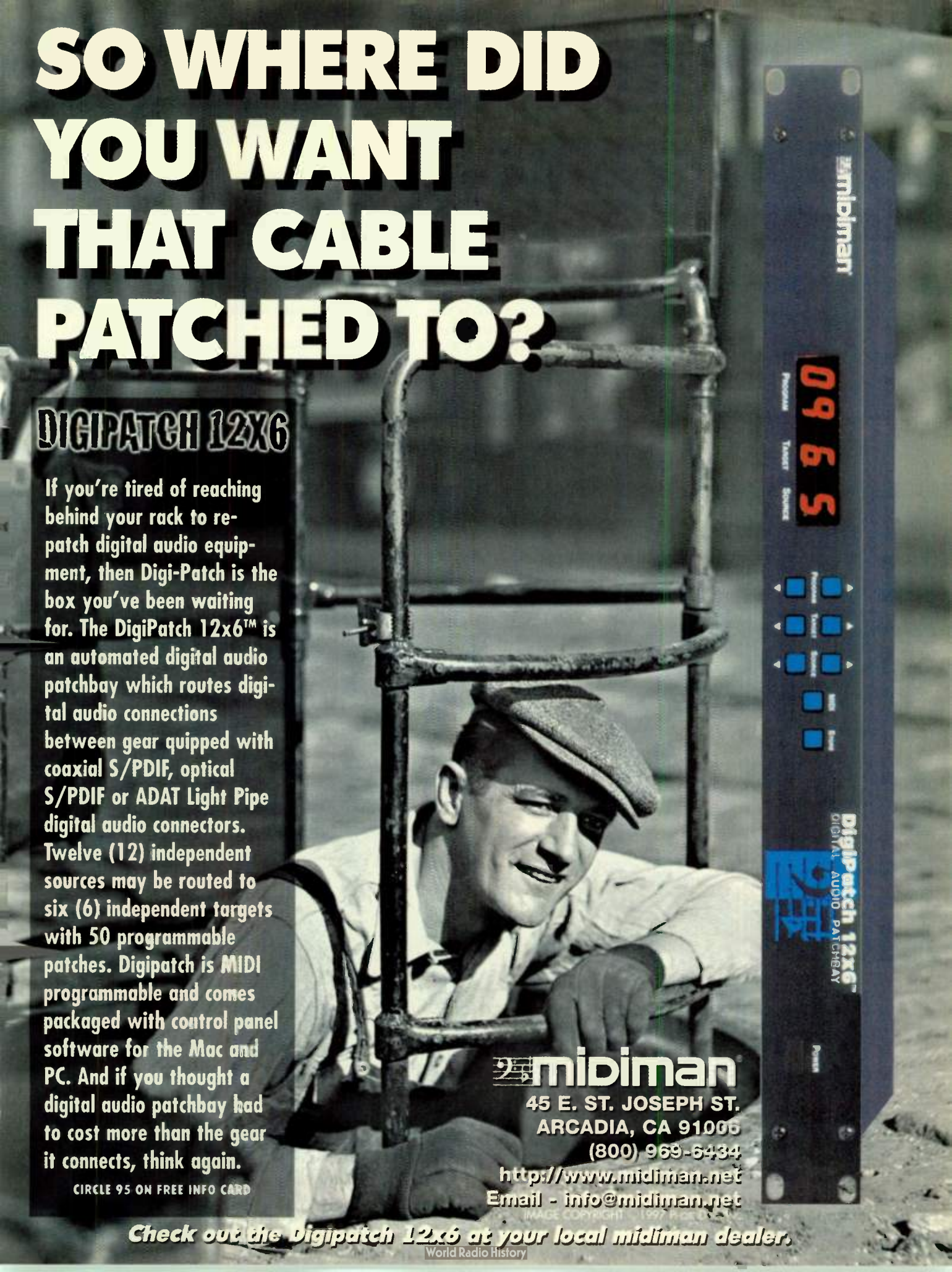

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Acoustically Speaking

The most important component in your studio may be the one that you don't see

BY DAVID FRANGIONI

When *EQ* called and asked me to write an article on room acoustics, frankly, I was a bit surprised. Why me? Well, I have certainly been involved in literally hundreds of studio installations. However, typically, my role in designing and installing a studio is to manage the project from start to finish, as well as design, implement, and install all of the *technical* (i.e., hardware and software) aspects of the job. Acoustics are an entirely different responsibility and set of demands.

The room that houses your studio needs to be designed in such a way that it is "acoustically tuned." What does this mean, exactly? Well, for starters, you need to resolve yourself to the fact that you probably don't know much about acoustics. There are a lot of acousticians running around with knowledge equal to that of a musician, not an acoustician. It takes a lot of experience and detailed studying to really understand the intricacies of acoustics, the properties in a room that influence them, and the material(s) necessary to effectively design the proper listening environment. Of course, the requirements vary from room to room, depending on the intention of the artist/studio owner. For instance, the demands for a large control room with an equally large studio area have different requirements than that of a medium-size control room-only installation.

Acoustics are one of the necessary evils of owning a studio. Think about it: Everything that you hear, every musical decision that you make, is based on what you hear in your room. How you hear it. Too much reverberation in the room and your mixes could sound far too dry. Too much bass in your room and your mixes may sound "thin" or "brittle." Your room is a tool just as much as your mixing console, tape machine, and other related components. Certainly, I would classify your studio

SATISFIED CUSTOMER: David Frangioni, Yngwie Malmsteen, and acoustician John Arthur pose in Malmsteen's project studio.

World Radio History

environment as important! With that said, I feel that the best advice I can offer is that from professionals who have cut their teeth designing rooms for years, so I called a few and picked their brains. These professionals also happen to be acousticians with whom I have worked. I know these guys know their stuff, and my client's know it, too. I presented questions to each person in an effort to create a scenario similar to what many project studio owners might create when designing and/or modifying their room. There are many different ways to "correctly" design a room. I have found that it's not really about right or wrong, but how much *you* like it and can work in it with great results. So here goes, some tips from the professional acousticians.

JAY MILLER, ACOUSTIC INNOVATIONS, BOCA RATON, FLORIDA

Jay Miller has been designing great sounding rooms for many years. He is a truly studied and knowledgeable professional with a vast understanding of the many facets regarding acoustics and their relevant properties.

What are some of the common problems that people have with their listening spaces, especially those that are "converted rooms" such as garages, living rooms, etc., rather than ground-up designs?

The biggest problem is initial sound reflection from an acoustically untreated wall surface. Also, our clients face the problem of sound leakage to other rooms. Many of the spaces have passageways, hallways, or other openings that allow the sound to promulgate into other areas, energizing those spaces. Another common problem is rigid wall surfaces. If the walls are not rigid, the "flex" in the walls will cause bass reflection back into the room.

The biggest problem is initial sound reflection from an acoustically untreated wall surface.

What do you do to fix these problems?

Acoustical wall treatment in the form of absorber panels and diffuser panels will correct the reflection problems.

Make sure all openings are controlled with doors and windows. This will eliminate sound passing out of the room. Strengthening the walls with a heavy mask, such as additional dry wall, will eliminate these problems.

STEVEN DURR, STEVEN DURR & ASSOCIATES, NASHVILLE, TN

Steven Durr has been a leading designer of award-winning rooms for 25 years. He is trained in many of the leading acoustic design formulas and is constantly in-demand for his innovative

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ideas — both acoustically and esthetically. Steve's experience crosses over from large, cathedral studio designs to comfortable, cozy project studios and everything in between.

What are the most common hurdles present in project studio acoustic spaces?

Hurdles present in any CR are pretty much the same. From the designer standpoint, accurate reproduction of the bass frequency in any environment is where practical experience and technical knowledge come into play. In a great deal of project studios, the monitor speakers are placed on pedestals, which is detrimental to accurate reproduction of the bass frequencies. We have spent long hours combating that one problem with excellent results.

The second most common hurdle is the tight working area normally associated with project studios in which the client stacks equipment around him, causing reflections that are detrimental to accurate reproduction of the mid-band and upper frequencies.

A majority of project studios employ inexpensive consoles that have sonically, poorly designed monitor specs. One of our simple tests is to patch to a 2-track source directly into the monitor amps to determine the amount of coloration introduced by the console. The results can be quite startling.

What are some common acoustic treatment materials that you find helpful in a control room design?

We use readily available materials consisting of Owens Corning 700 series products, pegboard, and laminated glass and a great deal of common sense. Yes, the technology is changing, but fortunately the laws of physics haven't been subjected to digital readings yet.

How much of a project studio budget do you recommend someone allocate for the acoustical treatment of their room?

Because our beliefs are founded on the fact that acoustics are one component in a very complex environment, it would be difficult to estimate an allocation for acoustical treatments. The look, the feel, the lighting, and the sonic performance all affect the perceived acoustical *values* of the room.

CHILDS'S PLAY: The author stands in Desmond Childs's project studio, which he designed.

JOHN ARTHUR JR., JOHN ARTHUR DESIGN GROUP, MIAMI, FL

John Arthur is quickly becoming one of the most renown and respected room designers in the world. Among his many prestigious projects, he has recently completed rooms for Phil Ramone, Machine Head Studios, Cancun, Mexico, and Paul Gilbert from Mr. Big. John is simply amazing with his unique combination of imagination, great acoustic space treatment, and extensive experience.

The second most common hurdle is the tight working area normally associated with project studios...

What would be the ideal size of a control-room-based studio built from the ground-up?

The ideal dimensions for a control room will vary, but a room with *rough, approximate* shell dimensions of 12 feet 6 inches high, 23 feet 9 inches wide, and 30 feet in length for a larger control room and around 9 feet 6 inches high, 18 feet in width, and approximately 23 feet in length for a medium-sized room. Proper room dimensions are essential in creating an accurate control room for monitoring. The shape (geometry) of a room and the symmetry around the mix position and the monitors play a major role in the performance of a control room. I would recommend to a project studio owner looking to build the room without professional advice to work with a simple rectangular layout. The low frequency response or modes are easily calculated in this type of room and can be treated with better results.

What are the most common hurdles present in project studio acoustics?

Some of the most common problems are:

1. Limited space for proper low-frequency treatment in control rooms and overdub rooms.

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The concept of fixing a room with applied treatments that are not designed specifically around the problem can lead to frustration.

We also work with their project studio products and various other manufacturers' foam and fabric-wrapped fiberglass panels. The concept of fixing a room with applied treatments that are not designed specifically around the problem can lead to frustration. I have found in the past that a client may be trying to fix a problem with acoustic treatment that could have been solved with some proper acoustic measurements and changing the position of the speakers.

The project studio owner may want to think about consulting with a professional early on in the design of their space. Even if it's to discuss the proper use of applied acoustic treatment or to discuss proper dimensions and construction methods.

This advice can go a long way in improving the accuracy of the control room monitoring and the isolation from your neighbors.

THE FINAL CHAPTER

If you're finding that your mixes sound different everywhere that you play them, think about your surroundings and how they could be better. You'll be glad that you did.

David Frangioni is a studio installer/technician/digital audio consultant. He recently finished studios for Tommy Shaw of Styx, Olivia Newton-John, and Steven Tyler of Aerosmith. Watch for his upcoming wiring series in EQ *on "How to build the ultimate project studio."*

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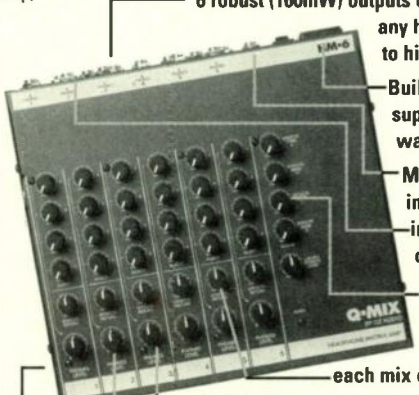

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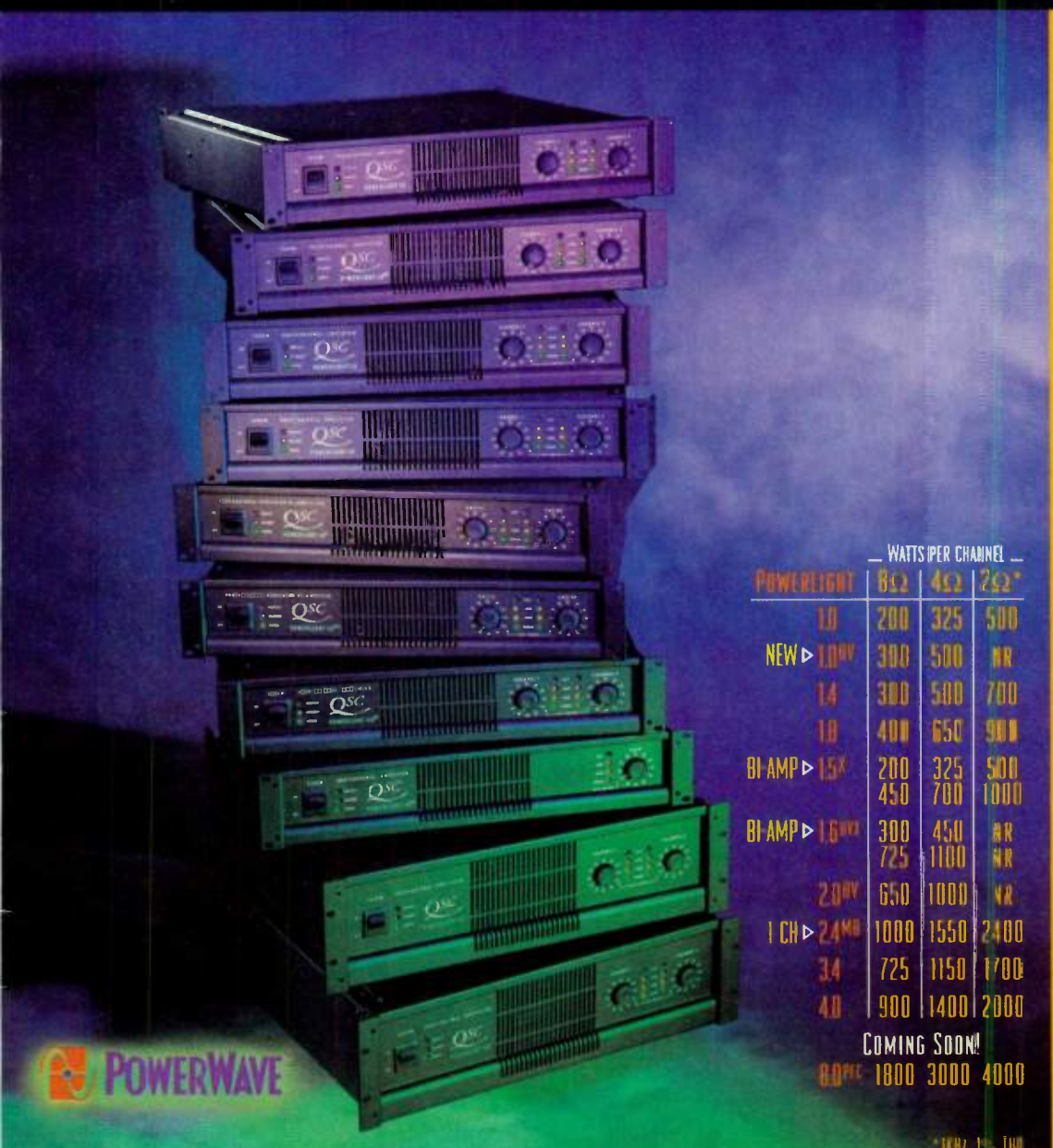

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THE LASWELL FILES

The master remixer moves on up to stately new digs and gives the low-down on capturing big (and clean) low end

BY STEVE LA CERRA AND ROBERT GRANGER
PHOTOS BY CHRIS JOHNSON

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The Laswell Files

Bill Laswell may not be a name that holds a steadfast position in your daily conscious, but the artists that he has worked with should strike a familiar chord. In addition to his ground-breaking work with Herbie Hancock on "Rockit," Laswell has worked with the likes of rap pioneer Afrika Bambaataa, P-Funk veterans Bernie Worell, Bootsy Collins, and George Clinton, John Lydon and Public Image Limited, The Ramones, Motorhead, Mick Jagger, Peter Gabriel, Buckethead, Buddy Miles, Ginger Baker, John Zorn, and a host of other artists. Most recently, the bassist/producer has remixed several Miles Davis tracks for Sony and has created an album of dub remixes of Bob Marley material entitled *Dreams of Freedom*.

Laswell recently closed the doors of his infamous Greenpoint, Brooklyn, project studio and has moved into a new studio space in suburban New Jersey where he graciously hosted *EQ* for this interview to discuss his work.

What made you decide to move from Greenpoint to this new building?
Greenpoint wasn't really a studio. It was a loft, and we just set up some equipment there. I stayed there for five years and it felt like it was definitely time to change. I had three floors in Greenpoint, but I was only using one of those floors. I wanted to rent all the floors because I didn't want anybody to move in, so it ended up that people would sort of

DO YOU KNOW ME?: With a full range of credits including Herbie Hancock, The Ramones, and Peter Gabriel, Laswell's work speaks for itself.

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The Laswell Files

notice that I had a lot of space and they'd start living there and camping out. It kind of turned into a fairly expensive hotel that had a studio on one floor and a lot of people who didn't pay rent on the others. It really didn't make sense, and the rent was *really* high. It was just a good time to change and get out.

Was the studio architecture here already or did you bring in a designer?

In terms of the design, everything was here. It's been several different studios since the late '60s. When we got here, we threw out a lot of stuff and cleaned it up. We're just getting started, but all the weird wood and designs that you see are original.

Was the equipment here?

No, I've got a friend who was working on acquiring the Neve that's in this room. I got a new Studer and we started to acquire more and more outboard gear. I brought everything that I had from Greenpoint and got some new equipment as well. All of the equipment in the upstairs room is from Greenpoint, a little bit is down here, but most of what's down here is new. All the instrument and tape storage for the studio is downstairs. There were actually too many tapes to bring here, so there are some in a storage locker in Brooklyn. I'll probably forget about those eventually...

How are you adjusting to the new space?

It's a great live room and a very even studio. I feel like the more I put into it the more I'll get out of it. It's a real building process. I eventually want to turn it into a facility that other people can use as well. I just hired someone from Canada to move here to actually work the place and coordinate who's coming in and out. That'll probably be in effect within the next two weeks.

What are your plans for the small room upstairs?

That room will be set aside mostly for creating things that don't involve the live room much — things that involve sampling, computers, and mixing. I'm going to try and keep this main room down here as a tracking room for bands of any kind. We've been pretty successful with live situations, everything has come out sounding really good.

What are your preferred speakers to mix on?

I got a pair of Hayes speakers from a guy I know in Australia. They're kind of a "cushiony" speaker. Obviously, I also use the "standard" Yamahas (NS-10M's) because I know exactly what they sound like. I think if you get used to the Yamahas and you know the space you're in, you can feel what the material is going to be like on another system. Sometimes we'll use the Hayes speakers if we're working on ambient material. For other kinds of music that involve pulse or impacts, I'll use the Yamahas because they're just a flat speaker.

Do you track off those as well?

I switch between the Hayes and the Yamahas when it comes to tracking. I'm open to other monitors. Whenever people want to try different speakers we'll try them as well. I've only stuck to the Yamaha because that's the tradition, and it's a speaker that has no personality — it's just there — and you know pretty much that it's going to sound together.

For somebody who's trying to get their low-end together, how do you use those Yamahas to complement the sound? For example, on the Bob Marley *Dreams of Freedom* disc, the bottom-end is huge, but it's not muddy.

Right. All you have to do is go to the big speakers. Occasionally you have to hear the music at loud volumes. For the Bob Marley disc I think we used those Hayes speakers. We checked everything really loud (and often), so we wouldn't get away from the clarity of the bottom.

Do you typically monitor loud?

No, only for certain things. For instance, if I'm mixing a dub piece and I do a short edit, I'll always listen to that section loudly at least once before moving on. For heavy low-end stuff you have to feel it a certain way, and if it's not translating at a loud volume — if it's wide — then it's going to be muddy on certain systems. I'm trying to be keen to use the bottom but not to lose the definition of the bottom.

It's a very difficult thing.

Yes it is, but there's all kinds of ways to keep intact. With a bass, I use a lot of different, very crude effects to get a kind of bottom that is usually very consistent because I know what the effect is. I'll use a dbx Subharmonic synthesizer that synthesizes the sound an octave lower and adds a kind of controlled bottom. It envelops the bottom in an interesting

World Radio History

way. For a bass, I'll use envelope filter pedals. If you set the pedals a certain way and play really hard, it sounds like a duck. But if you don't play hard, it'll give you an incredibly tight low end and you can just cut stuff like that.

You'll cut through that pedal?

Oh yes.

Any particular kind?

There's a lot of different brands out there. DOD makes the green one — the FX-25 — it's a simple pedal with two knobs, but it gives you massive low-end if you use it correctly.

How do you capture your bass sounds?

Again, when using those devices there's a whole line of things that go into creating the overall sound — it's the instrument, the strings, how you have the pickups set (usually with no treble at all), the pressure of how you play it. I don't always use an amp. A lot of people I talk to think it's a special amp, but in actuality a lot of the Brooklyn material was just a combination of DI and using these effects to push the bottom as much as possible without the mud. I can pretty much do that live between the bass I'm playing, the pedals I'm using, and the way I play it. Depending on the setting — I'll usually use an Ampeg SVT and two cabinets — and if the amp's in good condition, I should be able to re-create that low-end live.

NEW IN NEW JERSEY: The control room at Laswell's new studio house a Behringer console and a Studer recorder — as well as an assortment of vintage gear.

Do you ever mic the amps in the studio?

Yes, but not a great deal. We just did the second Third Rail disc and we did mic the SVT, which is about 10 or 11 years old. We also simultaneously went with a DI. That's usually what I'll do if we're tracking live, but if I'm overdubbing, I won't necessarily do that. I'll probably stick with the DI.

When you record the amp and the DI together, do you record them to separate tracks or do you mix them together?

Usually if it's a live band playing, I'll record them separately. But if it's a tune where I know I'm going to use up a lot of tracks and it feels good, then I'll combine them into one track.

Does part of that sound come from recording at 15 ips?

They say that you can retain more bottom at the slower speed, but it's also noisier. I don't do that just for the noise factor. But I do have some tapes of Dub Syndicate that are recorded at the slower speed, and they have thunderous low-end — but they are very noisy. We actually haven't done that much. People do that when they're trying to save tape.

Do you compress your bass sounds heavily?

It depends. Because there are so many basses and so many approaches that people try, and with some players there's kind of an erratic sense of dynamics, I usually end up having to compress everything a lot. Usually, for what I'm doing, I don't have to compress it tremendously, but I notice with some players that if there's an uneven dynamic, then you need compression to create a feel.

Do you have a preference for compressors?

Lately, we've started to get a lot of older stuff, like a lot of the Neve gear that is either upstairs or down here in the main control room. I think that's an area that you have to stay open to. The older tube stuff is great. Jason Corsaro, an engineer who I used to work with a lot (and sometimes still do) is really into compressors and is always finding really old stuff — things that don't really do anything except add bottom in a way. For instance, the LA1 — it just has the one knob that you can crank up. I'm always looking to find new old pieces of gear, but everything's getting more expensive all the time. That's kind of the

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THE LASWELL FILES

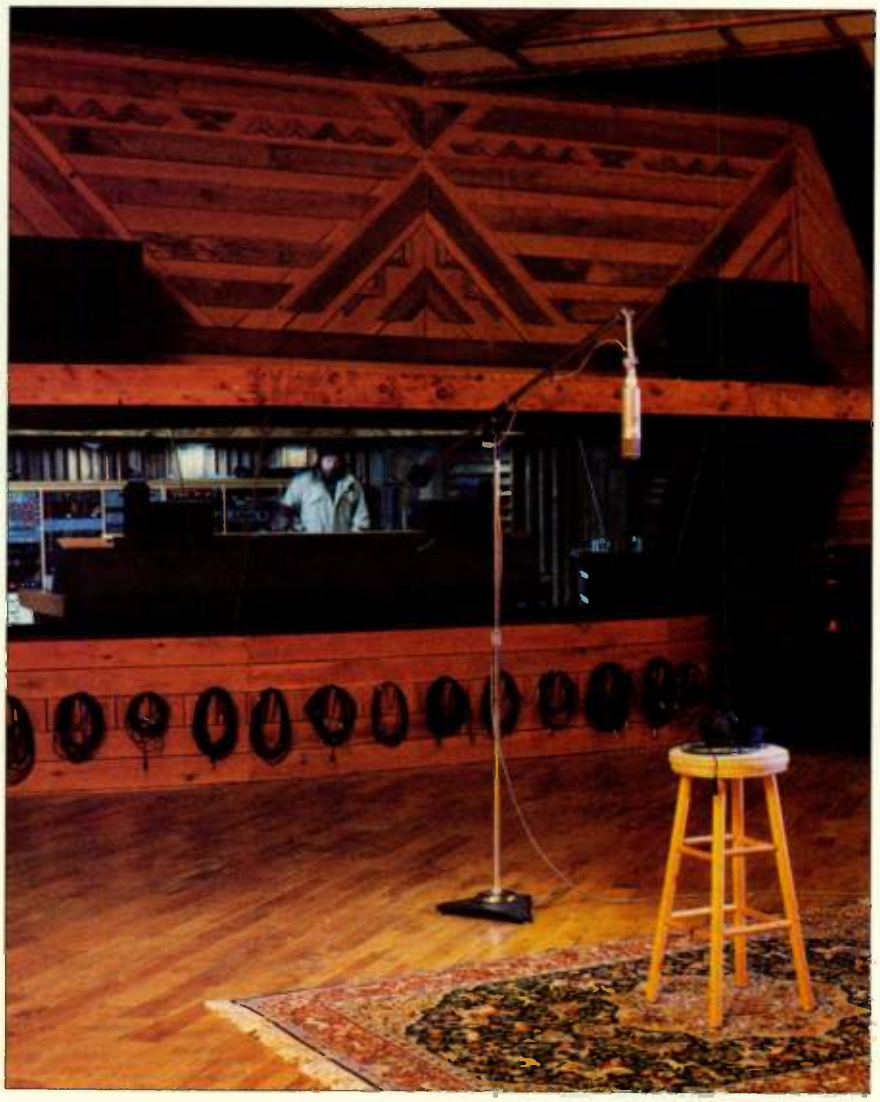
idea here, to get the old stuff. The concept is to have the advantage of the older gear in order to retain a fuller and a warmer sound — a real warmth, not a synthetic one, because there's definitely a difference in how you feel it.

Has that always been your philosophy, or does it depend on the project? The Praxis discs have a very distinct, hard-edge feel.

It definitely depends on the project that I'm working on. I think if you're going to go for impact and you're going to go for extremes, you should take it as far as you can. With that type of music, anything short of extreme is missing something. Praxis is really "assault" music — the way it's played, the way it should sound, and what goes into the thought. The natural impulse of doing it should manifest itself in the extremes. And I think you really have to go for extremes. Not just in the low end, but in the harshness, the distortion, or the piercing sounds. It's not a conservative sound anyway, so you should make it more extreme.

How do you manage to allow those sounds to have their own space without stepping on each other?

That's a balance thing — you have to feel it. Everything has to fit together no matter how abstract one thinks it is or how weird and impossible it might be to



VIEW OF A ROOM: Laswell surveys his live room, which was designed by the studio's previous owners.

World Radio History

stead, I read a lot about Bob Marley, Jamaica, Rastafarai, and Marcus Garvey — everything that related to why [Marley] would be creating this music. When I thought that I had amassed enough knowledge on the topic, one day without any warning, I just opened the boxes and said, "We'll do this now." I listened to the tapes without thinking too much about the pieces. I had listened to everything in the catalog already because I picked the pieces that I wanted to work on. I had to come to terms with the fact that I was messing with music that has a deep meaning for a lot of people. People have so much of an interest in this music that sometimes their interest becomes a bit more devotional, and it may go beyond admiration to something more closer to a religion.

So you're almost walking the line of "sacrilegious" behavior...

Absolutely. But remember, it's reggae. Reggae always had a B-side, and the B-side was a version of the song in dub. So doing dub mixes of Bob Marley is very logical. And to keep the tracks in the tradition of Jamaican dub by only enhancing the atmosphere, it isn't really sacrilegious. It actually turns that around and becomes ultra-respectful, and that's been the response so far.

I'VE ALWAYS HATED KICK DRUMS THAT SOUND CLICKY, AND I'VE ALWAYS HATED BASSES THAT SOUND LIKE TYPEWRITERS, SO I'VE AVOIDED THEM. THAT LEAVES ME TO DEAL WITH THE REAL LOW-END STUFF.

There was a very big respect toward Bob Marley's presence and a respect and an inherent kind of spirituality in the value of what his presence meant to so many people. Then there's the words, which is the statement about all that. I purposely left those out because, to me, that would be like editing stories. I see Bob Marley's songs more as poems or stories, and I didn't want to reinterpret the meaning of his words. I only wanted to reshape the space that they were in.

What kind of shape where the tapes in? Where they carefully stored?

The tapes were actually in pretty good shape. I used the safety masters made from the original 24-track analog masters.

Did you have the original track sheets?

I actually worked from copies of the originals. I recently remixed a Miles Davis record and that was kind of the same situation. The oldest tape was

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THE LASWELL FILES

MASTER OF THE HOUSE

Robert Musso has been engineering with Bill Laswell since 1982. Here he discusses some of the particulars of the new studio, OM, Orange Music Sound Studios, as well as some of his techniques for engineering, recording, and mixing.

We're using a 32-input/24-return Neve 8038 console that's been modified with newer power supply caps (all the original EQ caps are the same), as well as all the modern convenience modifications that a modern console would have, such as direct outputs. We also have a brand-new Studer A827, which is great as well as a ton of outboard gear, including old CBS VolumeMax and AutoMax compressor/limiters that were originally used in radio-broadcast situations. We'll use them in the studio because they offer that Fairchild-ish type of compression — it's there, the compression's on, and that's it. Gear from the two rooms we have here is often traded. We always bring down the Neve 33609 stereo compressor we store up there for mixing.

Both consoles upstairs are Neve broadcast models, so they only have four bus outputs, which make them much more direct-sounding than the 8038 in the main room. Those two consoles are wired independently at the moment, but when we mix, I'll take the output of one and patch it into the direct inputs of the other.

TALK SHOW: Robert Musso (right) and DJ DXT.

We've also got a great collection of mics here: one great tube U47, two tube U67's, two U87's, two FET '47's, and a whole lot of all the normal stuff. I believe we've got every Shure and Sennheiser mic ever made. We have a number of RCA 44's and 77's, Altec salt shaker mics, and a couple of strange beyer mics in the collection. We have at least 40 or 50 mics at our disposal, and when we do a string section, I always rent mics as well.

On strings I'll usually use '87's for close mics (sometimes a '67 for cello) and I'll use the tube '47's for room mics. In terms of close miking, I'll place the mic about 14–18 inches away from the sound hole, the bridge, and the strings. Usually it all goes to one track and then gets doubled.

When it comes to vocals, the mic I'll use depends on the type of vocalist we're working with. If you're recording someone who really likes to get close to the mic, a tube '47 is always great. If you're recording a screamer, or someone who doesn't have a real complementary voice, SM57's are absolutely the best.

For acoustic guitar, depending on who's playing it — a strummer, a finger-picker, or if it's a nylon string guitar — I usually use a tube mic near the sound hole, about 5 to 7 inches away. I move the mic slightly off-axis to avoid picking up reflections coming from the back of the guitar. Occasionally I'll add an AKG C451 on the fretboard for clarity, depending on how clean the person is fingering the guitar. If I'm miking the fretboard, I'll keep the mic about 6 to 8 inches away, because condensers pick a little more of the top end. Position of that mic will depend on the type of guitar, the location of the guitarist's fretting hand, and the type of strings.

There is no automation on the Neve 8038 in the main room. When we mix we do it the old-school way — section by section on 1/2-inch tape. We'll usually concentrate on four bars at a time, or less, and then edit the pieces together. Once you get used to this style of mixing, it's much easier than modern automation. I know how to use all the modern packages, and they're all great, but it seems that when you're doing it in pieces like this you really hear exactly what you have. And you hear it coming back off of tape — which always seems to sound a little different than coming off the console. Even when I mix to DAT tape it always comes back a little different. Mixing section by section, I put it on tape first, and then listen to it so I know exactly what it's going to sound like.

We usually proceed mixing in the order of the song sections. There is that rare occasion when we'll mix the two choruses and then hold the second one while we do the verse in between (or all the verses), but usually I want the second chorus to be a little different anyway — a little more volume or a dynamic change — so it's not all exactly the same thing, which leads to boring music in my book. So, I might bump up the overall energy level by kicking the master up a little during the second chorus.

We mix to a Studer 1/2-inch machine at 30 ips with kind of a special alignment. Believe it or not, we still run at +6 over 185, which is the same as +3 over 250, but I beef up the bottom end so that it comes back a little warmer. I usually bring up the low end about half a dB at 90 Hz, which effects everything below as well. That gives a real solid bottom end.

World Radio History

from '69 and it was an 8-track, which means there were eight tracks and there were eight musicians — so everyone had a track, including the drums. The original piece, "In A Silent Way," was over 30 minutes long. What you hear on the record is obviously much shorter and it has a repetition in it twice — the same piece of tape. What they did with that

WALLS OF FAME: Laswell's extensive tape vault — and this is not even all he owns!

was record a piece and put it together. They recorded some more stuff, took the original piece and tagged it on after that to create a full piece of music — it was all manual in those days — scissor edits. We did that the same way. We made the Miles record by manual razor editing.

What kind of shape were the Miles tapes in?

Not too bad. You have to remember that these were major stars in their field and I think that the big major label people were taking extra special care of those tapes.

What I've also heard is that jazz and classical engineers sort of had their act a little bit more together, as opposed to the pop and rock 'n' roll engineers, only because it was so new to them.

They probably grew up under a guy who was so serious about making recordings right, and they probably learned many different things. To be on a gig like that they just couldn't come in off the street.

continued on page 152

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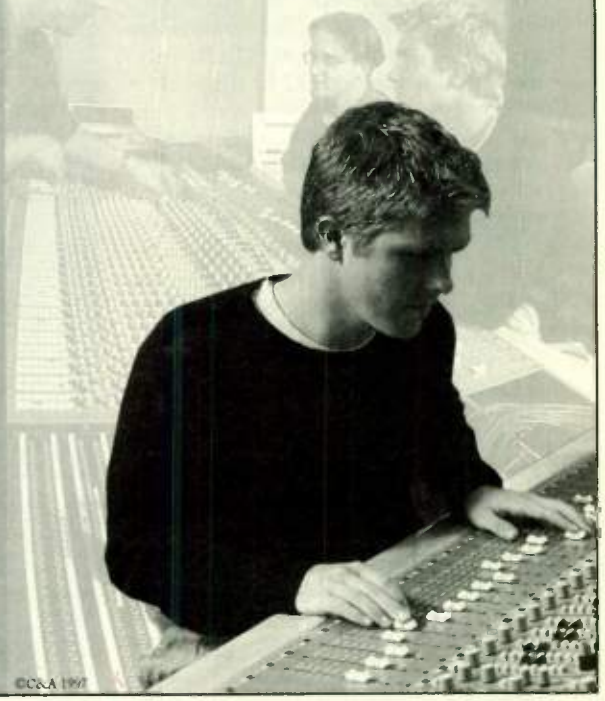

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CIRCLE 14 ON FREE INFO CARD

World Radio History

1998 Digital Console Update

The digital console market continues to grow, so here's a look at where we are and what's available

By Steve La Cerra

With digital technology growing leaps and bounds, it's no easy feat to keep up with the latest digital console developments from pro audio manufacturers. Keeping that in mind, *EQ* has rounded up the latest info from the ever-growing family of companies manufacturing consoles that route and process audio in the digital domain.

The Starting Point

($3000 to $10,000)

KORG

Korg's 168 RC is the centerpiece of its SoundLink DRS. Built into the 168 RC are a pair of ADAT optical interfaces that provide 16 channels of ADAT I/O. Analog audio is introduced to the system through eight inputs, each of which include an on-board, 18-bit A/D converter. If your recording setup requires only one ADAT and you want more analog inputs, you can opt for Korg's 880 A/D, a rackmount box that interfaces to the 168 RC via ADAT optical cable. The optional 880 D/A provides eight analog bus outs from the 168 RC.

Korg's input routing matrix patches inputs via software to any of the 16 channels. Inputs 1 through 12 have fader level, pan, 3-band EQ (semi-parametric highs and lows and fully parametric midrange), aux send 1 and 2 level, effect send 1 and 2 level, mute, solo, and output assign controls (inputs 13 through 16 do not have EQ). Two analog auxiliary sends are available on 1/4-inch TS jacks at the rear of the '168, while the two effect sends are internal; these are "normalled" to the console's two built-in effects processors, which are capable of reverb, delay, distortion, pitch shift, speaker simulation, and dynamics processing.

Up to three 168 RC's may be cascaded, yielding a total of 48 input channels. Mixes can be recorded via the 168 RC's analog line-level master outputs or S/PDIF output. The 168 RC has built-in automation that can be used either snapshot-style (the desk can store 100 snapshot scenes internally) or for dynamic recording into any standard MIDI sequencer. Fader level, pan position, EQ adjustment, auxiliary send level, and muting may all be automated.

List price for the 168 RC is $3200. For more information, contact Korg at tel: 516-333-9100 and see the November 1996 issue of *EQ*. Circle EQ free lit. #133.

MACKIE

Mackie's Digital 8•Bus is a 48-channel desk with 24 channels of balanced analog I/O. Input channels 1 through 12 have balanced XLR mic (with phantom power) and line level inputs, as well as analog inserts. Each channel of the con-

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sole has a 100mm motorized fader, a V-POT™ for data entry, a record-ready switch for the respective tape track, and a write switch to record-enable the on-board UltraMix II automation. The rear-panel of the Digital 8•Bus accepts cards that carry eight channels of digital I/O; cards are available for TDIF, ADAT, AES/EBU, or S/PDIF formats. In conjunction with Apogee Electronics, Mackie will be employing the UV22 process on the main digital output of the desk.

Virtually every parameter on the console can be automated, including level, mute, EQ, and aux send adjustments, as well as the dynamics processor, which is available on every channel. Automation on the Digital 8•Bus is dynamic and snapshot, and an external computer is not required to implement automation. To facilitate use of UltraMix II, the Digital 8•Bus has on-board floppy and hard disk drives. The Digital 8•Bus will be available in 1998 at a price under $8000; for more information see the March 1997 *EQ*.

Also available from Mackie is the HUI (Human User Interface), and while it's not exactly a digital console per se, it is a console-style work surface that is designed to control a Pro Tools system. HUI includes faders, transport control, and audio level indicators, as well as V-POTS for adjustment of channel parameters. HUI is now shipping at a list price of $3499. For a complete description of HUI, see the December 1997 *EQ*. Contact Mackie at tel: 425-487-4333. Circle EQ free lit. #134.

RAMSA

Certainly the newest kid on the digital console block, Ramsa's DA7 is a 32-input console with 8 output busses. Input to the DA7 is interface card-based, each card accommodating eight inputs. The type of card you use would depend upon your needs and could be TDIF, ADAT, AES/EBU, or — if you prefer — 32 analog inputs. Analog inputs are balanced at +4, and a typical configuration would employ eight XLR and eight 1/4-inch TRS connectors.

Inputs are controlled with 16 moving faders that operate in various "layers." In layer 1, the faders control input level for channels 1 through 16. In layer 2, they control channels 17 through 32. Shifting to layer 3 transfers the faders to control the six aux sends, six aux returns, and eight bus masters. A fourth layer is user-definable and can be used to control any combination of signals from the first three layers or to send MIDI controller data.

Each input has a four-band parametric EQ and a dynamics processor (expander, gate, compressor), and channel settings are displayed on an LCD screen. Viewing the channel settings on the LCD requires only that you touch the channel fader — the DA7 then automatically shows that input's parameters. To adjust a parameter such as EQ, you simply move to the master section and touch an EQ knob: the screen updates to show EQ settings. This procedure is employed for adjustment of dynamics, bus assignment, aux assignment, and surround assign.

A total of 200 memory locations are available in the DA7. Fifty of these memorize all settings of the console, snapshot style. The rest provide 50 locations for EQ presets, 50 for dynamics presets, and 50 for channel settings including EQ and dynamics (in addition to the EQ and dynamic presets).

The DA7 will be available in 1998 at a price of $5000. For more information, contact Panasonic Ramsa at tel: 714-373-7277. Also see the First Look in the November 1997 *EQ*. Circle EQ free lit. #146.

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Digital Console Update 1998

TASCAM

TASCAM's TM-D8000 differs from most other digital consoles in this category in that it has a larger profile to accommodate 48 faders (arranged as 24 inline pairs) and transport control on the work surface. Basic configuration of the TM-D8000 is 40 mono inputs and 6 stereo inputs, each of which may be assigned to any of the eight busses as well as the stereo mix. Additionally, the input may be directly assigned to the digital tape send of its corresponding channel, acting as a digital "direct out." To make digital interfacing with TASCAM DA-98, DA-88, and DA-38 tape machines easy, the TM-D8000 has 24 TDIF tape sends and returns. In addition, there are 16 balanced mic (XLR) or line (TRS) inputs with analog insert and phantom power. Alternately, these analog inputs can be switched to TDIF, giving the TM-D8000 40 channels of TDIF at mixdown.

A built-in machine controller allows the TM-D8000 to run the DA-family of machines via the TASCAM sync I/O interface. Auto-locate, punch-in and -out, record arm, and auto-punch can be executed from the console, and a jog/shuttle wheel helps the cueing process. Beside TASCAM sync, the machine controller can also send MMC and Sony 9-pin protocol.

Automation of the TM-D8000 can be either snapshot (99 scenes) or dynamic, via either MIDI or computer control using dedicated software. A total of six aux sends are included in the TM-D8000, two of which may be switched to AES/EBU digital output. Six stereo returns may be assigned to any of the eight busses or the stereo mix bus, and Return 6 can accept either an analog input or an AES/EBU digital input. See the First Look in the March 1997 issue. For more information contact TASCAM at tel: 213-726-0303. Circle EQ free lit. #135.

YAMAHA

Yamaha's 03D is the company's latest offering in their line of digital consoles that also includes the ProMix01 and the 02R. The 03D is a compact mixer with 24 mono and one stereo input, and a total of 18 outputs that may be configured for three different surround mix modes. On-board processing includes 40 dynamics processors, 40 four-band parametric EQs, and two stereo multi-effect processors. A total of 19 faders are provided on the front panel; 16 for the inputs and one each for the stereo input, effects returns, and L/R master. Inputs on the 03D are configured with channels 1 through 16 as analog (each having a 20-bit, 64x oversampling A/D converter) and 17 through 24 as digital. A YGDAI (Yamaha General Digital Audio Interface) card slot accepts I/O cards for TDIF, ADAT or AES/EBU digital I/O. The stereo input may be either AES/EBU digital or analog, and there is an extra unbalanced 2-track analog input for monitoring purposes. List price for the 03D is $3699. A full review is in the August 1997 *EQ*.

Yamaha's current flagship digital console is the 8-bus 02R with Version 2 software. All 02R's shipped as of September 1997 employ V2 software; older units may be upgraded. The major difference in the V2 software is surround sound capability. Additional pages under the Routing menu allow several surround configurations including 2+2 (left, right, left front, and right front), 3+1 (left, center, right, and surround) and 3+2+1 or 5.1 (left, center, right, left surround, right surround, and subwoofer).

To facilitate panning in surround, the 02R V2 provides a graphic display of the chosen surround mode with on-screen speakers correlating to room placement. Panning trajectory is user-selectable and Yamaha plans to offer a

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MIDI joystick to facilitate surround panning. As you'd expect, the 02R (as well as the 03D) can be automated, so any surround pan moves can be executed automatically.

Inputs are arranged in blocks of eight, and within these blocks any input may be routed to any channel, making grouping simple. Like the original 02R, the V2's analog inputs include eight balanced XLR mic, eight 1/4-inch TRS balanced mic or line, and eight 1/4-inch TRS line level. Digital I/O cards accommodate ADAT, TDIF, and AES/EBU digital I/O. The 02R V2 is available at a list price of $7995. For more information on either the 03D or the 02R, contact Yamaha at tel: 714-522-9011. For more detailed information on the 02R V2, see the First Look in the November 1997 *EQ*. Circle EQ free lit. #136.

The Mid Range
($10,000 to $50,000)

AMEK
Introduced at the fall '97 AES in New York, the Amek Soho is designed for professional audio postproduction applications. Details at press time were minimal, but Soho includes full dynamic automation via the company's SuperTrue automation system, and is based upon Amek's DMS (Digital Mixing Systems) technology. Further information on Soho is forthcoming, but we do know that the console will be priced in the $49,000 area. For more information, contact Amek at tel: 818-508-9788. Circle EQ free lit. #137.

RSP TECHNOLOGIES
Project X from RSP technologies offers 32 inputs and 16 outputs (other configurations are available) that interface with either DA-88's or ADATs. Every input channel of the Project X has phase reverse, high- and low-pass filters, 4-band parametric EQ, a delay line, compression/gating, and RSP's HUSH noise reduction. Eight auxiliary sends and eight stereo returns are standard, and two of these sends are internally routed to (two) 24-bit multieffect processors that can do reverb, delay, chorus, and pitch-shifting. There are also two AES/EBU digital sends and returns, as well as four analog sends and returns. All console settings may be stored, recalled and dynamically automated, and the desk can be master or slave to SMPTE or MIDI timecode. Five modes of automation are implemented including Manual, Read, Write, Update, and Rehearse. DSP takes place in an outboard rack integral to the system. Prices range from $30,000 up to $55,000. For more information, contact RSP Technologies at tel: 248-853-3055. Circle EQ free lit. #138.

SOUNDTRACS
Soundtracs' Virtua is a 48-channel console with eight aux sends, and 4-band parametric EQ, compressors, and gates on every channel. In remix, the console accommodates 64 channels. Thirty-two of the inputs are analog, switchable between balanced XLR mic or 1/4-inch line inputs. The remaining 16 inputs are digital-only. Virtua includes both snapshot and dynamic automation of all parameters, including LCRS surround panning. Eight stereo returns have level, balance, mute, and master output controls. Version 2 software for the Virtua provides touch update for the automation, high-pass filtering, and MS decoding. Prices for the Virtua start at $35,000. For more information contact Korg USA — which now distributes and supports Soundtracs — at tel: 516-333-9100. Circle EQ free lit. #139.

Dream On
While these consoles may be out of reach for many *EQ* readers, they implement the latest DSP technology and set the standards by which all digital consoles are judged. It doesn't hurt to dream...

NEVE
The Neve Capricorn is Neve's flagship digital console. A Capricorn intended for use in a 48-track studio typically would contain 32 analog mic/line inputs, 24 AES/EBU digital I/Os, 48 tape sends, 64 tape returns, and 16 auxiliaries. Any input source may be routed to any number of input paths simultaneously. Version 2.8 software facilitates updating automated control of console parameters without making an entire update pass; EQ and auxes may also be automated. A list editor allows console snapshots to be arranged in a specific order and recalled "playlist" style. Version 2.8 also enhances multichannel mixing. For more information, contact

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AMS/Neve at tel: 212-965-1400. Circle EQ free lit. #140.

OTARI

Otari's new Advanta is a large-format, configurable console designed for music and postproduction. The Advanta utilizes 40-bit DSP technology for improved resolution, and is able to handle all digital audio formats up to 24-bit with a 96 kHz sampling rate. Advanta consists of a control surface that connects via Ethernet to a processing rack. The rack includes the digital engine (expandable from the smallest to largest configurations by addition of DSP cards), I/O modules, and power supplies.

Two types of input sections are available and may be used interchangeably: "Mapped," which can control eight audio paths per control path (allowing minimum real estate for maximum number of channels) or "Dedicated," which provides more dedicated controls per signal path. Any control module on the work surface may access the functions of any signal path in the Advanta. On-board DSP can include filter and EQs, gate, compressor, limiter, reverb, chorus, or flange. The Advanta pricing starts at $185,000 for the base price and will begin shipping at the end of the first quarter of 1998. For more information, contact Otari at tel: 800-877-0577. Circle EQ free lit. #141.

STUDER

Studer's D950 digital console is based around a configurable "DSP core," which allows a user to tailor the console to their applications. The D950's processing utilizes Analog Devices' SHARC DSPs, each of which can execute 120 million floating-point operations per second (for more info on the SHARC, see the April '97 *EQ*). The D950 may be configured like a conventional console with one signal path per channel strip, or a single channel strip may control up to 10 virtual channels. Digital I/O can be fed directly to the DSP core via AES/EBU and MADI interfaces, while analog audio can be routed into the system via onboard A/Ds based on Studer's D19 mic amp. The D950 may be automated either dynamically or snapshot-style, each snapshot storing all console parameters. Pricing for a D950 system starts at around $350,000. For more information, contact Studer at tel: 615-399-2199. Circle EQ free lit. #142.

SONY

Sony has recently released a major software upgrade for the Oxford. Version 1.1 software includes multiformat panning and monitoring of surround sound formats including LCRS, 5.1, and SDDS. Additionally, V 1.1 also provides enhanced EQ algorithms, increased delay functions, and more extensive automation abilities. Control linking now allows stereo or multichannel sources to be linked for simultaneous adjustment of specified parameters.

In addition to V 1.1 software, Sony has also introduced the OXF-R3 24CO — a physically-compact Oxford with a 24-fader configuration designed to be operated by one engineer. Since the control surface is assignable, the 24CO can still access the standard 120 channels of Oxford's architecture. The Oxford 24CO is planned to ship in January 1998. For more information, contact Sony at tel: 800-686-SONY. Circle EQ free lit. #143.

SOLID STATE LOGIC (SSL)

SSL's most recent introduction to the digital console world is the Avant Film System. Avant is designed for multioperator use in film mixing and dubbing stage applications. Frame sizes range from 48 control surface channels up to 96, any of which may control up to 196 audio channels. Channels include 4-band EQ, dynamics, and eight aux sends; 24 digital reverbs, and 48 digital delays may be assigned to any channel. The Avant supports surround mixing in 7.1, 5.1, 4.1, or LCRS. For more information, contact Solid State Logic at tel: 212-315-1111. Circle EQ free lit. #144.

SOUNDTRACS

Based upon the technologies developed for its Virtua, the Soundtracs DPC-II Digital Production Console is designed for music and postproduction applications. The DPC-II employs an inline format and includes two main components: a modular work surface and a dedicated rack for the analog/digital conversion. Two work-surface frames are available, providing 64 or 96 faders. Either size frame can support from 32 to 160 channels. Channels are divided into blocks of 16, and each block can have a dedicated, touch-sensitive LCD color display. Systems may be configured with varying options for a high degree of customization. Pricing will vary from about $100,000 to $300,000, depending on the configuration, and shipment is scheduled to take place in the first quarter of 1998. For more information, contact Korg USA at tel: 516-333-9100. Circle EQ free lit. #145. EQ

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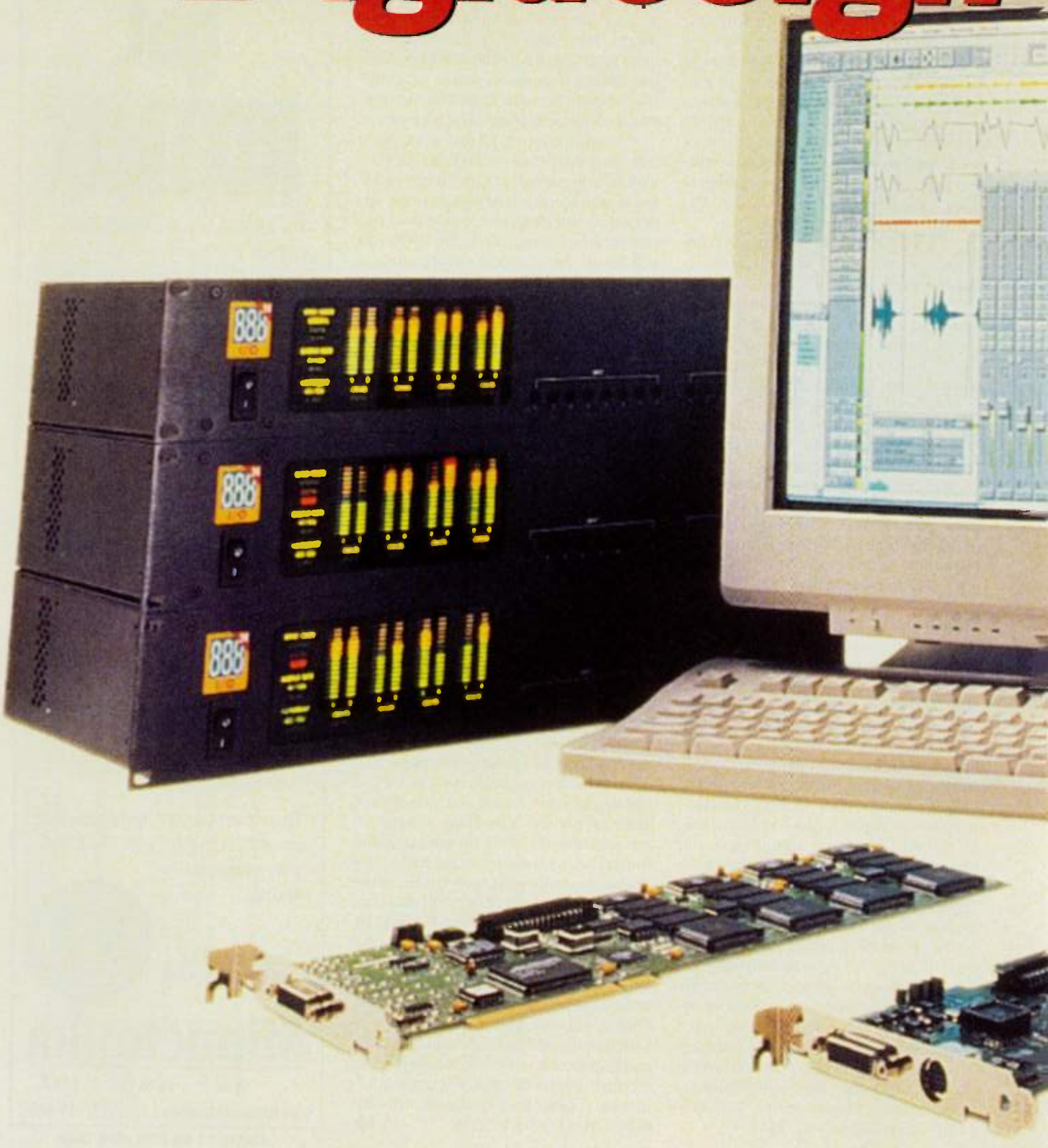
Studio Review

Digidesign



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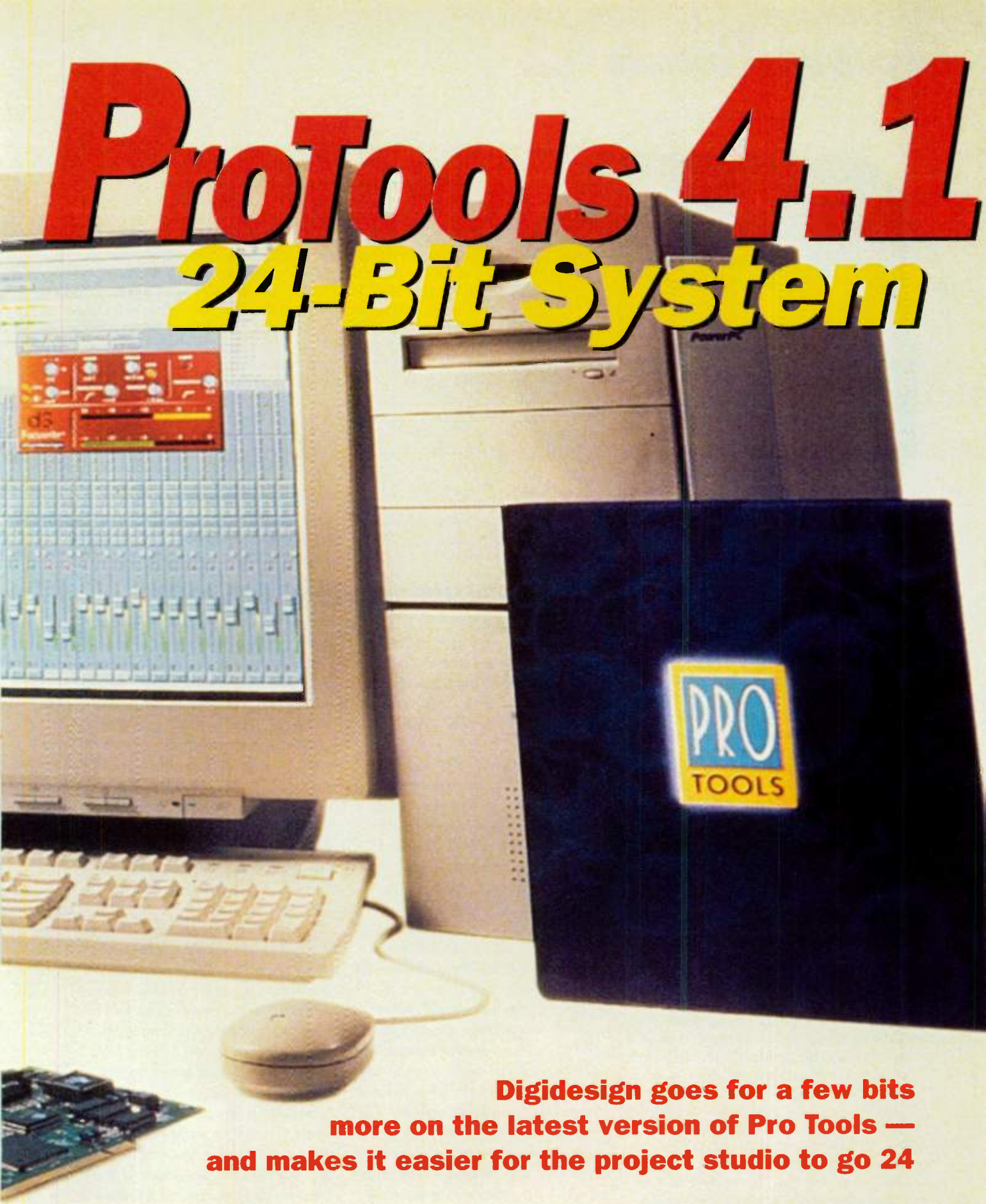
ProTools 4.1
24-Bit System



Digidesign goes for a few bits more on the latest version of Pro Tools — and makes it easier for the project studio to go 24

BY ROGER NICHOLS

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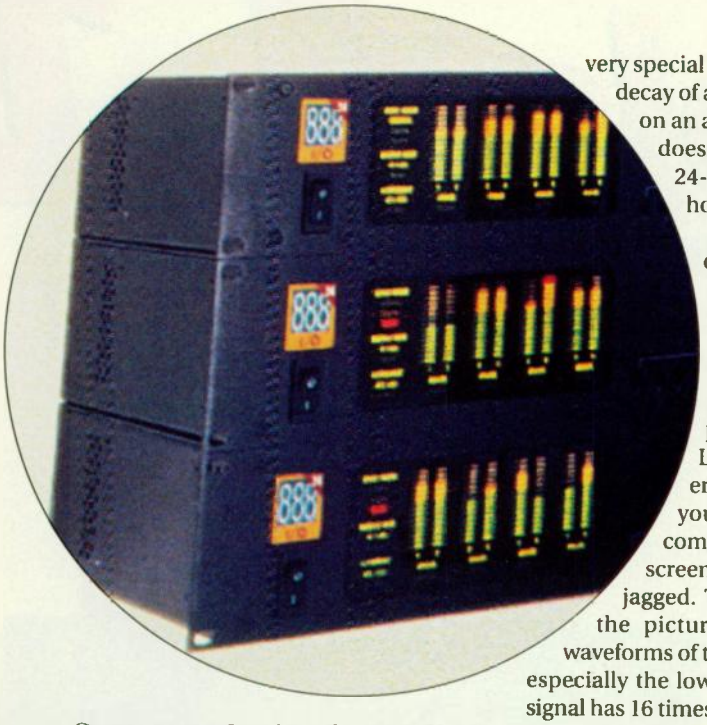
Digidesign ProTools 4.1



One year ago, I reviewed Pro Tools 4.0. I am still just as impressed today as I was then. Now comes version 4.1 and some new hardware to go with it.

A BIT BETTER

The most notable improvement in Pro Tools 4.1 software is support for 24-bit files. Other software enhancements include automated Plug-in bypass and improvements in AudioSuite Plug-ins. The hardware interface improvements include: a new d24 PCI interface card; a new 24-bit version of the original 888 I/O box, the 888/24-bit I/O box; support of the Mackie HUI control surface; direct support for the new Universal Slave Driver for SMPTE synchronization; and MIDI Machine Control of Pro Tools transport functions.

A 24-BIT PRIMER

To better understand the significance of 24-bit capability, I need to talk a little bit about why more bits are better. One improvement is in the signal-to-noise ratio of 24-bit. You get roughly 6 dB of signal-to-noise ratio per bit. This is where the 96-dB figure comes from when you read about 16-bit. With 20-bit material, this figure jumps to 120 dB, and 24-bit pushes the signal-to-noise ratio up to a whopping 144 dB.

Without question, 24-bit is definitely better than 16-bit, but the response I get most of the time is, "What the Hell difference does it make? I am recording guitars and air conditioners and stuff that is not that quiet." Very true. And except for very special circumstances, like the decay of an acoustic piano chord on an audiophile recording, it doesn't matter. The part of 24-bit that does matter, however, is resolution.

The bit resolution determines the amount of "fineness" that is used when recording the analog signal. It works just like digital picture resolution. The picture you see on the LCD display of the camera looks good, but when you copy it over to your computer and display it full screen, straight lines become jagged. These straight lines in the picture correspond to the waveforms of the analog audio signal, especially the low frequencies. A 20-bit signal has 16 times better resolution than 16-bit, while a 24-bit signal has 256 times more resolution. This holds true over the entire dynamic range. The loudest part of the recording contains just as much accuracy as the lowest level signal.

One additional plus from 24-bit recording is that you can lower your "Zero" reference so that you have more headroom. Headroom is the amount of room you have above Zero level for those unexpected peaks that show up every so often. If you lower the reference by 6 dB, you still maintain a 138 dB signal-to-noise ratio and have 20 dB of headroom.

The difference in sound quality between 24-bit and 16-bit is not some small difference that requires training. You can hear it on the first comparison with any kind of music, with one hand tied behind your back. The differences you will notice the most are the tightness of the bottom end and the enhanced detail of the images. A vocal recording with one microphone sounds three-dimensional.

DIGIDESIGN UNIVERSAL SLAVE DRIVER

By Roger Nichols

Almost everyone who uses Pro Tools needs to synchronize audio with something. How about a digital multitrack machine or a D2 digital video machine or a 1/2-inch video deck or a film chain?

Synchronization is no stranger to Digidesign. In the past they have offered the Video Slave Driver and the SMPTE Slave Driver. They have done a perfect job of digital audio lockup. They now have combined all the features of both boxes, and more, into one Universal Slave Driver.

When synchronizing two digital audio devices together, all you have to do is get them to the same spot and let go to sample clock. You then have sample-accurate lock forever. When synchronizing different sample rates, locking to picture, or even (heaven forbid) locking digital audio to an analog source, the potential problems rise exponentially. You must be able to varispeed the slave (in this case, Pro Tools) to make it run second for second in sync with the master. The problem with most systems is increased jitter and distortion in the digital audio signal when chasing SMPTE or locking to the crystal of a video machine.

The USD generates Digidesign Superclock, which is basically a sync pulse with 256 times higher resolution than a regular word clock. This signal then drives the sample rate of the Pro Tools system. If the video machine runs a little slow, then the USD slows down to match so that Pro Tools stays in sync throughout the show. [Timecode information is carried via a proprietary protocol to the host CPU, allowing lock-up times in one or two seconds.]

The USD functions as an LTC reader and generator, a VITC reader and generator (with window burn), a stand-alone timecode and clock format converter, and a master clock for Pro Tools workstations. If you want Pro Tools to be the master, then the USD will generate SMPTE based on Pro Tools play position.

The USD is one of those add-ons where you don't have to think about it, you just get it. Later, you won't know how you ever got along without it. By the way, do I get royalties if a piece of equipment is named after my wife?

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THE NEW HARDWARE

As mentioned above, the 24-bit core system comes with a new interface card, the d24, a DSP Farm card, an 888/24 I/O interface, and all the necessary Pro Tools 4.1 software. The d24 card will connect to one or two interface boxes (with the addition of an optional Y cable). The interface boxes can be any mixtures of the new 888/24 I/O (not included in the core system price), a standard 888 I/O, or the economical 882 I/Ointerface. The connector on the DSP Farm allows you to connect to a third interface box for a total of 24 tracks of simultaneous I/O. [You can add more DSP Farms (or a second d24 disk engine card with upcoming expanded systems) to get up to 72 channels of I/O. Digidesign has an upgrade program that allows users to trade in their older 888 I/O for the newer 888/24 I/O when they return the old box and pay a fee. No factory retrofit, however, is offered.]

The new 888/24 I/O audio interface contains 24-bit A/D converters for all analog inputs, while the DA output section contains 20-bit converters. Also, you seldom ever need to output multiple tracks analogly (new word) at 24-bit resolution. You will most likely be interfacing digitally, which supports the full 24-bit stream.

To me, the biggest change in the new system is that the hard disks now reside on the Mac SCSI bus instead of being connected to the disk I/O card. [You also can now network with the new FibreChannel-distributed RAID networks when disks support block-level disk access.] This means that backup, file transfer, and formatting are easier.

One thing that I think you must add to your new 24-bit system is one of the supported SCSI accelerator cards, such as the Adaptec 2940 or 3940. If you are going to be doing 24 or 32 tracks of 24-bit recording with lots of edits, it is going to be hard for the Mac's built-in SCSI controller to keep up. With the addition of the accelerator card, all of your worries are gone. If you ever paid attention to disk access activity with the old system, the disk access light remains on for 70- to 99-percent of the time, and on very complex situations with fragmented disks, the drives couldn't keep up. With an accelerator card, the disk access light is only on 20- to 50-percent of the time. Plenty of overhead for those times when the number of edits gets out of control. [Digidesign states: You can get 32-track, 24-bit performance with Apple 9600's and 8600's by using the internal SCSI Fast bus that is in these computers. You can place drives on the internal fast bus, or on a combination of the internal and external (narrow) SCSI bus, and get perfectly adequate performance for 32 tracks of 24-bit. In addition, this system has a totally new disk engine, so everything is enhanced. As a result, disk activity will be lower even without an accelerator. While we do recommend a disk accelerator for best performance (and they're cheap), we do not support them in 3-slot Macs like the 8600, which are supported with this system. (Accelerators also take up a PCI slot, of course.) The new G3 Macs do, however, support disk accelerators.]

SLOT MISER

The new d24 core system requires only two card slots for 24 channels of I/O. Digidesign has, as I write this, qualified the new three-slot Mac G3 Mini Tower for use with the core system. This cuts over $1000 off the price of the computer needed to power the system. With only two slots necessary in the core system,

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the need for an expansion chassis to accommodate multiple cards is less likely.

If you have followed my columns, you know that I used the 24-bit system for the new Bela Fleck & The Flecktones album in the middle of October '97. This system had 24 channels of 24-bit I/O, the Adaptec 3940 SCSI accelerator, and was in a Mac 9600/250 with dual 20-inch video monitors. Installation on that system was unbelievably easy. Insert the CD-ROM, click on INSTALL, and come back in a few minutes. On initial boot, you select which I/O boxes are connected to which ports, and go to work. No glitches, no crashes — just recording 24 channels of 24-bit audio 12 hours per day for a week. Upon completion of the recording, Bela proceeded to start editing and overdubbing.

Because we are talking about hard-disk recording, I must mention the dreaded "backup." Only so much stuff will fit on a hard disk. The key to back-up for me is speed. For the Bela sessions we had to be able to backup lots of data fast. We used a DLT drive and another computer. While we were recording on one pair of drives, we were backing up the previously recorded pair.

My second impression held up. I just installed a d24 core system with one 888/24 I/O, one 888 I/O, and one 882 I/O interface. This allows me to get into the 24-bit system and upgrade as the budget allows. I added the Digidesign Universal Slave Driver for synchronization (see sidebar), and the Adaptec 2940 accelerator card for fast hard disk I/O. The host computer is a Mac 9600/300. With the 350-MHz version out and the G3's on the way, I was able to get a good deal on it.

The installation was just as easy as Bela's, and I had all of the hardware and software up and running in about 2-1/2 hours. The hardest part of the whole deal was SCSI cables and the Adaptec accelerator. Because of the enhanced speed, cable quality and length are even more important than normal SCSI connections.

FINALLY

Finally, everyman's Pro Tools. They say you can't be all things to all people, but the d24/ Pro Tools 4.1 combination comes as close as you can get.

For past projects, I've usually done multitrack editing with two Sony 3348 48-track machines. For the next Steely Dan project, it looks like the recordings will be done on Sony 3348-HR (48 tracks of 24-bit). The tracks that require editing will then be transferred to 24-bit Pro Tools for full 24-bit editing. The results will be digitally transferred back to the 3348-HR. How sweet it is.

I have been waiting for this level of hard-disk recording for 10 years. I'm glad that Digidesign has helped it arrive with their new 24-carat...I mean bit...system.

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PRICE: Pro Tools 24 core system, $7995; PT III core PCI, $4995; 888/24 I/O, $3495; 888 I/O, $2295. Pro Tools upgrade prices: PT III core PCI —> PT 24 core, $1495; 888 I/O —> 888/24 I/O, $1995; PT III core NuBus —> PT 24 core, $4495; PT Project (NuBus or PCI —> PT 24 core, $5495. Universal Slave Driver, $1995.
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EQ LIVE

Digital Consoles Live

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NEW GEAR PAGE 108

PHOTO BY JEAN LANNEN

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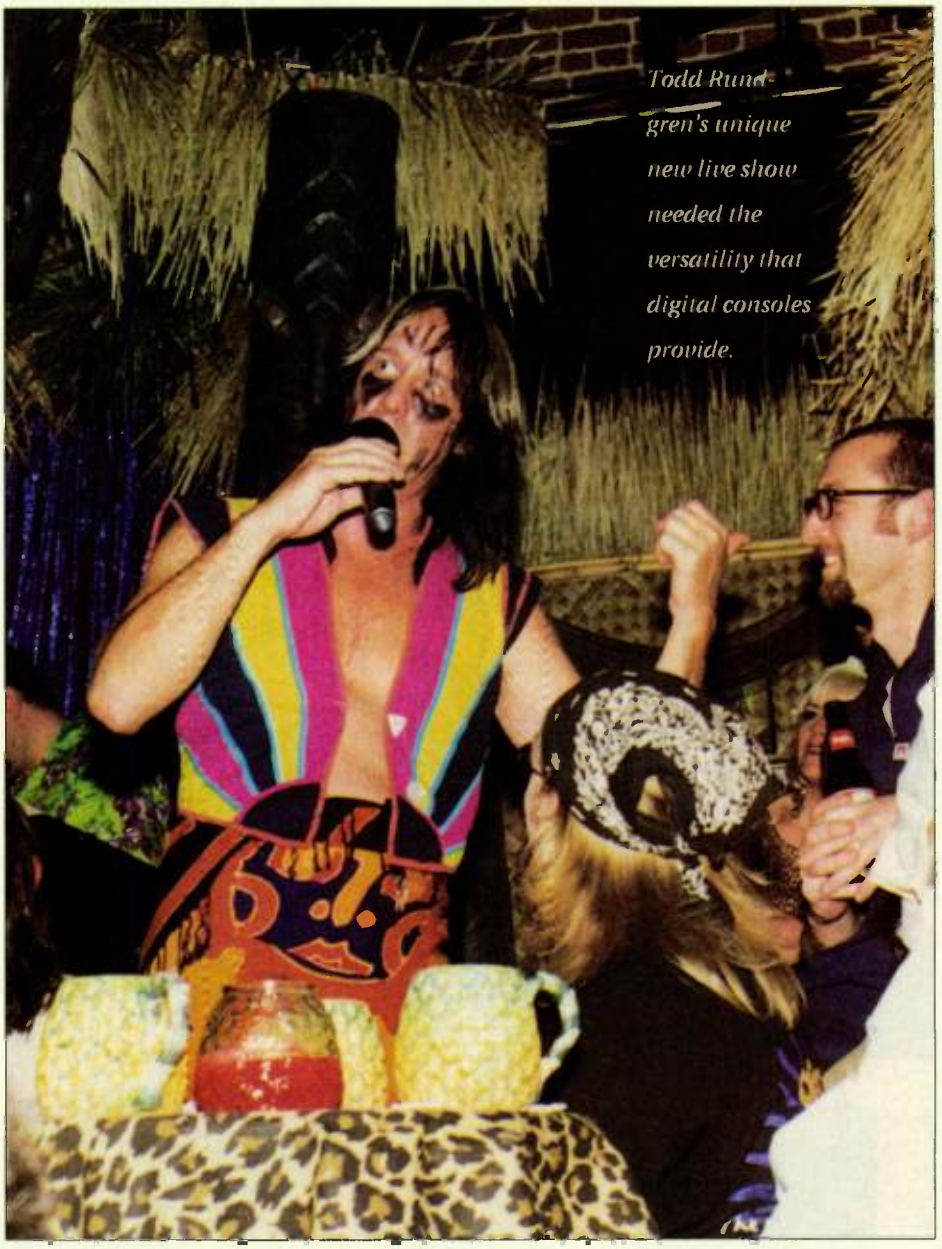
DIGITAL TODD WITH A TWIST

PROJECT STUDIO DIGITAL CONSOLES FIND A NEW APPLICATION ON THE ROAD.

By Bobby Owsinski



Todd Rundgren's unique new live show needed the versatility that digital consoles provide.

PHOTOS BY JEAN LANNEN

Sound reinforcement consoles, the last stronghold of analog, appear to be finally falling to the digital tidal wave on the horizon. Smaller, sleeker, and cheaper with more features, digital consoles now creep silently and effortlessly into the concert soundscape. Nowhere is this better illustrated than by a recent series of dates by technology maven Todd Rundgren entitled "Todd Rundgren with a Twist," where FOH engineer Larry Toomey sported a pair of Yamaha's digital 03D's as his main mixing rig.

The tour, which features a unique Tiki Bar Lounge stage set, had the band contained on a small riser, making them look like they were tucked into a corner of a tacky Tiki-style bar. In keeping with the low-tech appearance, no microphones were exposed. The band consisted of a drummer playing on a small upright cocktail lounge set, bass, acoustic, and electric guitars, and keyboards. In yet another unique twist, the monitor mixer was part of the stage setup and served as the bartender, dispensing drinks to Todd and some invited audience members while mixing.

Toomey, who has mixed Rundgren for the last 10 years, is no stranger to using a digital board on the road. Having used one on Todd's last solo tour, Toomey states, "I've owned two of the Yamaha ProMix01's previously. On the last Todd tour, when he was out solo with just an acoustic guitar and a piano, I used an '01. Since we flew everywhere, I just took this little '01 in a flight case and did both mains and monitors from the stage and found it to be amazingly flexible. It was a way for me to have my own console and effects in basically a briefcase. We did a lot of remote radio broadcasts where I just plugged the outputs directly into the phone lines and it flew every time. When I got hip to the 03D, I found it such an amazing tool that I had to have one."

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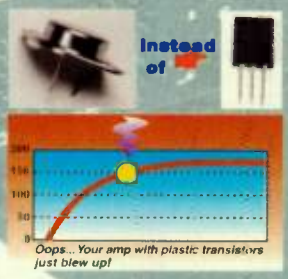
The new CS 800S uses metal (TO-3) power transistors, because plastic devices just don't deliver equivalent thermal performance. While metal devices can be used right up to silicon junction failure, plastic devices degrade 50°C (90°F) sooner. This margin of "thermal headroom" can be the difference between a really loud finale and something more final.



Books have been written about thermal management, but it all boils down to three things: air flow, heat sink area, and Δ T (the difference between the heat radiator and ambient air). The CS 800S uses a unique "parallel flow" heat sink alignment so every transistor receives the same cool temperature air for optimum Δ T.

With two variable-speed 32 CFM fans cooling hundreds of square inches of heat sink area, and metal (TO-3) power devices (in the air stream), the CS 800S will play very loud for very long (years - not minutes or seconds).

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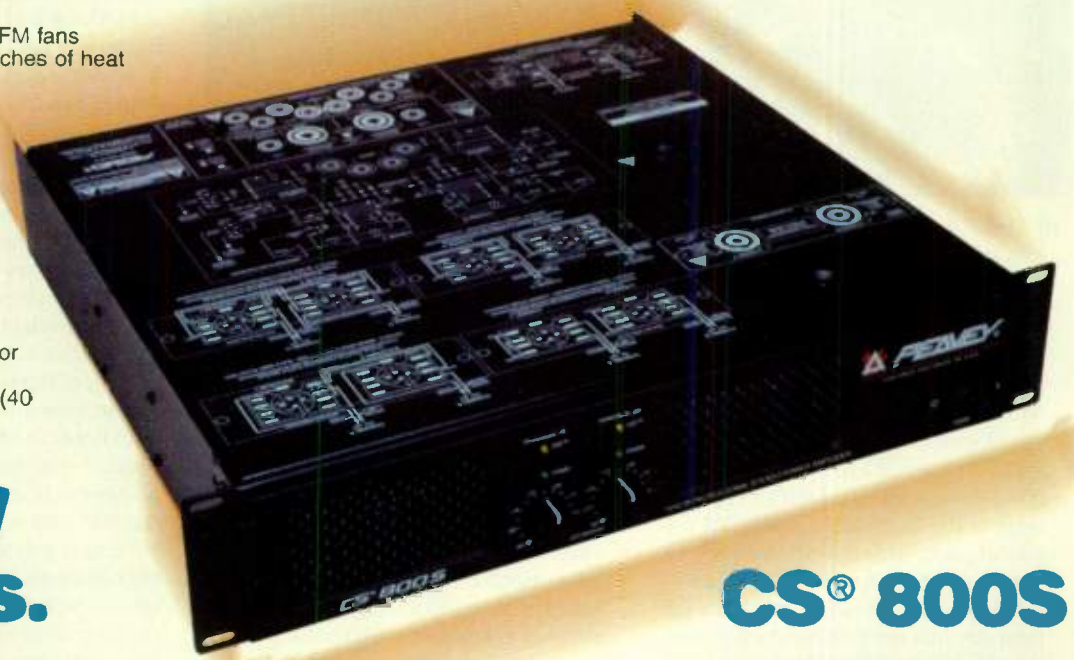

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PEAVEY

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Soon after purchasing the 03D, Toomey became instantly won over by the unit. "I love the flexibility of the interface and its ease of operation, plus the fact that it's so cheap, yet it sounds so good. It's kind of scary that this little tiny box can do all that," he proclaims. But soon Toomey found some unexpected advantages of the digital domain as well. "We played everywhere from some really tiny clubs to some pretty big theaters, and in some of those places the mix position that you would get with a big console would be lousy," he says. "But with the 03D, I could be in the sweet spot every time because it's so small and doesn't need to take up any good ticket spots. It wasn't a compromise in the least, and it really did sound good. In fact, I would give members of the band some show DATs, and they would come back the next day just not believing what was coming out of these things."

IS THAT A BANANA IN YOUR HAND? Rundgren is happy to see the crowds at his performances. TOP: Engineer Larry Toomey keeps things running right.

Toomey found that the only limitations of the desk were easily overcome. "The only thing that's a little difficult is that you only have eight true mic inputs," he comments, "but because everybody makes an outboard mic pre these days, so you can get around that pretty easily. The first eight inputs are on XLR while the second group is a 1/4-inch TRS balanced input, but it's totally line level. I did run some hot condensers into three of those and got enough level because it was on some drums, but you couldn't plug a vocal mic in there and get it to do much. On the next tour I'm going to use just one console and then I'll just use some additional outboard mic pres. That being said, the onboard mic amps are really good and have a lot of swing to them, and now that they have phantom power switches on each input instead of just one overall, it helps out a lot. They're really quiet and work very well with the onboard dynamics."

While some have complained about a steep learning curve with digital consoles in general, Toomey feels just the opposite. "For me, it's been a really natural thing," he replies. "I've always been an Apple Macintosh computer guy, and the 03D just feels like that interface. The display is laid out with that same sort of no-nonsense graphics. It just makes so much sense. When you want to see what you're sending somewhere, you just have to press a button and all the faders reset to what that is. It makes so much more sense than trying to look through a whole field of knobs to make sure that you're on the right channel strip. When you're on a really large board, you have to double check constantly to make sure that you're turning up the right effects send on the channel that you want. It's just kind of slow compared to the 03D style of doing it."

Toomey claims that he didn't even need to reconfigure the console from what would be a normal studio setup. "I didn't have to because it's so simple already. You don't have the availability of VCA groups and such, but the 03D does have four mute groups and grouping as well. I also used the onboard effects almost exclusively, except for an outboard Harmonizer™, a reverb on the background vocals, and another on the acoustic guitar. Plus having dynamics processing on all the inputs and outputs is just great."

Relying exclusively on the onboard dynamics for the tour, Toomey states, "What was kind of amazing was that you really couldn't hear the dynamics. They really didn't have a sound to them. It was almost like using an LA-3A in that you'd see that meter take a dive back when you were doing all this compression, but you wouldn't really hear it. It was really refreshing — especially after using the '01, where you really hear it when you turn on a compressor. It was really useful in that respect. You could really squish the heck out of something and not hear it too much because it had a good knee flexibility to it, which was recently added, and that helped out a lot. In a live situation, you're just looking to control something and not looking for an effect. Like on the bass, I took him direct, and the dynamics processor really helped because it kept him in the mix."

With every intention of going digital for the monitors as well as the FOH, Toomey found that it didn't seem to work out as planned. He notes, "For this portion of the tour it was more important to have more of a bartender/actor than it was to have a monitor guy. As a result, the monitor console we used was an Allen & Heath M2000 because he was familiar with it, but on the next swing we'll have a monitor engineer with an 03D on stage. We just have to find someone who can appreciate the nuances of the 03 and isn't stuck in the old school of having to have all those knobs." EQ

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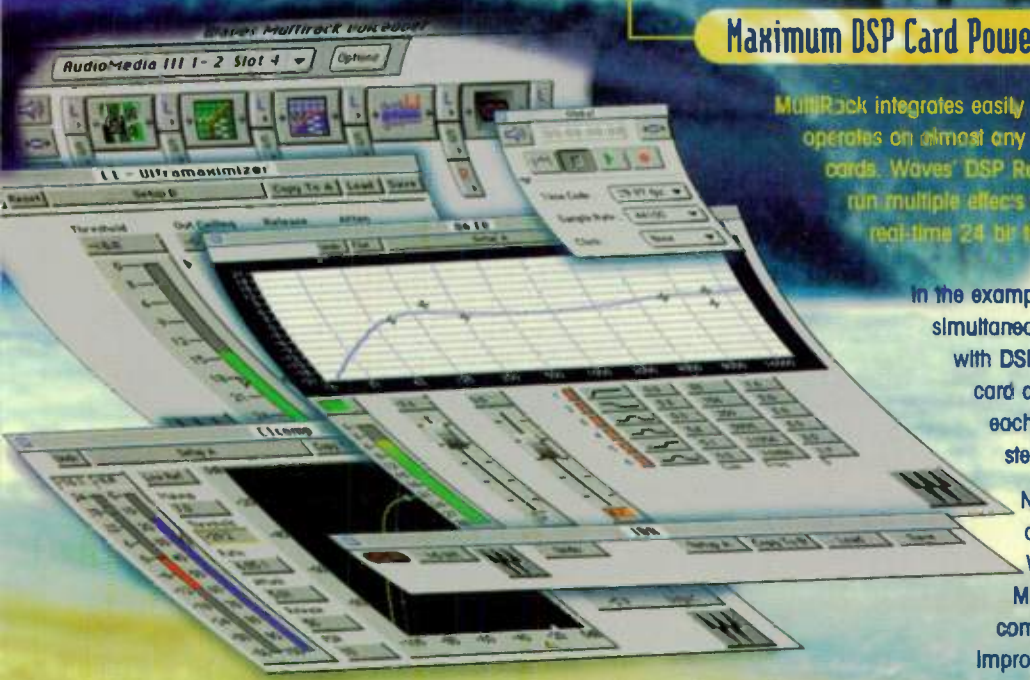

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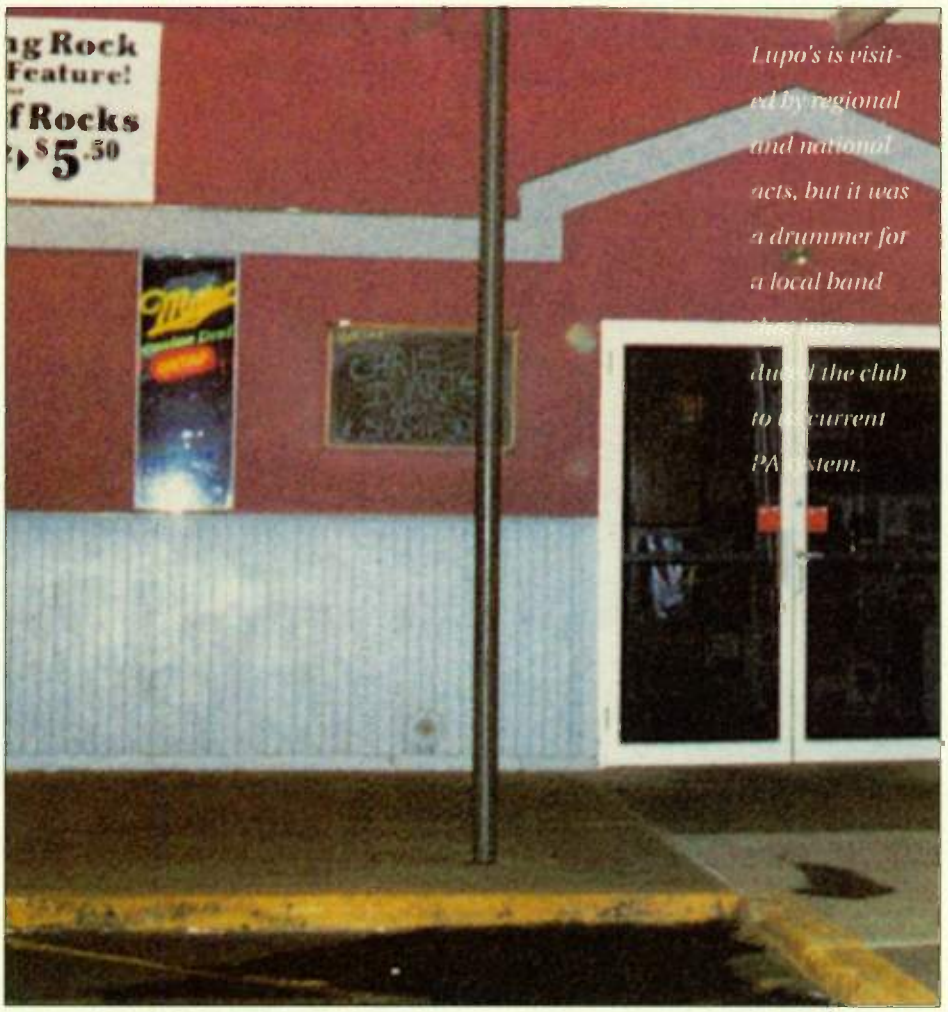
CLUB PROFILE: LUPO'S

A TRAVELING PA FINDS A HOME AT THIS BETHLEHEM, PA-BASED CLUB

By Steve La Cerra



Lupo's is visited by regional and national acts, but it was a drummer for a local band that brought the club to its current PA system.

PHOTOS BY TONY HERSCH

Located in Bethlehem, PA, Lupo's is a club that hosts approximately 900 patrons for signed national and regional acts. The club's currently installed PA system has an interesting story behind it, and house audio engineer Tony Hersch explains its origins:

"This PA system is owned by a gentleman by the name of Kevin Miller, who was a drummer in a local band. Kevin's band was playing in the area, but he found that most of the clubs they were playing in had installed systems, so he wasn't using the PA rig very much. Meanwhile, Kevin's brother Greg (who owns the club with Gene Lupo) was paying someone else for a house rig and it just made a lot more sense for Kevin to bring his PA to Lupo's. Recently, Kevin joined a signed band out of Tennessee called Fuel and since they will be busy with touring, he asked me to maintain the PA for him. The system is about four years old and has about 270 shows per year on it. But it has been very well-maintained in terms of the drivers because Kevin had an in at Community — me! [*See Tony's bio at the bottom. —Ed.*] The entire rig is on multipin connectors for easy setup and tear down, though now it's in Lupo's permanently."

STAGING THE RIG

Most of the loudspeakers in this PA are Community, with four RS880 full-range cabinets flown two per side. All of the cabinets have been modified by installation of Community VHF100 high-frequency drivers. Subwoofers are Community VBS415's, each containing four 15-inch drivers. There are two VBS415's per side on the floor, near the front of the stage. These boxes are powered by Crown amplifiers: four Micro-Tech 1200's in bridged mono for the RS880's (one amp per box) and two Crown MT2400's in bridged mono for the subs (one amp per pair of subs). A Community DSC42 digital crossover is used to cross between the subs and the top cabinets.

Standard gear at the front-of-house position includes a Mackie 32•8 console with White 4660 EQs for the stereo house mix. For inserts, there are two Symetrix 525 stereo compressors, a Behringer Composer, an Alesis 3630, and a Peavey Gatekeeper. Effects at house include two Yamaha SPX90's (which Tony describes as "hard to get these days..."), an ART Multiverb III, Alesis Microverb, Ibanez DMD2000 delay, and a DigiTech RDS1000 delay. Hersch is using a Community DSC42 processor for crossover and limiting on the main mix bus, and has an very interesting way of setting the system limit.

"Limiting in this system is based on a measured voltage level. First I feed pink noise into the rig and put a

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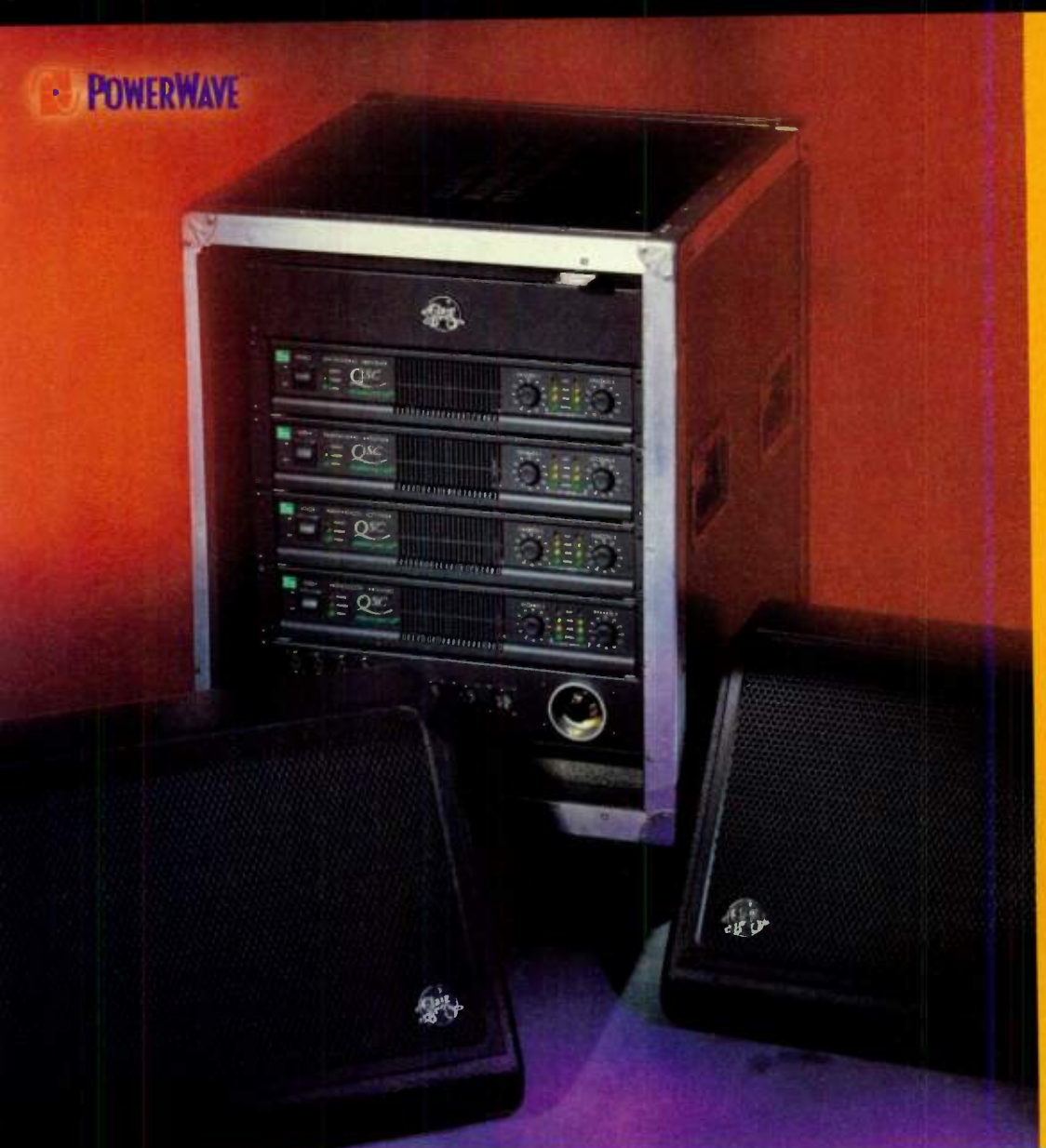

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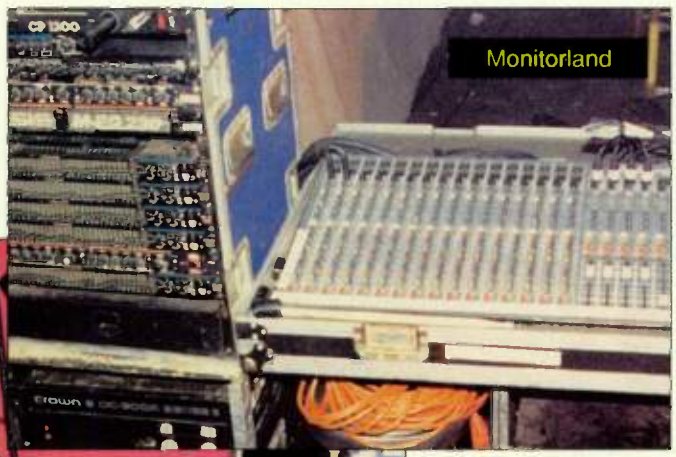
voltmeter on the output of an amplifier. Then the output of the system is turned up and brought slightly above the voltage level that the loudspeaker can handle. Then I begin to engage limiting in the DSC42 until the voltage level comes down to the maximum that the speaker can take This way, I can run the system up as far as I want, but when I hit that level, that's it. It's set literally to where the drive will take the speakers to their limit." [*This procedure is done with all speakers disconnected. Since you are measuring voltage, it is unnecessary to have a load present at the output of the amp. —Ed.*]

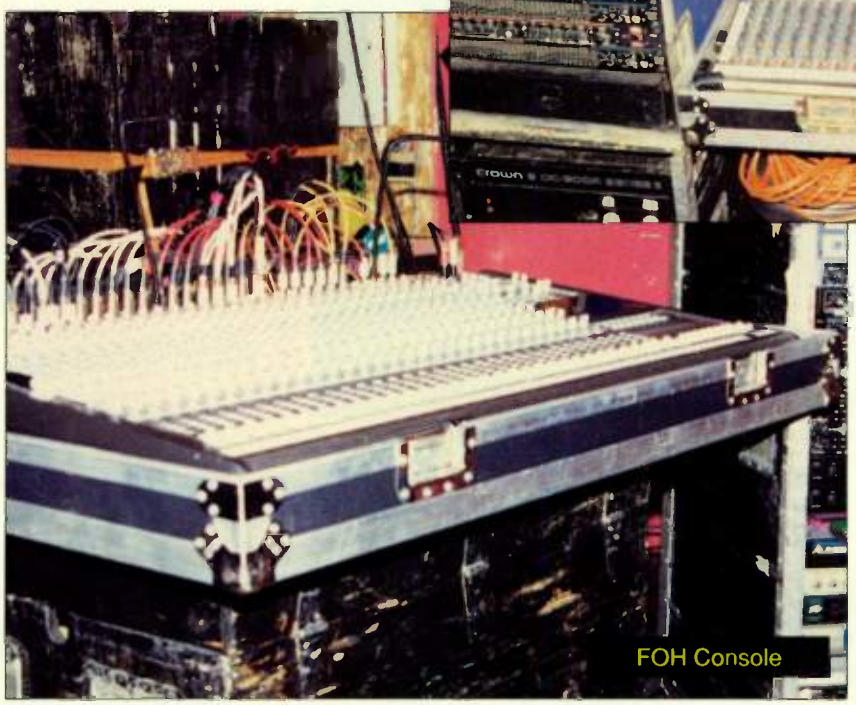
NOW HEAR THIS

In monitorland are five Community CSX58-S2's (each box contains two 12's and a 1-inch horn), all powered by Crown MT1200's with one cabinet per amp channel. An EAW SB528 serves subwoofer duty for the drum fills while the top end comes from a custom-designed box with two 12's and a 2-inch horn. This is triamplified with a Crown '2400 on the bottom and a '1200 for the top and mid.

To maximize usable space on the 30 x 30-foot stage, a pair of stereo sidefills are flown: one Peavey HDH1 cabinet per side, triamplified with Crown MT1200's on lows and DC-300's for the high and mid. Over the coming months, Tony intends to make some changes to the stacks. "Our plan is to take down the RS880's and put in a Community Air Force rig. Then we'll use RS880's for sidefills and a drum fill. In the past I have used RS880's for drum fills and they work extremely well. When you can get a drummer to come up, check his monitor, and say, 'Can you turn that down?' then you really have something! I'm looking forward to having the '880. The sensitivity is 109 dB, and if you put it on one side of a Crown '3600, you can make a drummer sterile. It's nice to have that kind of headroom."

Mixes are created from a Studiomaster Stagemaster 24 x 8 console. Currently, Tony is running eight mixes: five wedge mixes, stereo sidefills, and a drum mix. Monitor EQs are (five) Peavey EQ31's and two Alesis MEQ230's. Additional monitor processing includes an Alesis 3630 for insert on kick and snare and an Alesis Microverb II "for whoever wants 'verb in their monitors," says Hersch. "Most performers don't ask for it, but it's there if I need it." A healthy selection of microphones includes six Shure Beta 58's, six standard 57's, two Beta 57's, an AKG D112, Shure Beta 52, Sennheiser MD504 for the snare, six Countryman DIs, three Shure SM94's, and two Audio-Technica ATM11R's.


Monitorland


FOH Console

SUPPLEMENTARY NUMBERS

Since Lupo's also hosts national acts — who can be more demanding as well as louder — a supplementary PA system is available for adding a little muscle to the existing system. Tony reveals the arrangement: "Ron Branchini from BSI (Branchini Sound Incorporated, New Field, NY) has a beautiful Crest-powered Community rig with 12 RS880's, 12 VBS415's, and ATM Flyware. For bigger acts he'll bring in his entire FOH rig, four extra subwoofers, a monitor console and processing rig, and a separate snake system. His rig and the house rig share the same drive, but have totally separate processing for the headlining and opening acts — so things can be set and left. Acts don't have to share a console except when there's a co-headline, which normally doesn't happen.

"Usually we have an acoustic opener, an electric act, and then the headliner. The openers run through the Mackie and the headliners get Ron's rig. He brings in a 40-channel Yamaha PM3500 with Klark-Teknik stereo EQs, eight Drawmer gates, eight channels of dbx compression, two Yamaha SPX990's and a REV7, and a Roland SDE-1000 delay (he also brings in a media rack with cassette and CD players).

"For monitors, Ron brings in a Crest LM52 (52 x 12), a 40-channel snake with a split, Klark-Teknik EQs for all of the mixes, and a processing rack with four Behringer Composers and two Behringer quad gates for insert and an SPX90 for 'verb to monitorland. Interfacing the systems is easy — it's basically plug and play. For the house systems, the PM3500 simply plugs into two open channels of the Mackie, and I bypass the house EQ, giving the engineer total control over EQ via the supplementary rack. This system can get really

World Radio History

loud if you want it to — it can maintain 120 dB SPL at FOH without clipping and can cruise right along there. By running the PM3500 through the Mackie and my drive racks, I can control the level. If an engineer comes in and gets out of hand, I have a lasso on him."

For the changeover in monitorland, drive lines from the Stagemaster are pulled out and plugged into the Crest console. According to Tony, this "allows the openers to get whatever they want in the monitors, and eliminates restrictions on either the headliner or the opener. The opener gets the Stagemaster and the headliner gets the Crest. If we get a national, signed opener, the monitor setup can handle them and please them as well. Our philosophy is that people came here to see a concert, so there's also no restrictions on SPL for the opener. Sometimes the headliner will ask me to leave them a little room, but that is not the house policy. House policy is that people came to hear a concert and they are going to get it!"

MIX TIPS

If you find yourself mixing at Lupo's, keep the following in mind: Bass response at the FOH mix position is a bit on the thin side. It sort of blows right past you and out to the rear (patron) areas of the club. Making the bass "right" at the mix position leaves the rest of the club hearing some "woof," and making the FOH sound bassy will make the mix in the rest of the club much too heavy in the low end. If you're not sure how to handle it, ask Tony — he knows.

Flying Rig

Front of Stage

In his 5-year stint at Community Loudspeakers, Tony Hersch was a product specialist and tour sound product manager, working on the development, rigging, and fly-bar design of Community's Air Force Series. Along with partner Brian Varhelyi, Hersch recently formed AudioBahn, a professional audio company. He can be reached at 610-495-6168 or hersch@voicenet.com.

When buying a dubbing machine for your personal or project studio, TASCAM gives you high speed relief from duplicating chores. The 202MKII Dual Auto Reverse Cassette Deck is twin two-head decks in single 3U rack-mount design that can work together or separately with the touch of a button. It's perfect for making high speed dubs or creating composite tapes from multiple sources. Record on one deck while playing-back on the other, or program for continuous looping playback. The 202MKII is the perfect blend of multi-function capability, quality sound and user friendliness. And at $529* it's ideal for budget-minded musicians and studios. Best of all, it's from TASCAM, so you know it's built to last.

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CIRCLE 60 ON FREE INFO CARD

World Radio History

ROAD GEAR

Tannoy T12

GET TO THE POINT

The new T12 loudspeakers, T40 sub, and TX2 system controller from Tannoy are the next wave in point source, Dual Concentric technology for the sound-reinforcement market. The T12 features a new 12-inch Dual Concentric Drive unit with double roll cambric suspension for greater low frequency dynamics and control, as well as a new halogen high-frequency protection system. The system is housed in a wedge profile enclosure for foldback monitor or traditional portrait applications. The new, compact Tannoy T40 transportable 15-inch bandpass subwoofer is designed to complement the T12 speakers. The high-power sub offers a peak SPL of 130 dB and a frequency response of 34 Hz to 160 Hz. The optional TX2 electronic controller can be used as a full-range device performing specific equalization functions, extending the low and high frequency response of the system. The TX2 can also be utilized in 2-way active mode in applications requiring a subwoofer. For further information, contact Tannoy/T.G.I. North America, Inc., 300 Gage Ave., #1, Kitchener, ON Canada N2M 2C8. Tel: 519-745-1158. Web: www.tannoy.com. Cirlce EQ free lit. #122.

THREE MS

The three new models in JBL's EON M Series of microphones offer a cardioid polar pattern, rugged construction, large "pop"/wind filter, rubberized shock ring, on/off switch, and very low output impedance. The JBL M100S dynamic microphone ($135) is a unidirectional mic that features a neodymium magnet system for high output and high SPL handling with minimum distortion. The mic's frequency range is 60 Hz–18 kHz and boasts a sensitivity of –72 dB (±3 dB) at 1000 Hz, and an impedance of 250 ohms at 1000 Hz. The JBL M80S dynamic microphone ($99) offers a neodymium magnetic system, matte-black die-cast zinc case, and 320-gram weight, and has a frequency range of 70 Hz–16 kHz. It's sensitivity at 1000 Hz is –72 dB (±3 dB), and its impedance at 1000 Hz is 600 ohms. The JBL M60S Dynamic Microphone ($69) is a general purpose, cost-effective performer that offers a frequency range of 70 Hz–15 kHz, a sensitivity at 1000 Hz of –74 dB (±3 dB), and impedance of 500 ohms at 1000 Hz. For further details, contact JBL Professional, 8500 Balboa Boulevard, Northridge, CA 91329. Tel: 818-894-8850. Circle EQ free lit. #123.

Telex Cobalt SE60

DIDN'T HE PLAY FRED SANFORD?

The Red Box Pro, from Hughes & Kettner, is an update of their popular Red Box Cabinet Simulator, which eliminates miking hassles by delivering cabinet tone from the line out or speaker out of a guitar amplifier to the mic input of a mixing console. The Red Box Pro adds new features to the original design, including a refined frequency curve for greater realism as a guitar cabinet simulator; a balanced transformer for both impedance matching and galvanic isolation, and a ground-lift switch to help avoid hum and other interference over long cables; power amp simulation; and the ability to do double-duty as a standard D.I. Box;. For more information, contact Hughes & Kettner, Inc., 1872 Elmhurst Rd., Mt Prospect, IL 60056. Tel: 1-800-452-6771. Circle EQ free lit. #124.

Hughes & Kettner Red Box Pro

BLUE BY YOU

Telex's Cobalt SE60 is an electret-condenser-type unidirectional microphone capable of running on batteries or phantom power. The frequency response is 40 Hz to 20 kHz running at an impedance of 600 ohms, with a signal-to-noise ratio greater than 70 dB. The SE60 offers distortion-free performance up to 140 dB SPL and features a cobalt blue finish. For more information, contact Telex, 9600 Aldrich Ave South, Minneapolis, MN 55420. Tel: 612-884-4051. Circle EQ free lit. #125.

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CIRCLE 38 ON FREE INFO CARD

ELECTRO-VOICE 1.5 kW

By **WADE MCGREGOR**

A quick glance at Electro-Voice's newest power amps is enough to answer the first two questions anyone asks about a power amp: (1) "How much power does it have?" and (2) "How big is it?" The model name, emblazoned on the front panel, offers the total output power — 1.5 kW — and the 2U size of the unit is self-evident. This direct approach to power amplifier packaging is carried through the rest of the very functional (and industrial) appearance of the unit. However, while the 1.5 kW's exterior offers a simple and direct approach, inside is a sophisticated combination of Class H output configuration and switching power supply that offers high efficiency and low weight.

The 1.5 kW is easy on the ears; that is, there is little contribution from the amp to the sound produced by the loudspeaker. It is not going to be at the top of anyone's list for critical monitoring applications, but the sound is tight in the low end and clean at high frequencies. If you need to enhance the low-end of your nearfield monitors, this amp offers a simple solution. The noise floor is low enough to remain unobtrusive during operation — although the noise floor rises significantly when the switchable filters, especially LPN (low-pass notch), are engaged.

The simple input level controls and large rocker switch for power on the front panel add to the unit's basic industrial look. Four LEDs indicate the status of the unit: amber for overtemp; red for protection; yellow for bridge-mode; and green for power on. There is no indication as to which channel has initiated a fault indication, but the unit handles faults without any nasty audio artifacts. Troubleshooting will be necessary to isolate the offending channel in situations where it is not possible to simply hear the protection engage (such as larger multiway loudspeaker clusters). The input level controls have the attenuation indicated, and should be sufficient to roughly gauge the system levels where and when time does not allow accurate calibration with test instruments.

Rear-mounted, dual-cooling fans keep the unit cool enough to work hard without the thermal protection kicking in. The fans are relatively quiet (compared to the computer in your studio) until the unit is driven really hard. (This is an amplifier design focused on sound-reinforcement applications.) The input connections use the ubiquitous Neutrik Combo connector (XLR and 1/4-inch phone jack) and are paralleled to adjacent male XLR connectors to simplify cabling units that drive arrays of loudspeakers.

Unfortunately, these male XLR connectors are labeled "Output," providing a potential source of confusion to the unwary (those in too much of a hurry to read the manual). The actual output connectors (also labeled "Output") are five-way binding posts of the thoroughly touch-proof style favored (or should I say legislated) in Europe. This design requires both bare-wire and banana-plug connections to be made from the side of the posts, but this enclosed format has the advantage

ROAD TEST

MANUFACTURER: Electro-Voice, 600 Cecil St., Buchanan, MI 49107. Tel: 800-234-6831. Web: http://www.eviaudio.com

APPLICATIONS: Power amplifier for sound-reinforcement.

SUMMARY: Efficient, low-weight model that provides ample power on the road.

STRENGTHS: Sound is tight in the low-end; includes several useful filters.

WEAKNESSES: Output labeling somewhat confusing; not intended for loudspeaker loads below 4 ohms.

PRICE: $1459 **FREE LIT. #:** 126

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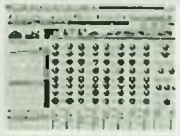

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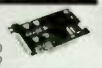

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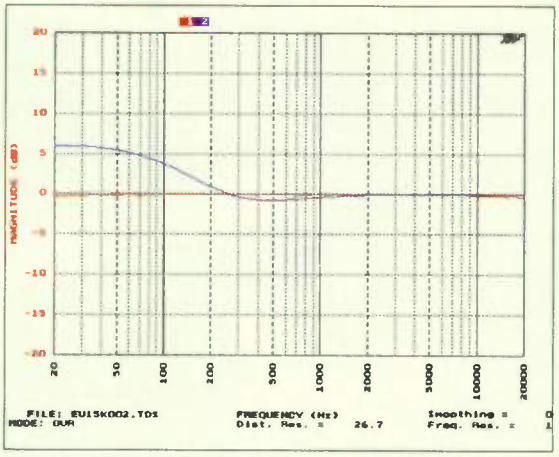

FIGURE 1: The flat frequency response (red trace) of the Electro-Voice 1.5 kW amplifier can be modified with the rear-panel filter switches. The LPN mode (blue trace) offers low-frequency enhancement for common compact full-range loudspeakers. Note the slight (1 dB) drop in the mid-band response produced by this filter.

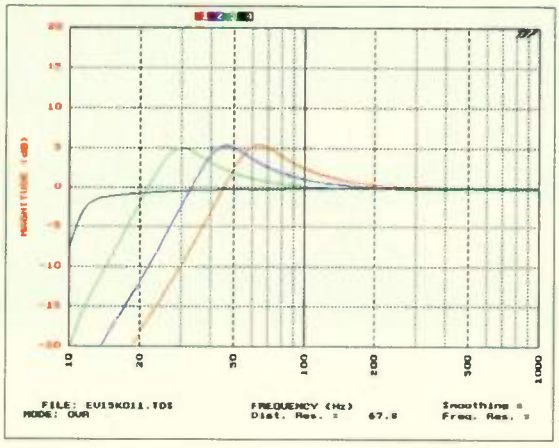

FIGURE 2: The rear-panel filters also include Electro-Voice "step-down" bass tunings that are created to suit specific Electro-Voice loudspeakers. Three frequencies are provided: 26 Hz (green line); 43 Hz (blue trace); and 60 Hz (red trace). The sensible infrasonic roll-off of the unit (without the filters) is indicated by the black trace.

of reducing the likelihood of stray wire strands causing a shorted output. Individual line fuses for each channel are accessible from the rear panel, which also features a very substantial grounding connection post.

The rear panel also includes a push-button switch to select the Bridged-Mono mode and two rotary switches to engage the low-frequency filters (see fig. 1). These filters operate simultaneously on both channels, precluding use in more complex systems, but ideal for enhancing a basic two-channel system using full-range loudspeakers. There are filters that offer what Electro-Voice refers to as B6 (an undamped 2nd-order high-pass filter) with selectable peak-boost frequencies at 23 Hz, 43 Hz and 60 Hz. The manual offers the appropriate B6 tunings for 16 Electro-Voice loudspeaker models. The sharp roll-off below the peaking frequency will protect the low-frequency drivers from overexcursion when used at moderate power levels. The LPN filter (see fig. 2) offers low-frequency enhancement that is suitable to a wide range of portable full-range loudspeakers. Users should, though, take care not to get carried away, because, while a little bump in the low end of these loudspeakers will help to extend their perceived low-frequency response, it will not replace the need for subwoofers at higher volume levels.

This is a no-nonsense amplifier that can produce quality sound continuously by reacting to faults when protection is necessary and then recovering gracefully. The basic package benefits from the well-chosen filters that work to enhance the low frequencies of a variety of full-range loudspeakers. This feature can be especially useful in those situations where subwoofers are inappropriate or unavailable. If you are concerned about the weight and reliability of your system power — and who isn't — the Electro-Voice 1.5 kW may be just what you need.

Wade McGregor is a principal consultant for Mc² System Design Group, an acoustical consulting firm based in Vancouver, BC. For more info, visit their home page at www.mcsquared.com

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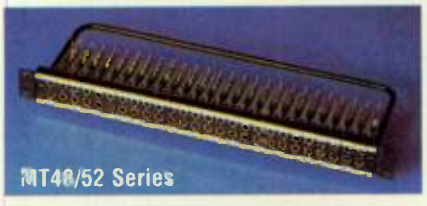

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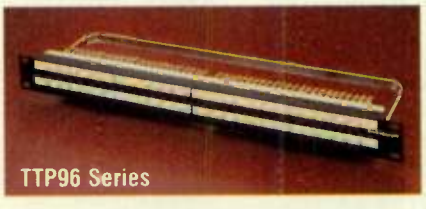

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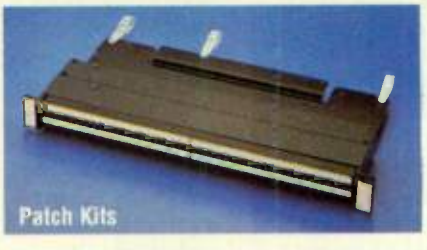

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AKG WMS 300
WIRELESS MICROPHONE SYSTEM

By **STEVE LA CERRA**

AKG's WMS 300 is a UHF wireless microphone system consisting of three main components: the SR 300 True Diversity receiver, the HT 300 handheld transmitter, and the PT 300 bodypack transmitter. Since the HT 300 accepts interchangeable mic elements, users can choose between AKG's D 3700 WL, D 3800 WL, or C 5900 WL capsules. These are the same mic elements used in AKG's Tri-Power Series, all of which feature hypercardioid pickup patterns, a wind/pop screen, internal shock mount, and protective baskets.

Mounting a capsule on the HT 300 requires lining up a set of contacts in the element with a set of mating pins in the HT 300, and then using the blue locking collar to tighten the capsule against the body. We found this mounting arrangement to be quite secure and free of play. For this *EQ* Road Test, AKG supplied us with the SR 300, HT 300, and a C 5900 WL condenser microphone elements.

One of 16 RF channels may be chosen for system operation. Frequency selection for the SR 300 receiver is via a front-panel rotary switch, while frequency selection for the HT 300 is via four internal DIP switches (exposed by removing the battery compartment lid). AKG has devised a clever "battery ejector" that pulls otherwise inaccessible batteries out of the HT 300's chamber, facilitating replacement. Battery life is specified as 12 hours for alkalines, 4 hours for NiCds, and 6.5 hours for NiMH types.

On our review unit, the SR 300's channel selector was one number off, which created a bit of confusion the first time we used the system (when the indicator showed channel 1, it was actually set to 16). In addition to the channel selector, front-panel controls on the half-rack-space SR 300 include power, squelch and audio output level. [There are two frequency sets for the WMS 300. The US3 set operates 16 selectable frequencies between 766 MHz–785.650 MHz. The U.S. set offers additional 16 selectable frequencies between 785.350 MHz–805 MHz. Therefore, the system provides 32 user-selectable frequencies and AKG guarantees 16 (8

ROAD TEST

MANUFACTURER: AKG Acoustics, 1449 Donelson Pike, Nashville, TN 37217. Tel: 615-360-0499. Web: www.akg-acoustics.com.

APPLICATION: Handheld, UHF wireless vocal microphone for on-stage use.

SUMMARY: A full-featured system for professional situations.

STRENGTHS: Excellent RF performance; interchangeable capsules; sensitivity adjustment; auto-mute when mic is shut off.

WEAKNESSES: Wall-wart power supply; front-panel channel selector is inaccurate (on this unit; see main review); temperamental power button.

PRICE: SR 300, $860; HT 300, $510; D 3700 WL, $154.80; D 3800 WL, $284; C 5900 WL, $480.

EQ FREE LIT. #: 127

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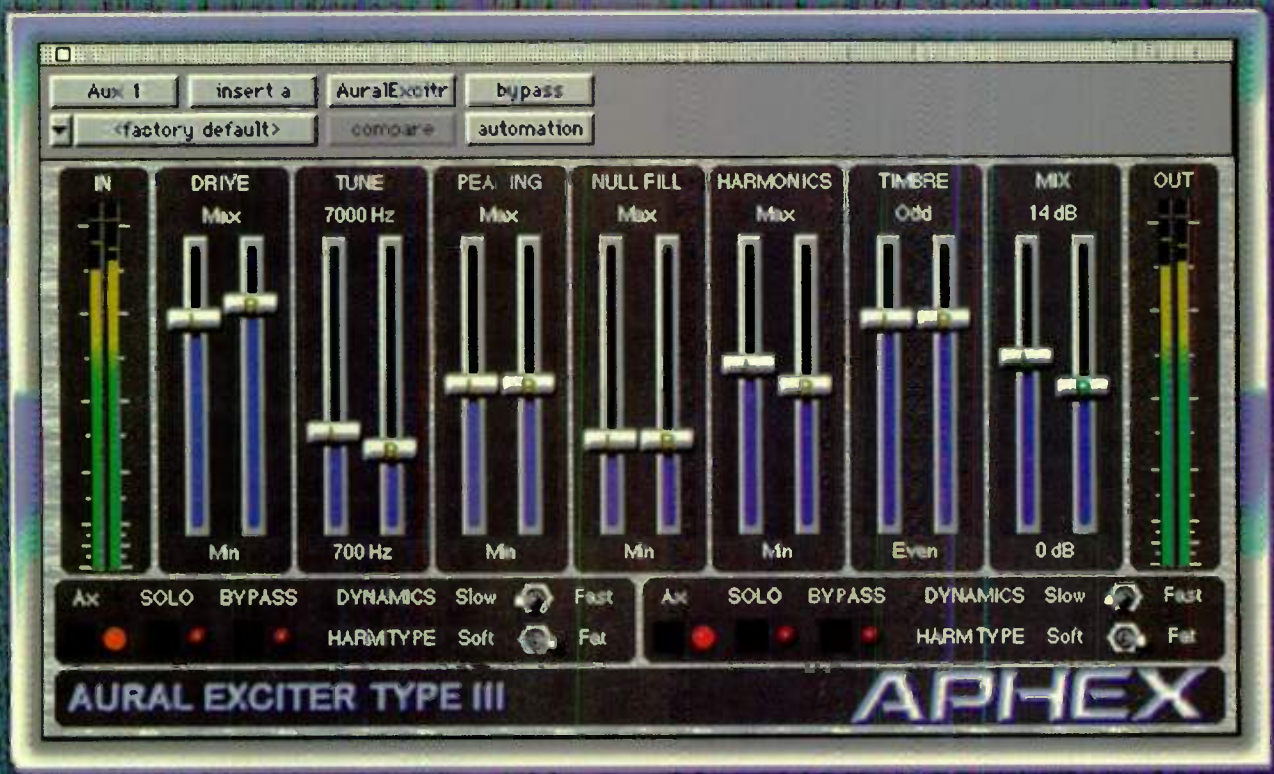

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EQ LIVE

SPECIFICATIONS

Audio Bandwidth of System: 70 Hz to 20,000 Hz
HT 300 S/N Ratio: Greater than 100 dB (A)
Operating Range: UHF, 766 MHz to 785.650 MHz [See review.]
Transmitter Power Requirement: Three AA batteries

per set) of those channels to be intermodulation free.]

Output is via rear-panel (balanced) XLR or 1/4-inch unbalanced jacks. Also found on the rear panel are two BNC antenna sockets and (*ugh!*) a wall-wart power input jack. It's worth noting that the two antenna inputs are for true diversity reception. A front-panel LED indicates which antenna is "online." On our unit, the power switch occasionally got stuck in the On position, apparently because of friction between the button and its front-panel cutout.

DESIGN CRITERIA

It's clear that AKG has designed this system for easy, reliable operation. For example, although the receiver uses a wall-wart power supply, AKG has built a clever strain relief clip into the rear panel to ensure that the DC connector does not accidentally slip out. Switches on the mic barrel are protected during use by a clear plastic cover to prevent a performer from accidentally changing them (AKG provides a small screwdriver to change these switches).

We welcomed the sensitivity adjustment (especially in light of the interchangeable elements), but felt that its overload LED was set much too conservatively for the C 5900 WL element — it would flash with minimal audio and plenty of system headroom available. For an inexperienced user, this could present a problem because if sensitivity is set too low, high-frequency response suffers.

continued on page 138

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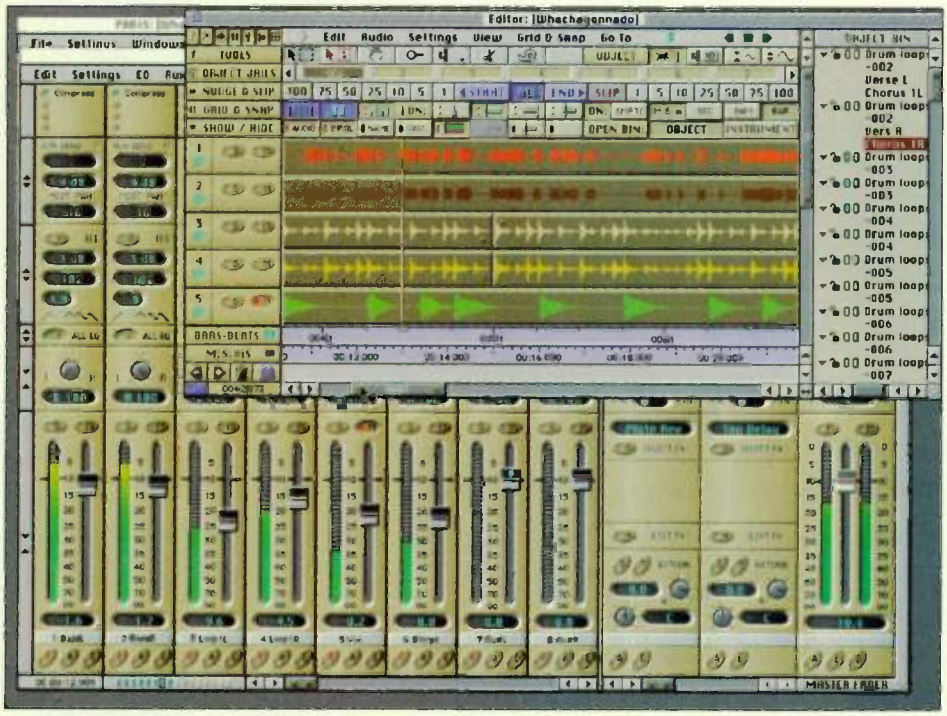
CIRCLE 216 ON INFO CARD

Ensoniq PARIS *Hard-Disk Recording System*



VISIT PARIS: The Editor window is the main workspace for editing, while the mixer window is designed to resemble a traditional hardware mixing console.

BY CRAIG ANDERTON

It's been one of the most anticipated hard-disk recording products, and now PARIS (Professional Audio Recording Integrated System) is here. It's not another "how-many-features-can-you-cram-in-for-under-$1000" kind of box; it's aimed at a pro market and priced accordingly — yet, given the capabilities, is more affordable than expected.

Because this is a deep product fighting a limited word count, we'll emphasize unique and unusual features.

HIP HARDWARE

So what makes PARIS different? The one-word answer is *hardware*. The system includes a choice of audio interfaces, EDS-1000 PCI card (with Mac and Windows drivers), and Control 16 "human interface."

The Control 16 is a compact, ergonomic hardware control surface that is a joy to use. It sports 16 long-throw (100-mm) channel faders, master fader, jog/shuttle/editing/data entry wheel, transport buttons, keypad, EQ/AUX send/pan adjustments (one set of knobs and buttons controls the currently active channel), monitor level control, and numerous buttons for functions such as mute, solo, punch, loop set, jump to auto-location markers, etc. Two nulling LEDs simplify automation (sliding the fader until the LEDs go out matches the fader's physical position with the programmed value).

There are three basic audio interfaces, all with 20-bit conversion. The basic Interface 2 has two 1/4-inch TRS balanced inputs, two 1/4-inch TRS outputs, and +4/–10 level switch. It can also expand the other interfaces.

The 442 interface (supplied for review) is a 1U rack box with four analog ins, four analog outs, S/PDIF digital I/O, external word/super clock I/O, and connector for an Interface 2 module. Front-panel LEDs show sync and sample rate (44.1/48) status. The third interface (MEC) is one of PARIS's many planned upgrades (see sidebar).

The PCI sound card includes six 24-bit DSP chips. These are the engine behind PARIS's onboard signal processing, real-time action, and smooth

EQ LAB REPORT

MANUFACTURER: Ensoniq, 155 Great Valley Parkway, Malvern, PA 19355. Tel: 610-647-3930. Web: www.paris.ensoniq.com.

APPLICATION: Record, process, and mix multitrack digital audio for music, video, and multimedia.

SUMMARY: Aimed at power users, PARIS is a serious and flexible system that's surprisingly mature for an initial release.

STRENGTHS: Hardware-based, real-time DSP doesn't steal computer resources; excellent software and sound quality; ergonomic, highly functional control surface; fast operation; cross-platform support; bundled with digital audio editors; choice of two tracking modes.

WEAKNESSES: No tempo map capability; underdeveloped snap functions; no MIDI support except concurrent sequencing; non-standard plug-in architecture.

MINIMUM SYSTEM REQUIREMENTS: 32 MB RAM, full-size PCI slot, hard-disk data transfer rate of 1.6 MB/second for 16 tracks. Mac: 120 MHz PowerPC with 603/603e/604/604e processor (601 not recommended), System 7.5 or higher. Windows: 133 MHz Pentium, Windows 95. (The system was reviewed on a Power Computing PowerTower Pro.)

PRICE: Bundle 1 (Card, Control Surface, Interface 2, software), $2895; Bundle 2 (with Interface 442), $3395; Bundle 3 (with MEC interface), $3895.

EQ FREE LIT. #: 128

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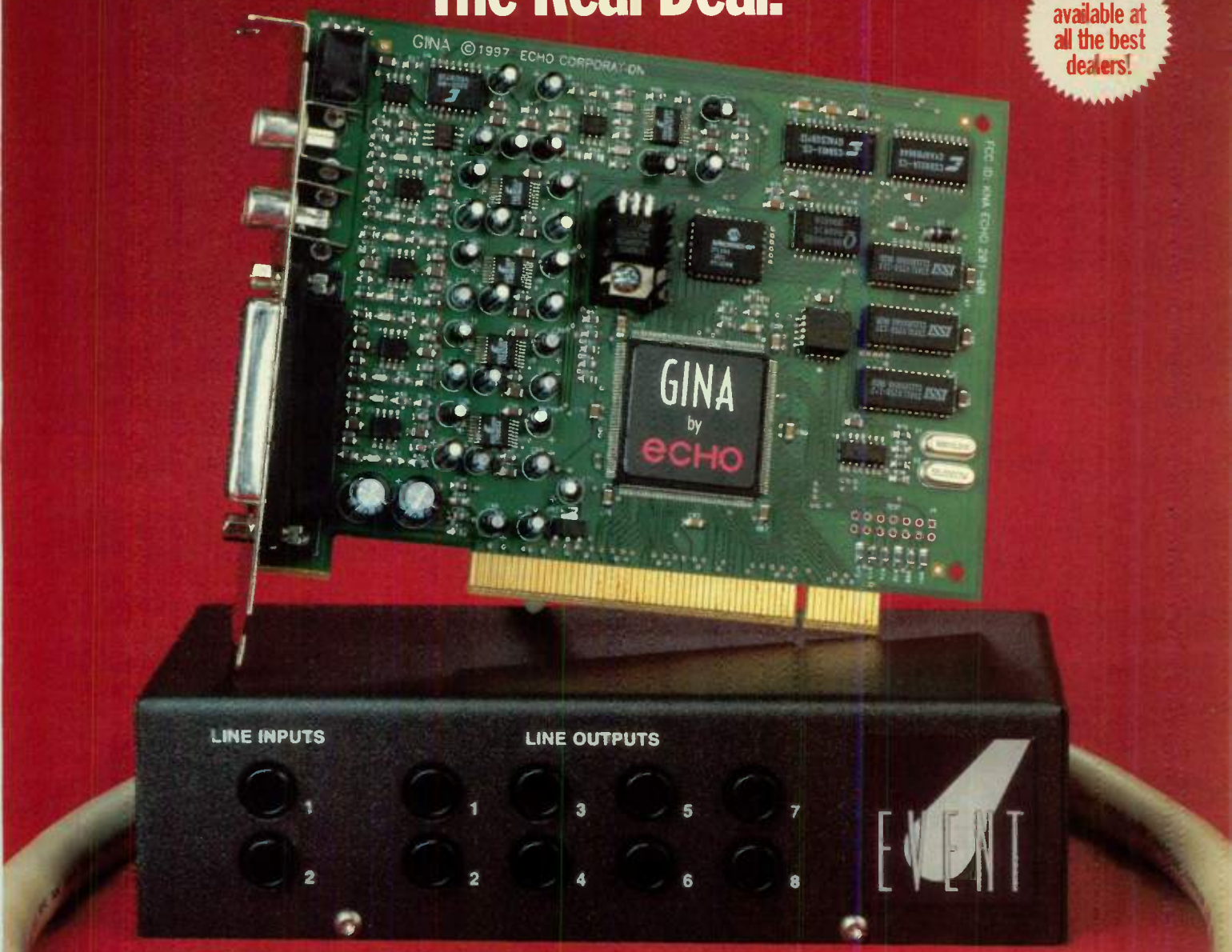

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THE CRYSTAL BALL

Ensoniq's upgrade plans include:

- MEC (Modular Expansion Chassis) 5U rack interface. This does everything the 442 does, but provides nine expansion slots. Planned I/O cards include 8 in/24-bit, 8 out/24-bit, ADAT optical with 9-pin sync connector, SMPTE, and AES/EBU; 442 owners can upgrade to the MEC for the difference in cost.
- 128-track playback.
- 24-bit input, output, and data path.
- Graphical editing for MIDI, digital audio, and automation.
- Mac plug-in compatibility with Adobe Premiere.

"feel": using dedicated hardware is far more powerful than making the host computer processor do everything. When you move a fader, change EQ, pan, or whatever, the action is *instantaneous*. Couple this with the Control 16, and the result is a system that can please even the impatient.

THE SOFTWARE

Plan on a big monitor that runs at 1024 x 768 — just fitting the mixer on screen takes a lot of space. Fortunately, you can save multiple "views" of screen setups used in a project for later recall, which speeds up the workflow.

PARIS can open Sound Designer II and WAV files, as well as the native PARIS format. Although there is no substantial audio editing, the Mac version of PARIS comes with BIAS's Peak LE and the Windows version with Steinberg's Wavelab Lite. These are cool digital audio editing programs that accept plug-ins for processing, offer file translation options, and have many other audio-warping talents.

Although there are several windows, you'll mostly use the Editor, Mixer, and Mini Mixer. The Editor is pretty standard, with a few nice touches like scroll bars that can also zoom, an "objects bin" that shows all bits of audio used in a project, and 32 clipboards that can store groups of audio segments (not just individual parts).

A more unusual option is a choice of "constrained" or "free form" track layouts. In constrained mode, 16 tracks tie to the 16 faders. In free form mode, each fader controls an Instrument, which can consist of an almost unlimited number of virtual tracks. Free form is primarily for constructing composite tracks and saving alternate takes, as only one virtual track can play through its associated fader at any time.

Time rulers can be in SMPTE, hours:minutes:seconds, seconds, samples, and bars/beats (with choice of time signatures, but there's no way to create tempo maps — specify an initial tempo, and that's it). Snapping works only with object placement; you can't trim start or end points to a snap point, nor snap the cursor. Another oddity is that you can't expand the editor windows horizontally beyond a certain limit, although the allotted space is acceptable.

These quirks aside, movement on this screen is fluid and obvious. If there was context-sensitive help, you could probably figure out most of the editor without the manual.

THE MIXER

This window looks and acts like a regular hardware mixer, with faders, panning, 4-band parametric EQ, up to eight aux sends, a master section, channel inserts, meters, and so on. What keeps it from becoming hopelessly cluttered is that you can hide/show just about anything — if you're in an EQ-adjusting mood, show all four stages and hide the aux sends and inserts. You can also hide entire channels, and, of course, save any particular combination as a view. The procedure for doing any of this is very quick, so you don't spend a lot of time managing your screen. Faders, mutes, and panning can be automated, while EQ and DSP settings can not.

The Mini Mixer is simply a scaled-down version of the main mixer that takes up less space, but still shows most of what you need.

Interestingly, you can adjust the levels of the digital inputs and add gain if necessary. Although this can lead to distortion if you're not careful, it's possible to boost weaker signals. Cool!

DSP À LA MODE

PARIS ships with several editable, real-time plug-ins: mono and stereo compressor/expander/gate, chorus, delay, long delay, tap delay, plate reverb, room reverb, and nonlinear reverb. Dynamics and delay can insert in individual channels; all effects work with the aux busses. One PCI card supports 8 stereo or 16 mono effects.

Ensoniq has earned a reputation for quality effects, starting with its keyboards and progressing to the DP-series signal processors. I was taken aback by the reverb in particular; it sounds great. The dynamics processing is also excellent, although rudimentary (e.g., no multiband compression). Add all this to the EQ, and PARIS delivers some pretty potent processing.

There are also some standard destructive editing options: resample, time compress/expand, normalize, pitch shift, and gain change. Pitch doesn't change length and is very usable. Time stretch is acceptable for mono signals, but can cause imaging problems with stereo. Because of the multiple undo levels, you can mess around a lot and still get back your original signal.

MIDI-LAND

PARIS currently has no MIDI capabilities, but can sync with sequencers running in the background. On the Mac, Ensoniq has successfully tested Opcode Vision 2.5/Studio Vision 3.0, Emagic Logic/Logic Audio 2.5, and Steinberg Cubase VST; PARIS Windows works with Steinberg Cubase 2.5/XT v3.0/VST, Cakewalk Pro 3.0/Pro Audio 6.0, and Opcode Vision 2.5. The Mac version requires OMS for MIDI. For Windows, PARIS installs custom drivers that are recognized by Windows programs and sends them MTC for timing. The driver's MIDI In can sync to sequencers.

FIRST KID ON THE BLOCK

The review unit was one of the first systems shipped, and I ran into several minor bugs and a couple of major bugs. I felt the product was released prematurely, but when I brought these

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CIRCLE 82 ON FREE INFO CARD

TL Audio VP-2051 *Tube Processor*

An all-in-one unit that gives everything you need for solid voice processing

BY TIM GOODYEAR

The growing use of digital 8-track recorders has helped create a serious demand for well-spec'd outboard processors capable of offering facilities and quality comparable with a major console. The TL Audio VP-2051 processor is a worthy entry in the field of tube-equipped contenders.

You cannot be serious about tube audio equipment and avoid TL Audio. If your pockets are deep enough, you can certainly be elitist, but if you're looking to cash in on the cachet of the vacuum tube without busting the budget, you're going to have to weigh up TLA's Indigo Series sooner or later. And if you take into account the growing popularity of "channel strip" processors — those that combine just about all the elements of voice processing in a single box — the VP-2051, although it's been out for a while, makes a timely study.

Having established its color, its purpose, the nature of its circuitry, and its general pricing, it should come as no surprise to learn that the 2051 is a single-channel unit incorporating a mic-line preamp, compressor, and equalizer. It employs six tube stages: one in the preamp, two in the compressor, and three shared between the four EQ bands.

The panel layout is uncluttered and holds no surprises, more a series of reassurances. Running left to right, the sections follow the signal path and place the compressor before the EQ, but the inclusion of an EQ PRE button makes it possible to reverse these stages. The EQ and compressor can be switched in and out and, like all significant operational switching, their status is indicated by LEDs. Metering is via a peak indicator at the input and an 8-segment LED ladder that can be switched to display either the output level or the amount of compression. Compression is metered regardless of whether the compressor is switched in or out of circuit and reads in the same direction as output level, not with the scale reversed. To make this function a little easier to recognize, an orange LED indicates gain-reduction metering.

The presence of an instrument input (on unbalanced jack) on the front panel is an indication of the thoroughness of the 2051's design. The rear panel reveals the expected balanced mic input and output XLR connections, an additional XLR to accept a balanced line-level input, sidechain insert on 2-pole jack, a link jack for stereo operation of two 2051's, and two further jacks for unbalanced input and output connection. Signal levels are +4 dBu on the XLRs and –10 dBu on the unbalanced jacks, with the output metering set to correspond to 0 dB on both. Between these audio connections and metering alignment, the unit can be readily run in just about any conceivable setup. (Compare this with, for example, the more costly Focusrite Green Voicebox where you'll find just two XLRs for audio: a balanced mic in and balanced line out.)

Returning to the front of the 2051, we find that the input section includes 48 V phantom power, phase reverse,

EQ LAB REPORT

MANUFACTURER: TL Audio, distributed in North America by Sascom, 34 Nelson St., Oakville ON, CANADA L6L 3H6. Tel: 905-827-9740. Web: www.sascom.com.

APPLICATION: Processor for studio or live applications.

SUMMARY: Combination tube mic preamp, tube equalizer, and tube compressor in a single 1U package.

STRENGTHS: Front-panel instrument input; very versatile as far as setup goes.

WEAKNESSES: EQ may be a little wanting in some situations.

PRICE: $775 (direct) **EQ FREE LIT. #:** 129

World Radio History

and a 90 Hz high-pass filter, as well as level trim. The compressor is a friendly affair, operating a soft knee with the threshold variable between +20 dB and –20 dB, ratio variable between 1:1.5 and 1:30, and gain make-up of up to +20 dB. Compressor dynamics are limited to slow and fast switching of the attack and release — 0.5 ms or 20 ms attack and 40 ms or 2 s release. While the declared purpose of the unit is for vocal use, I found it up to everything I threw at it without wishing for manual controls.

The EQ, meanwhile, offers 12 dB of cut or boost in four bands: an LF shelf switchable between 80 Hz and 120 Hz; a lower mid band switched among 250 Hz, 500 Hz, 1 kHz, and 2.2 kHz; an upper mid band switched among 1.5 kHz, 2.2 kHz, 3.6 kHz, and 5 kHz; and an HF shelf switchable between 8 kHz and 12 kHz. Note the overlap and duplication of the 2.2k frequency. In operation, the EQ is smooth and ideally suited to enhancing a vocal, thanks largely to the low (0.5) Q of the mid bands. You could find it wanting in more desperate situations, for instance, for salvage jobs or difficult live situations. The Green Voicebox EQ might have the edge in such cases as, although it has just one swept band, its frequency settings are not stepped, and its Q is certainly narrower. Indeed, it's easy to make a strong case for the Focusrite unit in the live situation as it is smaller and lighter than the 2051, and isn't full of glass.

The TL unit signs off with its output section containing output attenuator and the meter. It also contains the Stereo Link button that, with the rear-panel jack, allows the control voltages of two 2051's to be commoned for stereo operation.

I have heard it said that the tube owes its current popularity to Tony Larking (the "TL" in TL Audio). I don't think I'd go that far, but it's hard not to recognize the appeal of the Indigo Series. So while the 2051 is probably better suited to life in the studio than life on the road, I tried it live and liked it, and it's now a regular part of Alanis Morisette's touring rig. Ultimately, everything it has is classy — up to and including the tubes, which definitely give it a character over and above many competing units, including its own Crimson solid-state stablemate. The 2051 comes out well featured, well voiced, well priced and well received.

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CIRCLE 91 ON FREE INFO CARD

World Radio History

Apple Power *Macintosh 8600*

No muss, no fuss — just an out-of-the-box, studio-ready computer

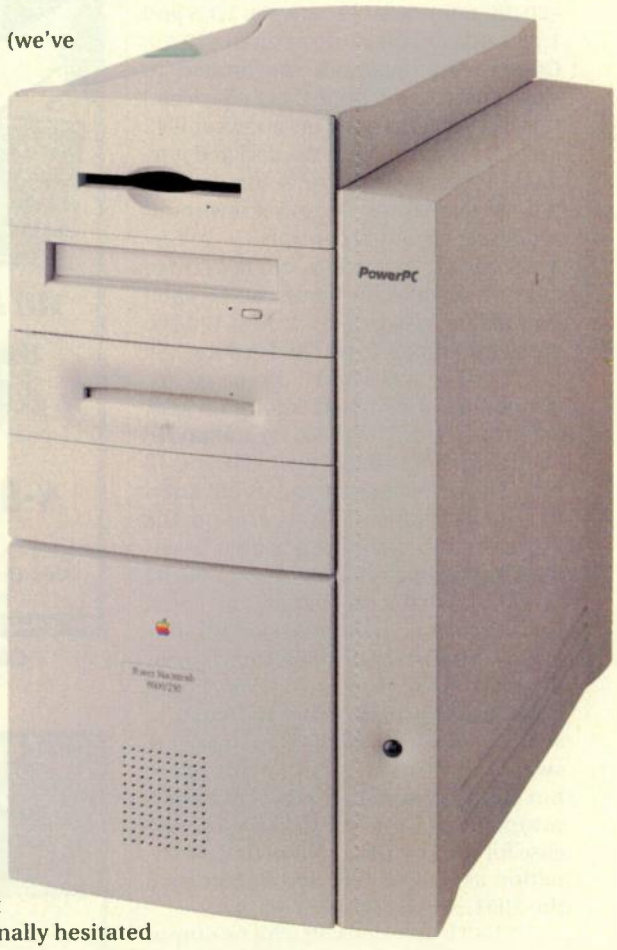
BY STEVE LA CERRA

Digital audio and MIDI programs require ever-increasing processor capabilities. So, *EQ* decided to take one of the fastest computer systems for a spin in the studio. The Apple Power Mac 8600 is a tower-style CPU intended for use in multimedia and A/V applications. Apple shipped us a stock 8600 300-MHz machine (see specs sidebar) and an AppleVision 750 AV monitor— a recently-released, 17-inch monitor capable of reproducing beautiful graphics and offering stereo audio capability. Our CPU came with Mac Operating System 7.6.1 installed; OS 8 was provided on a CD-ROM, which we installed before use.

We were interested in the capabilities of the machine itself; our opinion was not based upon running programs that require accelerator cards of any kind. Our first project was relatively simple: integrate the 8600 into a MIDI system running Opcode Studio Vision Pro 3.5.5b with Open Music System version 2.3.2 and see how it could handle MIDI data. We loaded 36 Studio Vision MIDI tracks with as much MIDI data as we realistically could (we almost ran out of synth voices), then threw in a few extra tracks of continuous controller data just to be annoying. The 8600 didn't flinch once, regardless of whether it was running on internal sync or locking to MTC via an Opcode Studio 4 SMPTE/MIDI interface.

Screen redraws were fast and clean, though we occasionally encountered a background-color, shade-aberration in the OMS "instrument" list (which does not occur with other machines). It's important to note that OMS and Studio Vision don't like virtual memory, so it should be turned off for bug-free performance.

While chasing code and running a sequence, the Power Mac 8600 easily performed functions such as quantize, transpose, track shift, and cut and paste without any hesitation (we've crashed slower machines performing such functions, particularly transpose). We were even able to perform file saves under these conditions, though the screen redraw did hesitate for a fraction of a second! Basically, the 8600 screamed through these tests.



On the rear panel of the Power Mac 8600 is a set of RCA-type stereo I/Os for access to the onboard, 16-bit A/Ds and D/As (we'd have been thrilled if the I/O was balanced, 1/4-inch TRS). Using these converters, we began recording audio tracks into Studio Vision on the stock 5400-RPM hard drive (a Quantum Fireball ST). A total of 16 digital audio tracks were added to the existing MIDI tracks. At that point, the 8600 occasionally hesitated on screen redraws, but had no problems with the MIDI or digital audio data.

Just to be difficult, we tried to quantize one of the MIDI tracks while all of this was chasing SMPTE. The 8600 continued to play, briefly muted the digital audio tracks, performed the quantize, and then unmuted the audio tracks. This entire process took under two seconds,

EQ LAB REPORT

MANUFACTURER: Apple Computer, Inc., 1 Infinite Loop, Cupertino, CA 95014-2084. Tel. 408-996-1010. Web: www.apple.com

APPLICATION: Multimedia/audio-visual computing.

SUMMARY: A fast computer that easily integrates into the studio environment.

STRENGTHS: Very fast CPU, extremely easy access to motherboard and drive bays, built-in Iomega Zip drive.

WEAKNESSES: Only three PCI slots, chassis is somewhat large.

PRICE: Model 8600, 300 MHz w/o Zip drive, $2999; w/Zip drive, $3099 (includes mouse and extended keyboard).

EQ FREE LIT. #: 147

World Radio History

which we felt was more than acceptable given the task. Apple's onboard converters sounded quite good — certainly capable of making professional-sounding recordings, though not as quiet as the converters on our TASCAM DA-88.

We tested the 8600's digital audio processing power by processing a 16-bit, 44.1 kHz mono file 3:46 long. Normalizing this file took about 24 seconds; reversing, phase inverting, or pitch shifting one octave down each took about 20 seconds. Time scaling took slightly longer: 30 seconds for an 85 percent scale-down. With the sequence running and the 8600 still chasing code, we were able to undo the time scale on the fly. Sample-rate conversion of the file to 22.05 kHz happened in just over five minutes — all indicators of high-horsepower performance.

One of the most attractive characteristics of the Power Mac 8600 is its removable side panel that allows access to the interior circuit cards for making changes and upgrades. Pressing the funky-green, top-panel button allows the entire side of the tower to be removed. There's plenty of interior space in which to work; PCI slots are accessed without the need to remove any parts. Apple makes it ridiculously easy to add a new drive to the 8600. Extra SCSI and power connectors are parked and waiting in the empty drive bays. Plastic, front-panel bezels for the bays unclip for access to the chassis screws, enabling a drive to be inserted from the front of the unit. When performing a hardware modification to this machine, you don't even have to move the CPU from its place, let alone take apart the chassis or disconnect any external cables. The time to add another drive? Maybe 10 minutes. Any studio that doesn't want downtime will appreciate this.

On our wish list for the 8600 would be another PCI slot or two. We could see a studio loading this tower rather quickly and needing that "one extra slot" (sounds like the computer world's form of "I just need one more track..."). Note that Apple's 9600 is essentially an 8600 with six PCI slots (and no A/V I/O) for users who really want the extra slots.

In addition to Studio Vision Pro, we ran a variety of Mac-based MIDI and digital audio programs, including Opcode Max version 3.5, and the Power Mac 8600 handled them all with finesse. Note that we did not run Pro Tools with the TDM farm because we were interested in the CPU's processing ability without any auxiliary accelerators. We also ran Metric Halo Laboratories' SpectraFoo audio analysis program, a recently introduced program that requires a Mac with real muscle. The 8600 cruised in the left lane with SpectraFoo.

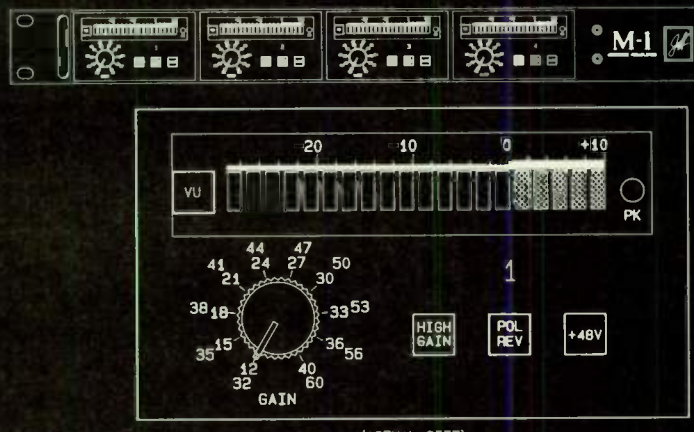
No doubt, Apple has come up with the goods in the Power Mac 8600. This machine screams through MIDI applications and cruises through MIDI/digital audio apps. It's easy to service and (by the way) comes with a well-written, useful manual. If you're looking for a new Mac to put in your studio, you must try the Power Mac 8600. EQ

APPLE SPECIFICATIONS

Processor: 604e, 300 MHz
RAM: 32 MB
Hard Drive: 4 GB, 5400 RPM
CD-ROM: 24X
Slots: 3 PCI
Drive Bays: 3 available
10BaseT Ethernet: Built in
Audio I/O: 16-bit stereo on RCA connectors
Video: RCA connectors and S-VHS
Mouse and extended keyboard included.

M-1

MICROPHONE PREAMPLIFIER



(ACTUAL SIZE)

Gloria Estefan, Dolly Parton, Neil Young, Lou Reed, Laurie Anderson, Bob Dylan, Madonna, Eric Clapton, George Harrison, Paul McCartney, Paul Simon, Joe Henderson, James Carter, Ernie Watts, Bill Hollman, Saturday Night Live, The Muppets and many others have done great work with the M-1. The M-1 is clearly superior, *satisfaction guaranteed*. Here's why:

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The 990 Discrete Op-Amp. The 990 discrete op-amp is superior to the monolithic op-amps found in other equipment.

No Coupling Capacitors in the Signal Path. DC servo circuitry and input bias current compensation circuitry eliminate all coupling capacitors and the degradation they cause.

Standard features: LED-illuminated push-buttons; phantom power switch; polarity reverse switch; conductive plastic gain pot and high-gain switch; shielded toroidal power transformer with 6-position voltage selector switch; gold plated XLRs; ground-lift switches.

Options: VU-1 meter (shown); PK-1 meter; Jensen JT-11-BM output transformer;

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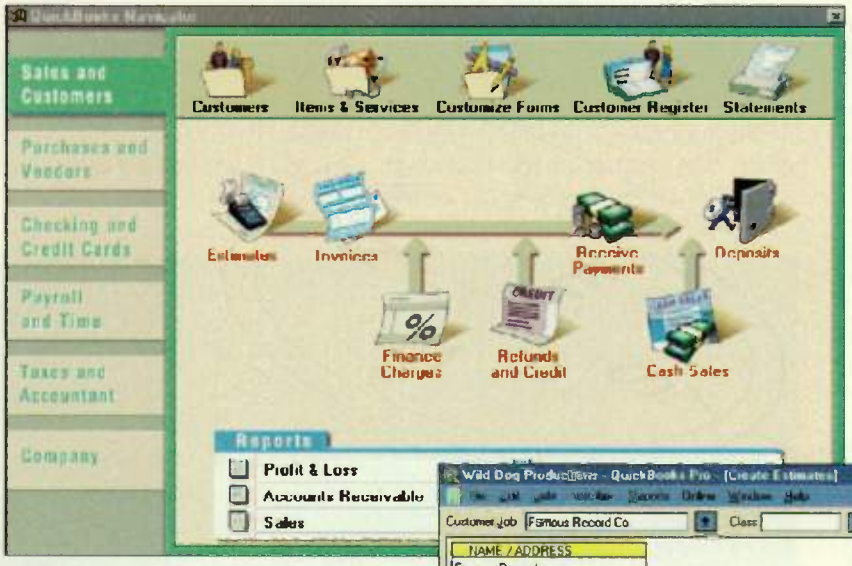
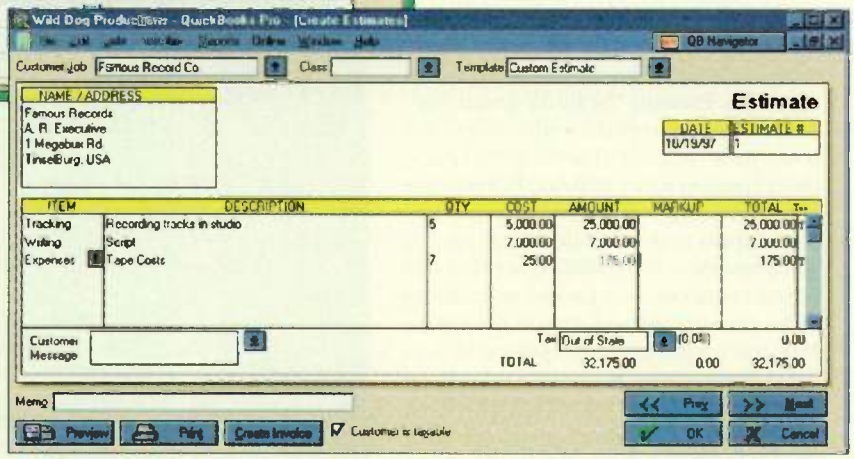
QuickBooks Pro 5.0 *For Windows*





Some software for the other side of your studio business — the one that manages your income

BY TIM TULLY

Building a project studio is tough: Setting up a functioning system based on a computer or two, along with 12 different makes and models of adapter cards and software, takes a lot of time and work to get up and running. Since maintaining the system that serves our creativity is so big a job, even the strongest of us can get shivers thinking about maintaining the *business* side of our business. Still, if you avoid the bookkeeping, you're asking for trouble of the worst kind — not only at tax time, but when it's time to bid a project, create an estimate, or defend added charges when the client asked for more work.

One solution is to bid by the seat your pants, and every April 14th, dump a shoebox full of receipts on an accountant's desk and pay through the nose to have someone else sort out the details. There is, however, another approach, and even though it requires installing yet another application on your already-overloaded hard drive and climbing a not-insignificant learning curve, it works.

Intuit, Inc. (www.intuit.com) makes several popular software applications designed to help the little guy through the finances jungle. Quicken organizes personal bills and checkbooks and TurboTax helps prepare income tax returns. When it comes to organizing and tracking the fiscal ins and outs of a small business, though, In-

FIGURE 1 (top): The Navigator screen displays events on a timeline and opens a screen for each. FIGURE 2: The Estimate form lets you enter information free form, automatically, or from information you've already entered.

EQ LAB REPORT

MANUFACTURER: Intuit, Inc., 2535 Garcia Avenue, Mountain View, CA 94043. Tel: 800-446-8848. Web: www.intuit.com.

APPLICATION: Bookkeeping, estimating, and billing software for small businesses.

SUMMARY: Gives small businesses control of finances. It's well worth climbing the learning curve.

STRENGTHS: Simplifies and consolidates bookkeeping procedures without jargon; great tech support.

WEAKNESSES: Not a simple program to learn.

SYSTEM REQUIREMENTS: IBM compatible 486 or higher PC, 8 MB of RAM minimum (16 MB recommended), 42 MB of free hard drive space (plus 6.2 MB for Netscape Navigator), Windows 3.1/95, VGA or better monitor.

PRICE: $199 **EQ FREE LIT #:** 130

World Radio History

tuit's QuickBooks Pro is hard to beat.

If you've spent your life learning music, audio, and the computers that control them, there's a good chance the jargon, concepts, and practices of accounting and double-entry ledger-keeping are not only foreign to you, but make you run screaming from the room. I'd heard QuickBooks Pro insulated the user from the worst of this, and decided to give it a close look.

The moment I opened the box, I experienced deep dread. The manual is over an inch-and-a-half thick and more than a thousand pages long. Born of too many hours watching computers restart and paying for bad tech support, my cyberphobia began gnawing the few remaining fragments of my stomach lining.

Nonetheless, I installed the software, and before too much damage was done, found the manual to be written in clear, coherent English, with a minimum of jargon. My accountant should make so much sense.

My doubts were further eased when I launched the application and saw a nice, graphic navigator screen displaying icons representing the program's principal functions. The icons are arranged on a flowchart-like line that reflects the way business-related events happen in real life. The "Sales and Customers" navigator, for example, lists estimates, invoices, finance charges, credits, receive payments, and deposits (fig. 1). This is all reassuring.

As you begin working on a given project, you can click on any of these icons to display screens where you can enter your own figures. For example, clicking on Estimates puts up a blank form for creating an estimate (fig. 2). Here you can enter the name of a new client or choose an existing one from a list and name the new job (QuickBooks automatically fills in the client's name and address). You can choose an Item describing the kinds of work the job will require, various expenses you will incur, and any other costs the job will entail. This form gives you spaces to enter markups, taxes, customer messages, and other information, and totals it all automatically.

While you can create an invoice like this using a simple spreadsheet, QuickBooks does more than this. One kind of help comes from the Lists menu. Before you start a job, you can enter the names of clients and the individual jobs you do for that client. The Lists menu also has a list of Accounts — not only actual bank and credit card accounts, but other logical groupings

continued on page 138

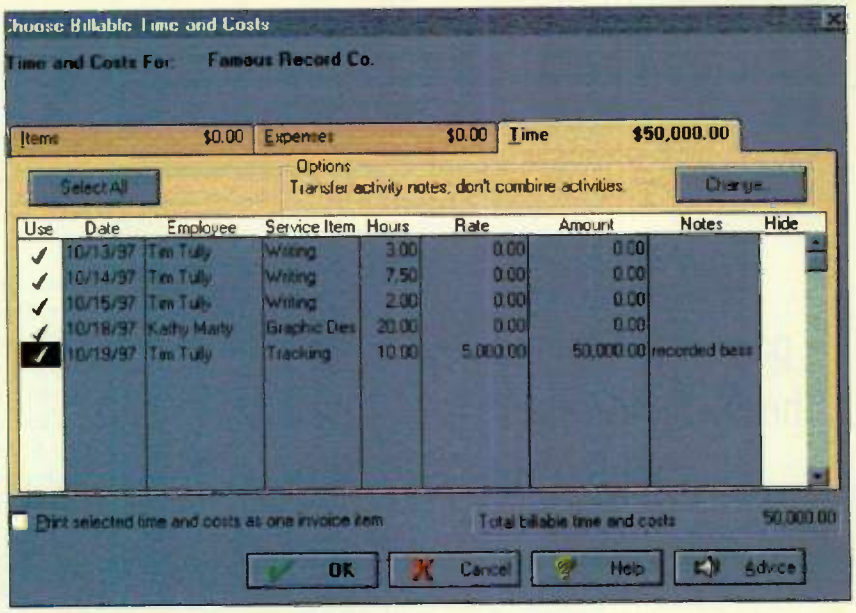


FIGURE 3: The Single Activity form lets you log time spent on a job.

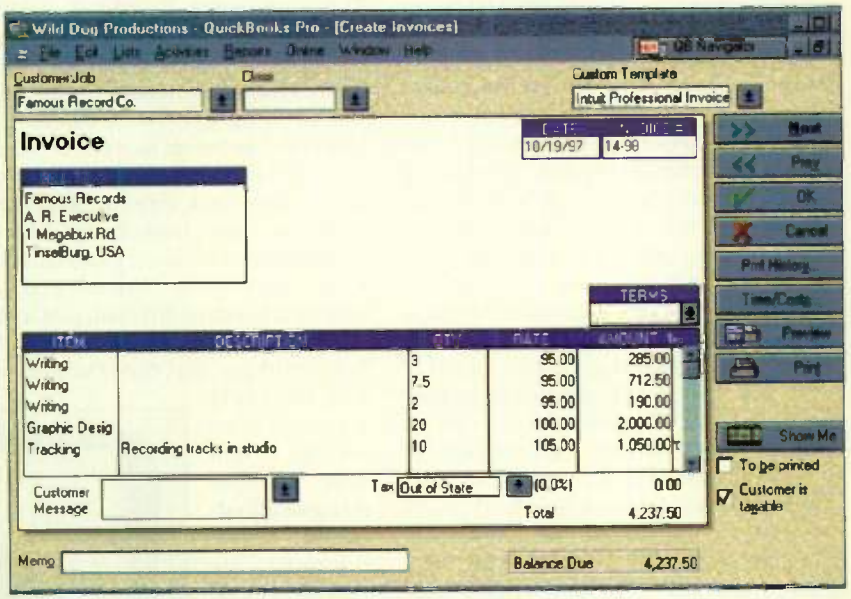


FIGURE 4: The Time tab in the invoice window lists all the time logged for a job and can enter any or all of it automatically in an invoice.

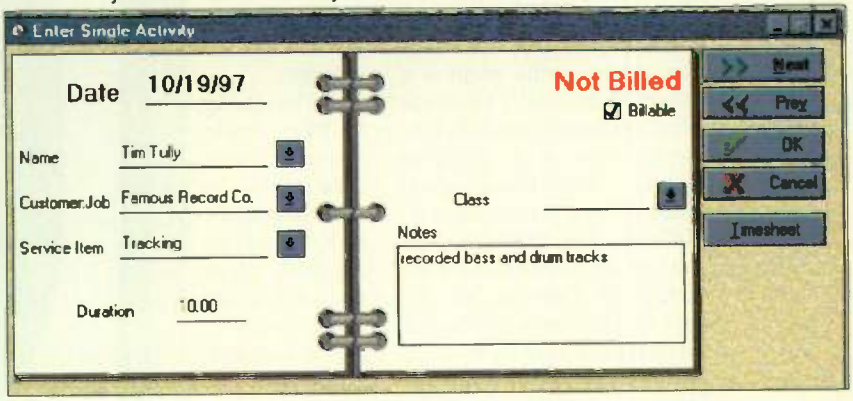


FIGURE 5: An invoice filled in automatically.

World Radio History

Diva Genesis 10 Monitor Speakers

These steel-lined powered monitors are heavy-duty — just ask the UPS man

BY BOBBY OWSINSKI

You know you're in for something different when a package elicits a response from the UPS man. In this case, his remarks were, "What's in these? They sure are heavy." What he was referring to was the shipping cartons that contained the new Diva Genesis 10 reference monitors that arrived at my door. After lifting them from the box, I experienced firsthand what the man was talking about. "Good!" I thought, "Monitors with dense cabinets tend to sound pretty good." Why these speakers pack some weight is surprising, and we'll get into that issue a bit later. First though, what is a Diva?

Containing a 10-inch polypropylene driver and a 25-mm Ferrofluid-cooled titanium dome tweeter, the Diva Genesis 10's utilize a 14 1/2- x 12- x 17-inch rear-ported cabinet that weighs in at 47 lbs. (A smaller model with an 8-inch woofer, the Genesis 8, at $1395, is also available.) The active, biamped units sport a pair of special 90-watt, high-speed, MOSFET amps electronically crossed over at 2600 Hz. Access is via separate 1/4-inch and XLR input connectors that provide either +4 or –10 operation. These amps employ a unique patented Multiloop™ feedback system, employing several additional internal lines from the amp to the drivers to sense current and voltage. This design is said to lower distortion and increase clarity and definition. The manufacturer claims that the frequency response is from 54 Hz to 22 kHz ±2 dB. There are no user controls except for the rear panel On/Off switch. A green indicator light on the front lets you know the amps are powered on.

The really unusual feature of the Genesis in terms of both styling and utility is that the enclosure uses a wood fiber bonded to a steel liner (which explains the weight). You don't, though, see the metal because it's covered with high-density polyurethane. Besides giving the speakers a different look, the polyurethane also serves as a built-in vibration decoupler. Many studios already use a 1/2- to 1-inch piece of the same material under their monitors to isolate the speaker from the stand or soffit. As to why these materials were chosen, designer and company president Tony Barbetta explains, "We wanted to build a shielded speaker, and the traditional way to do that is to either have two magnets out of phase with each other or individually shielded magnets. There are some functional problems with either method, so building a steel box was both the easiest and the best way for us. We could've painted the metal, but the covering material looks so good, and is so functional as well."

How do they sound? I used the Divas to play back three projects that I know very well. Initially, the high end seemed out of balance, especially in the 8- to 10-kHz range. The top end never sounded harsh or strident, just a bit on the hot side. A quick call to Tony Barbetta told me that the monitors were deliberately balanced a bit on the bright side (something easily adjusted in production). He also mentioned that the addition of a tweeter-level control was being considered.

The thing I like most about these monitors is that they don't mind being cranked. They sound just as good the louder you crank them. The Divas have the ability to sound bigger, rather than louder, the harder you push them. This is because the distortion remains low despite the levels being produced. The frequency response also remains fairly equal at low and high levels — although the low end did seem to roll off a bit at very quiet levels (as it seems to with most speakers). Thanks to what I assume to be solid phase coherence around the crossover frequency, the imaging, especially in the mid-range, is very good.

After living with the Genesis 10's for a few weeks, I found that I liked the definition and clarity they provided, especially once I determined their optimum operating level. If you're in the market for some powered monitors that look distinctive and sound bigger than they look, the Diva Genesis 10's are certainly worth considering.

MANUFACTURER: Barbetta Electronics, 5345 Commerce Ave., Unit 5, Moorpark, CA 93021. Tel: 805-529-3607. E-mail: Barbetta@earthlink.net. Web: www.barbetta.com.
PRICE: $1595 per pair.
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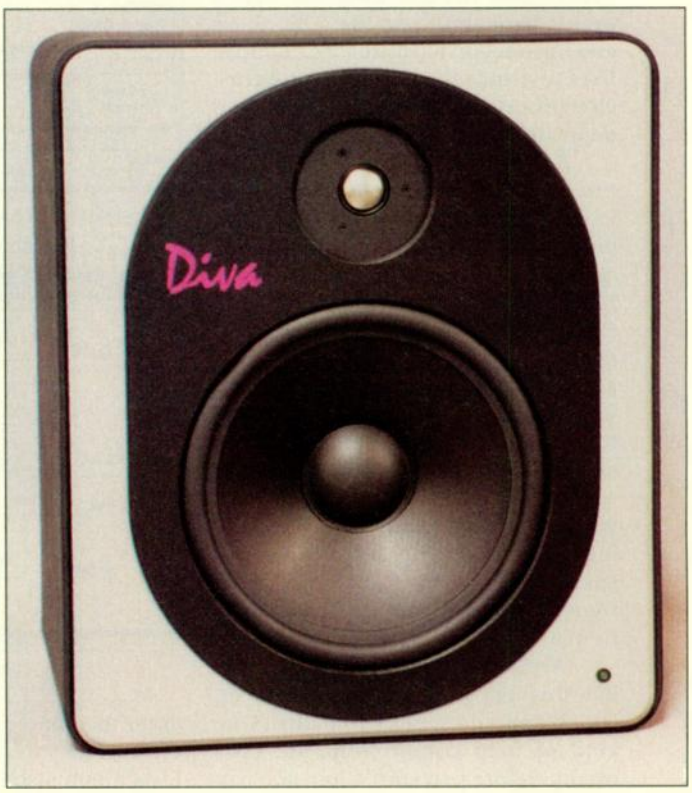
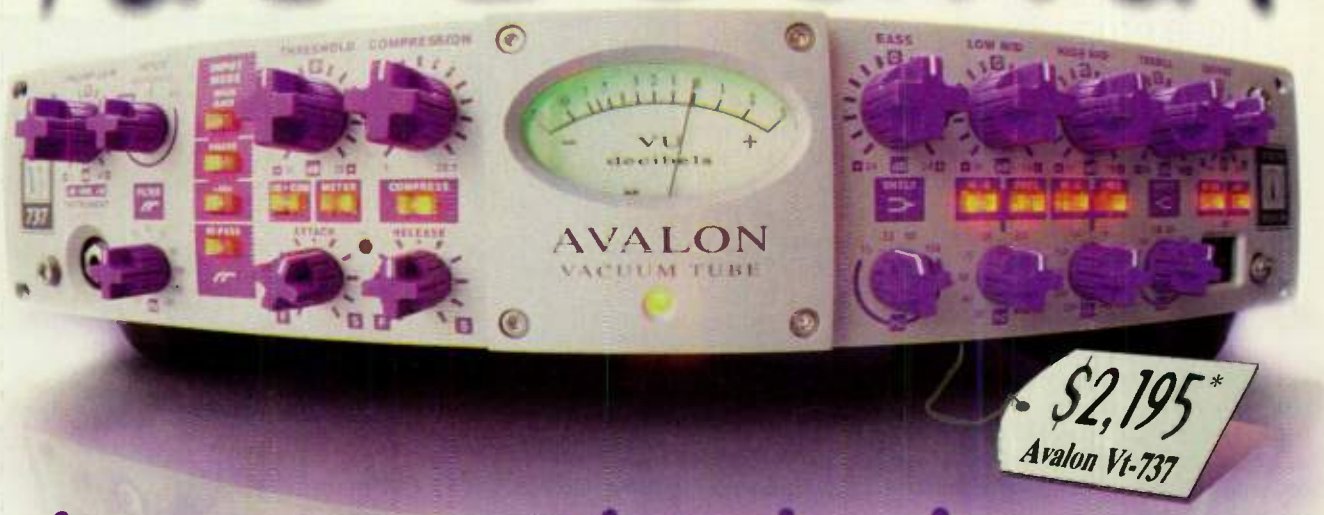


World Radio History

fat sound?



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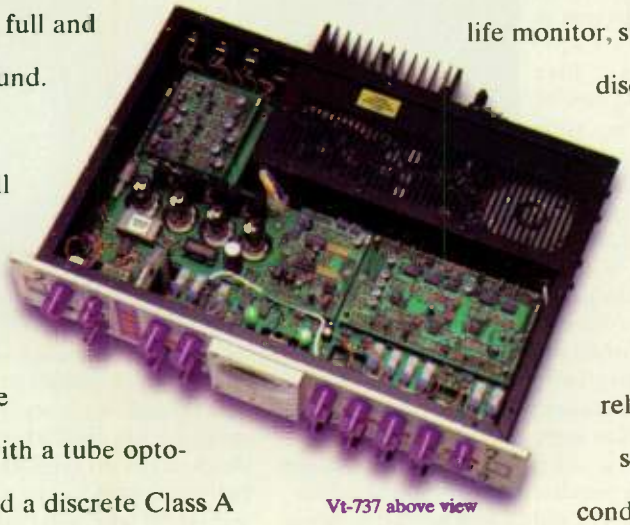

Vt-737 above view

Avalon Vt-737 features:

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Røde NT1 *Microphone*

Røde produces an economical mic that just looks expensive

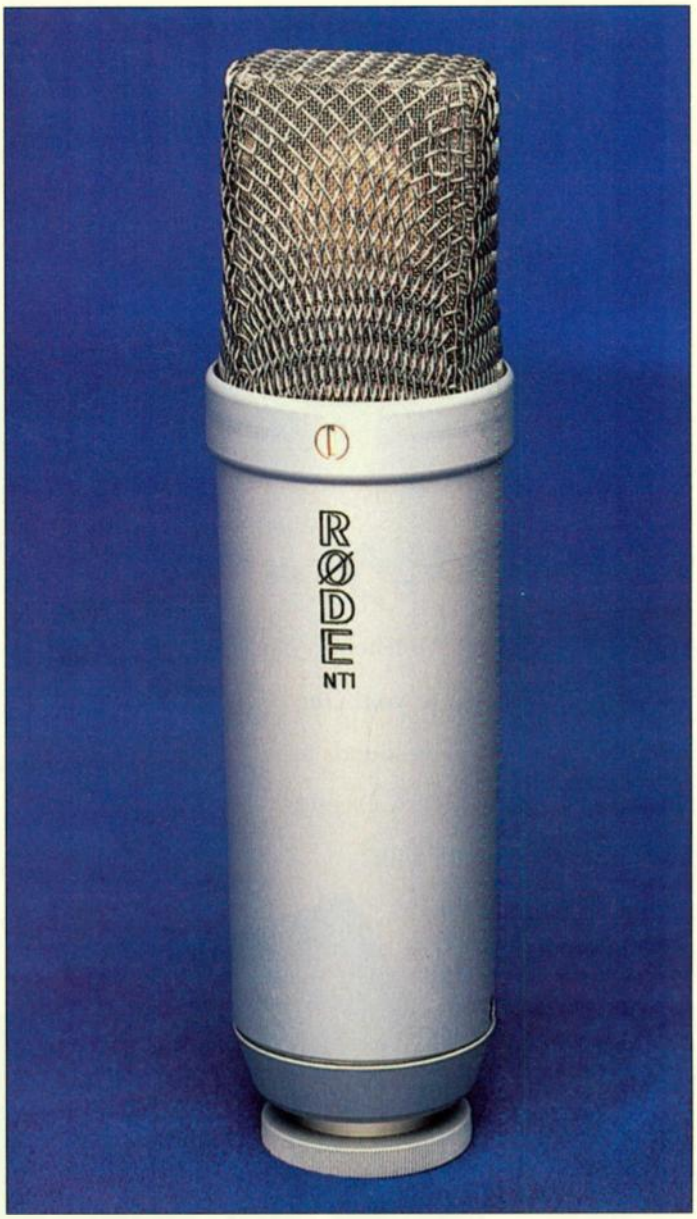
BY BOBBY OWSINSKI

The once rather complacent microphone industry has recently provided a compelling argument that it is subject to the same market desires as the rest of the industry. That is, give the customer more for less. As a result, almost every other month there's a new mic introduced by both new and established manufacturers, and most of them are giving more features and better performance while the price is staying within the reach of the average project studio. The new Røde NT1 is a perfect example. Imagine a large diaphragm condenser microphone for $499! Up until now, this was unheard of.

The Røde NT1 is a condenser microphone featuring a large 1-inch capsule, low-noise transformerless circuitry, and a fixed cardioid pickup pattern. According to the manufacturer's specs, it has a frequency response of 20 Hz to 20 kHz that appears virtually flat except for a pronounced presence peak from about 12 to about 15 kHz. The NT1 is reasonably quiet and has the relatively high output typical of most condensers. The mic comes with a nifty high-impact plastic carrying case and a stand mount that, while looking flimsy, is reasonably usable.

No external pop filter/windscreen is supplied (the inner mesh of the microphone's grille is intended to do this job). The use of one when doing vocals, however, is highly recommended by Røde to cut down the moisture reaching the diaphragm, which is detrimental to the long-term performance of the mic. As stated above, the NT1 lists for $499, a price enabled by more efficient and less labor-intensive manufacturing. (This microphone is entirely different than the more expensive NT2 model, except that they both happen to be 1-inch condenser microphones.)

Despite its price, this mic has the appearance of a unit costing much more. In fact, several people commented on its expensive look. This can be a problem in that people expect the NT1 to sound better than it is capable of (looking for a C12 for $500 perhaps?).



This mic reminds me in many ways of a condenser version of a Sennheiser 421. The look is similar, with its Euro-enameled powder coat aluminum body and wire mesh grille, and I found the resultant sound comparable as well.

When experimenting with this mic on different sources, I liked the NT1 best on a guitar amp. When compared with the ever-trusty pair of a 421 and an SM57 on a vintage Bandmaster, the Røde sounded bigger while maintaining the definition. Capturing the bottom end of a guitar amp can sometimes be difficult, but the NT1 seemed to manage well in this regard.

On a string date, however, where the mic was used on an individual violin, the NT1 didn't fare as well as some much more expensive U87's and U87's with the Innertube retrofit, but that was to be expected. The sound was a tad strident and a bit constricted compared to the others.

The NT1 fared much better on male vocal. When compared to a Soundelux U95 (which contains a tube), the sound was surprisingly similar. The U95, though, again was warmer and bigger sounding and fit better in the track. Much of the dissimilarity occurs in the bottom octave or so of the mic's response. (If you're listening on nearfield monitors, you hear much less of a difference than on large monitors with substantial low end where the difference becomes immediately apparent.)

It's unfair to compare this mic with others costing four to six times

continued on page 139

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World Radio History

Finding *Your Geek*

PHOTO BY STEVE JENNINGS

Having your songs Web-ready is almost a necessity these days — even if you don't actually do it yourself

BY JON LUINI & ALLEN WHITMAN

It's post-holiday torpor. Maybe the answer is to get chocolate cake and a bottle of teenage single-malt scotch and climb into bed. Maybe it'll go away. Maybe not. Maybe the only way out is straight through. And we're through with you! That's right, the FezGuys are packing it in and moving on to other duties...our work is done here.

We've told you what to do and how to do it. We've explained how these things can make a difference and now we're taking our message of hope to other civilizations. You guessed right again! We're leaving the planet! By the time you read this we'll be halfway to the Taurus sector of the sky and aiming for the Plieades Cluster. There are sagans of other planets crying out for this knowledge. Bye!

Okay. That's a lie. We're not really leaving Earth or this magazine and we've only hit the tip of the iceberg of information for you to absorb. Here's another idea:

Whether you're making original music, working up industrial sounds for advertising, or providing soundtrack material for a client, you'll be confronted with either the opportunity or the requirement that the sounds you create get placed on the World Wide Web. Be it promotion, distribution, or actual sale, most music gets digitized and compressed for transmission over phone lines. Maybe this particular technological playground fascinates you and you have the tools and energy to make it happen. Maybe you recognize that, while it's got to be done (one way or another), you don't want the responsibility. Just because it's incredibly cool to be able to manipulate audio files on the Web doesn't mean you have to be the one doing it, right?

So how can you get it done? A marketing diva in Northern California suggests everyone using the Internet should "get their own geek." But if you can't find yours (or it just won't come home), don't give up. Here are some thoughts on delegating the responsibility for getting your sounds online.

Typically, when you hire the services of a recording studio, the engineer hands you the finished product when the session is done. Why not have that studio provide you with Web-ready files as well? When you're shopping for the services of a recording studio, mastering house, or manufacturing facility ask them if they can provide this service. Perhaps you could walk away with a Zip disk (or whatever digital media storage unit you require formatted to your specifications) with all your songs on it as well as the DAT, CD-R or analog audio master. This way you'd have full-length and excerpt-length pieces ready to be uploaded to your site. By who? C'mon, at some point you've got to take some responsibility. Keith Richards, lambasting musicians who claim to be afflicted with "artist's block," said the problem is they "think the music comes from *them*." Your artistic inspiration comes from the Unnamable. But your Internet presence (and the world's recognition of your existence) comes from a little study and work. Don't be afraid! Wisdom from the mouths of our FezFathers comes to mind: "The way to eat an elephant is in small bites."

MASTERING TO THE INTERNET

Remember that music must be manipulated to optimize its transmission over phone lines. It's ugly, yes, but it's necessary. Normalizing (smoothing sharp transients) and mixing up the lower register instruments (drum and bass) while turning down the lowest frequencies of those same instruments (below, say, 80 Hz or so) will allow for better sonic legibility at the other end. You wouldn't ordinarily do this, but since we're trying to shout down a thin and really long cardboard tube, we want the yell to travel as

THINGS THAT ARE NEW

AT&T's a2b technology was announced in mid-November. The telecommunications octopus (which features a healthy serving of tech gurus in its AT&T Labs division) describes a2b as a "full system for secure digital distribution." Using their proprietary compression algorithms for watermarking, licensing, and encryption, the currently PC-only technology began its official life as a way for a band called The Verve to release a new single on BMG-RCA's Web site. AT&T claims a2b will provide for faster downloads and more flexible licensing options in the "electronic commerce value chain." To wrap this particular link in the chain around you, download the player at **www.a2bmusic.com**. Keep your eyes on these folks in the future, as they seem to combine the technical prowess of AT&T with some real-world awareness of the needs of the music industry.

Liquid Audio has joined Audioactive and Real Networks (in addition to other standard codecs like MPEG3, etc....) in working with Microsoft's Netshow. As the Muslim mystic once said: "Ride the camel in the direction it's going."

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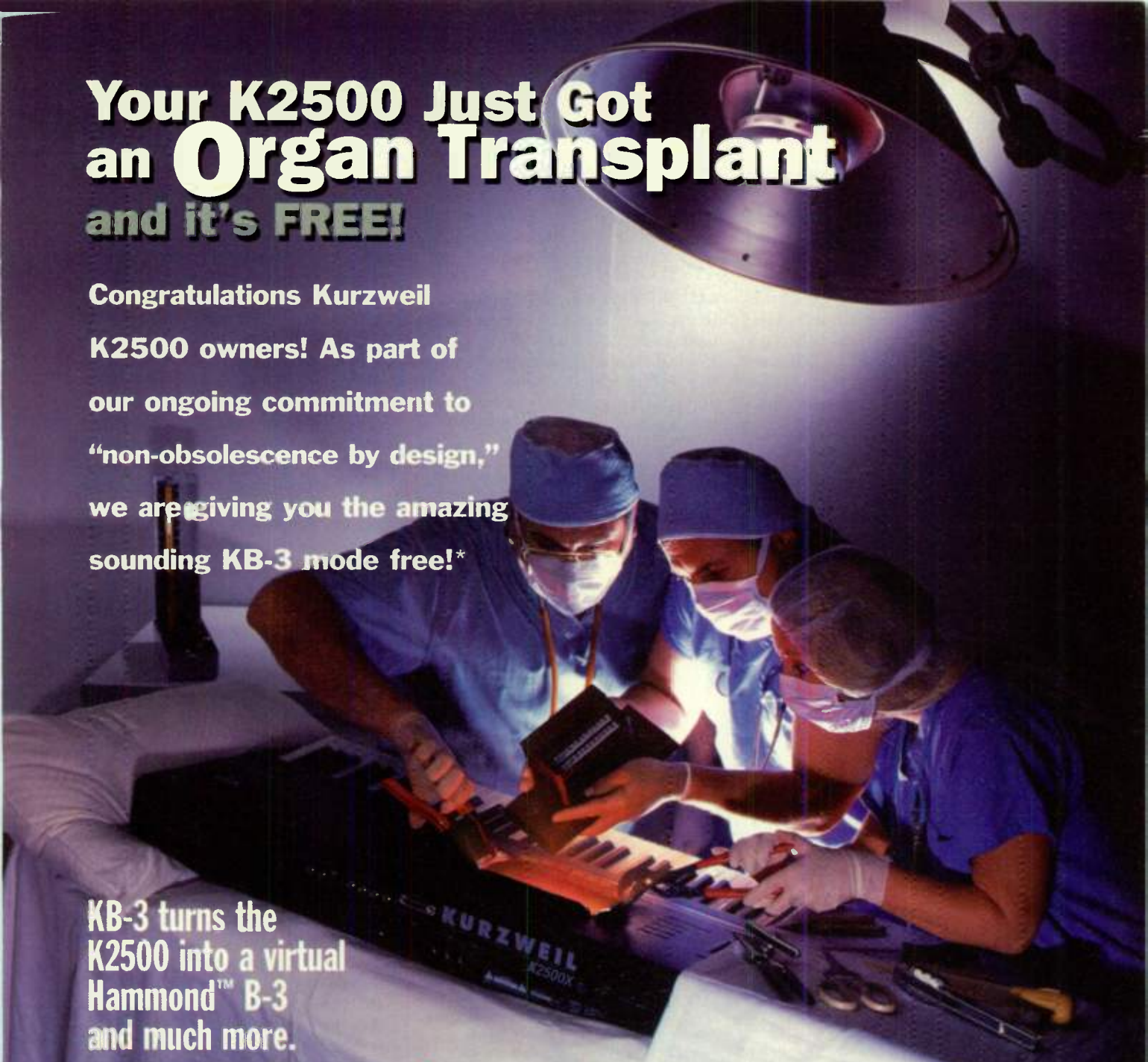
Your K2500 Just Got an Organ Transplant and it's FREE!



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* This software upgrade is FREE at our FTP site along with downloadable manual for K2500 owners (a $300.00 value MSRP). Hard copy manual, software disks and button function overlay available for purchase for a limited time only ($65.00 plus handling). Contact Kurzweil accessories at 1-800-409-6658. New factory equipped (v.2.52) K2500's will have a list price increase of $300.00, so, buy a K2500 now and get KB-3 from our FTP site FREE.

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far as possible and still be understood.

Speaking of mastering to the Internet: here's an opportunity for small business owners to expand their services and markets. Why not provide the ability to encode (in a variety of formats) your client's music. It's a straightforward process. Your current tech-savvy intern could do it. (Interns rule! Treat them like the Gods they are!) In your multimedia production room, in an hour or two, an entire album's worth of material can be encoded in a variety of audio formats. Songfiles and excerpts can be encoded into MP3 (Audioactive/Shockwave), RealAudio, or Liquid Audio and optimized for 28.8 modems and single-channel ISDN lines.

CASE HISTORY: MR. TOAD'S RECORDING

In the San Francisco warehouse wasteland south of Market Street, upstairs from fabric manufacturing sweatshops, this independently owned recording and mastering studio is addressing the independent musician's needs of accessing the new media. Offering a choice of analog or digital recording techniques (and a variety of computers), they provide the resources to shepherd sound from basic tracks to finished encoded files ready for uploading to your server.

Recognizing that flexibility is the key to survival in the competition for the songwriter's dollar, the studio provides everything from direct-to-DAT to complete 24-track analog with state-of-the-art noise reduction. At the other end of the process they offer CD-Rs burned on-site and/or a SyQuest or Zip disk with your material optimized and encoded in a variety of formats. They'll even broker the manufacture of physical product. Tardon Feathered (yes, it is his real name), the studio's founder, says about addressing the realm of New Media: "Everything we do is geared toward the working musician. We actually do this a lot, usually in RealAudio or Shockwave. No one's asked for other encoding methods, but they should. If you carve a slice out of the pie now, you'll be in a better position later with the major labels. If you're waiting for them to find you, it's not going to happen. That's the beauty of the Internet. It's available to both the average musician and major labels...you're on equal footing." Check out Mr. Toad's Web site at **www.toadophile.com.**

ON ANOTHER NOTE!

We've been receiving heartening letters from various sources about the successful implementation of techniques described in earlier FezGuys columns. Several people have requested a place to share information about how and what they do to provide for an audio presence on the Internet. We've created a links page on the FezGuys Web site to describe the tools and techniques used by regular humans making audio sense in a wacky WWWorld. We'll ask you to document who you are and what kind of hardware, software ,and magical spells you used to make your Internet audio presence a reality. Go to **www.fezguys.com** and click on the "Audio Resource Gallery Homepage" (ARGH — sorry, we couldn't resist). Fill out our amusing little form and tender comments. We'll link you. ARGH is where the myriad ways we eat that elephant get showcased. We're all sure to learn something from each other. Please contribute your site and your experience!

We welcome your comments. Visit our Web site at www.fezguys.com. EQ

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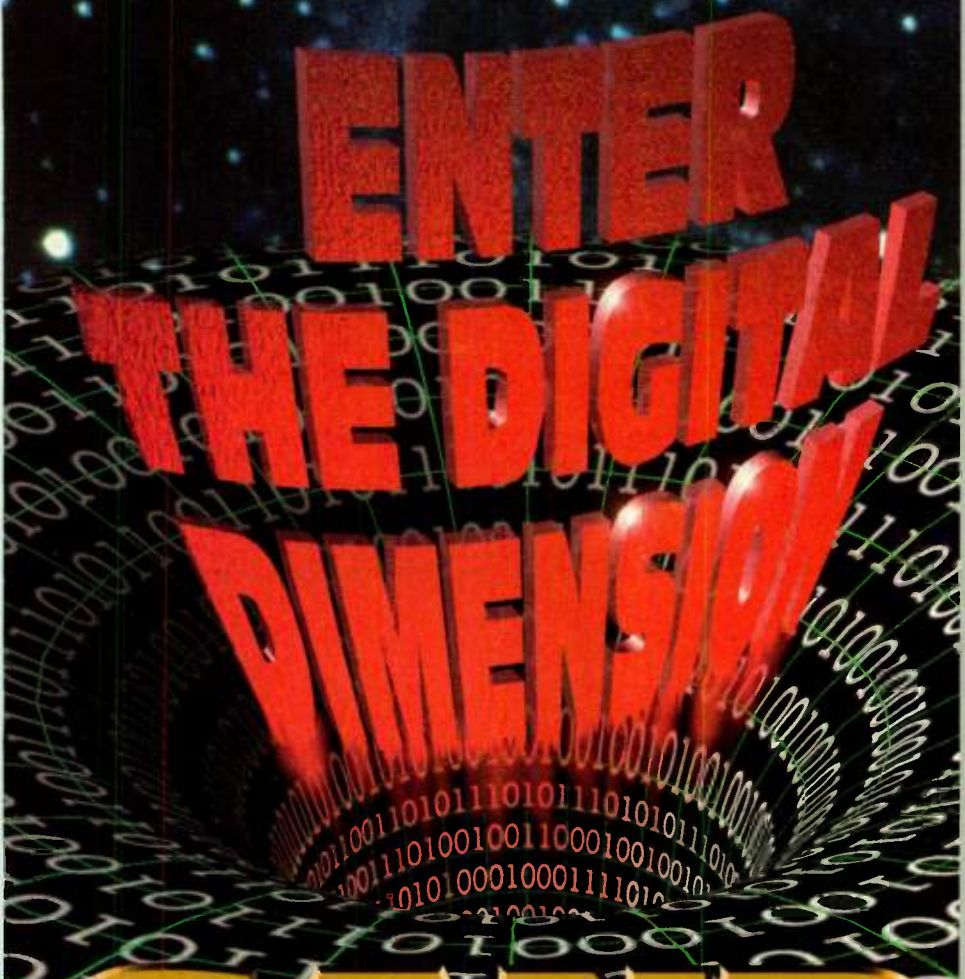

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Keeping In Sync

Some helpful tips on keeping your studio's gear in ship shape

BY EDDIE CILETTI

Happy New Year everyone! I have three topics to help keep you in sync for '98:

- The first concerns shipping gear for service.
- Second is an improved method for cleaning heads, plus some "other" causes of error messages.
- Finally, a call for civil feedback.

DAMAGED CLAMS

When it's time for service, no one wants the hassle of further damage, so if shipping is the only option, good packaging techniques are essential. This is especially true for electro-mechanical devices like tape machines and hard-disk-based systems. For all but the most space-starved urban dwellers, saving the original shipping material is easy. If starting from scratch, you might want to request packing material from either the manufacturer or the service company. Otherwise, head to your local packaging store, get two boxes (a box-in-a-box is highly recommended), some bubble wrap or packing peanuts, and a tape gun.

DETAILS AND PROCEDURES

Have you called the service center? Some require a return authorization (RA). Be sure to get the advance scoop on rates — minimum, diagnostic, typical, or rush — turnaround time, payment, and shipping options. Insure for the full list price.

Next, write a letter detailing the problem(s). Include the serial number of your ailing toy, the RA, and, if applicable, your own name, address, and phone number, as well as those of the service facility and manager. Date, make a copy, and stick one to the case. If rack ears can be removed, do so to avoid packaging complications and to reduce the potential for shipping damage. If the product is a tape machine, include a sample tape that exhibits the problem. Don't send the power cable unless it is suspect.

Packing material can come loose during shipment, so wrap your baby in swaddling clothes — plastic or paper — and tape shut. (You don't really want to pay a technician to extract all those bits from the sensitive innards of a tape machine.) The size of both the product and the first box it gets into will determine whether the cushy stuff is applied before or after. For tape decks and hard drives, there should be four to six inches of insulation on all sides.

TAPE IT

Before sealing the outer box, remove any previous shipping labels, otherwise your precious thingy will end up in Tim-buck-teeth. Use reinforced packing tape, start at the top main center seam and, if possible, go all the way across the bottom and then back to the top without cutting. (Sometimes the tape sticks better to itself than to the box.) Smooth out all air bubbles to make sure tape-to-box contact is positive. Secure secondary seams as well.

ADDRESS LABEL

There can only be one label, so make sure it's large, legible, well-secured, and waterproof. (Clear packing tape over the label will protect the text.) Physical location of the address is possibly more important than simply writing "To" and "From." Don't laugh, I once re-used a shipping label, crossed out "To" and "From" and rewrote the same addresses but in reverse placement. Result? The package was sent to mice elf. *Duh!* Put the source (that's you) on the upper portion of the label and the destination on the lower half. Include the company's local phone number (not the 800 number) as well as the person and/or department to which the deceased is headed.

USE IT OR LOSE IT

This tip applies to new products as well as the newly revived. Don't wait until that critical hour for full functionality. Unpack 'em, plug 'em in, and try 'em out within the first week.

TOPIC TWO: GET YOUR HEADS REALLY CLEAN

Lots of people use chamois (shammy) sticks to clean their helical tape heads. For some DAT machines, this is the only practical way to gain access without removing the loading mechanism. Serious head cleaning starts with the removal of such "obstacles" because, believe it or not, it can sometimes take ten minutes or so to dissolve and remove all the dirt.

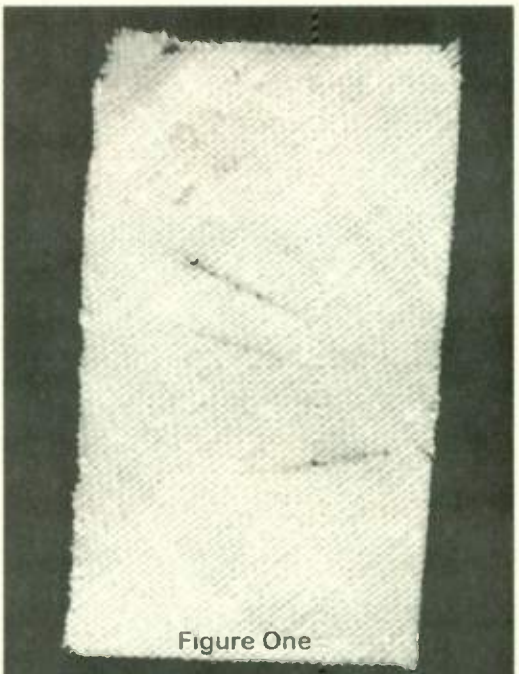

Figure One
Proof that "Dry" cloth picks up head funk

World Radio History

The typical approach is to dampen the applicator with a solvent, apply it to the heads, and rotate the drum in a counterclockwise direction. Environmentally friendly 99-percent alcohol is a slow evaporator, so you must allow for additional drying time before rolling tape, otherwise the tape may get wrapped around the heads. I found that using a second cloth to dry the heads removed more dirt than just the damp cloth. Fig. 1 shows several swipes. I prefer Twillwipes by Chemtronics (call 800-645-5244 for a distributor near you). These come in 6-inch square sheets that I cut into 1-inch-by-2-inch squares. Alternate between damp and dry cloths until no dirt is collected.

SEQUE

Always keep in mind that head cleaning is not a panacea. There are plenty of other obstacles, not the least of which is the tape itself. In a previous article I mentioned the "rabbet," the groove at the base of the helical head assembly of cassette-based digital tape machines. The rabbet collects oxide that neither cleaning tape nor cloth can dislodge.

Other obstacles to great performance are the clutches that regulate take-up tension. (Dedicated reel motors would solve this problem.) A stock DA-88, for example, sucks air through the "tape insertion port." This brings airborne contaminants into the mechanism and is particularly irritating to the reel tables, each of which has a magnetic clutch to regulate tension. Fig. 2 details the assembly, which, from top to bottom, consists of: the reel table and magnet (the former makes mechanical contact with the tape hubs in the cassette); a spacer (this sets the amount of tension); the "magnetically attractive" base (older versions were not anodized and may rust in humid environs); and an optical reflector (for generating motion signals).

Even though the capstan motor is responsible for precise control of tape speed, dirt in the clutches can make the tension both irregular and higher than normal. This mechanical interference will increase the error rate, as well as generate mechanical error messages. The long-term solution is to reverse the fan's direction, add an external air filter, have the mechanism thoroughly cleaned, replace the reel tables (if necessary), and regularly monitor error rate. (Visit www.tangible-technology.com for details.)

TOPIC THREE: POSITIVE FEEDBACK

This final topic is a request to both users and manufacturers of digital tape machines. The Internet is a great information resource. It is also a breeding ground for paranoia and misinformation. Disgruntled users are particularly mistrusting of manufacturers who they believe are hiding and/or ignoring product flaws. There are two sides to this story...

First of all, it is my experience — especially with tape machines — that manufacturers are more than willing to resolve "premature failure" problems. That's what Customer Service is all about. All you have to do is make that phone call. Be sure to have your receipt and serial number handy.

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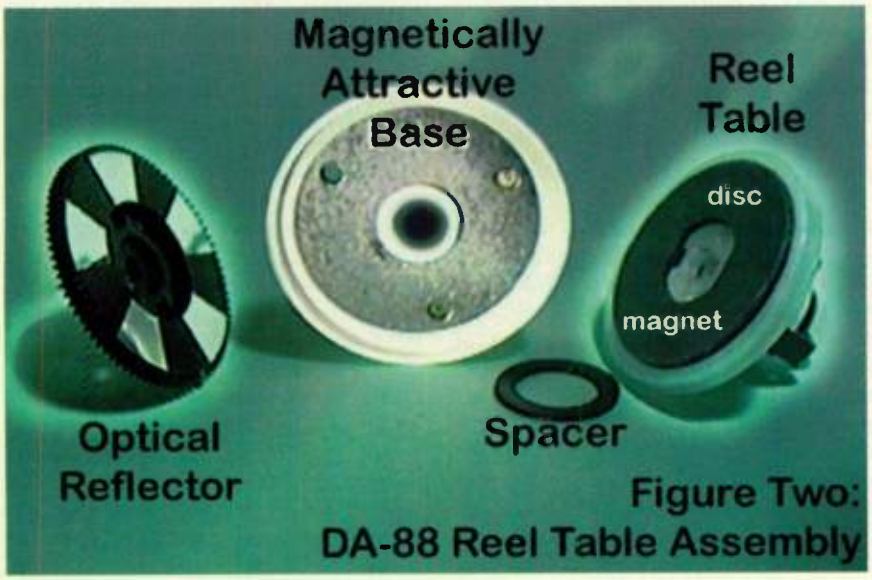

Figure Two: DA-88 Reel Table Assembly

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AKG ROAD TEST

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UNDER THE BRIGHT LIGHTS

Under performance conditions, the WMS 300 operated flawlessly. We ran the balanced XLR output into a mic input and adjusted the SR 300's volume control to approximately 1/3 of the way up — which was plenty to drive our console's mic input. The sound of a female vocal was clean, smooth, and round, without any of the upper-midrange peakiness that condenser capsules can often impose on the female voice. We felt that the C 5900 capsule was a bit heavy in the bottom for some male vocals, especially when the vocalist got close and proximity effect kicked in (a bit of LF rolloff corrected this).

Most importantly, the RF performance of the system was great. We took the system into a room known for RF problems, and when our female vocalist took a walk 125 feet from the stage, audio remained excellent. We could see that the WMS 300 was working hard — the A/B diversity lights were flickering madly back and forth, showing that the receiver was looking for the stronger signal. Still, despite how hard the '300 appeared to be working, we never heard hash, a dropout, or a compromise in audio quality — and there were three additional VHF wireless systems in use at the time. The singer commented that when she normally works this room, she can't walk around without having RF problems.

Although it has a few quirks, the AKG WMS 300 has RF performance and audio quality that will easily meet the needs of working professionals, especially in areas where clean transmission is difficult. It also has a few features that set it apart from the pack, including an automute circuit that mutes audio output from the receiver when the transmitter is turned off and the safety clip for the power connector. Add clean, quiet operation and you've got a solid, reliable choice for a wireless system. EQ

ENSONIQ PARIS

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bugs to the attention of Intelligent Devices (the company responsible for the application; Ensoniq covers the hardware and drivers), they were extremely responsive and started working on fixes immediately. In any event, development is ongoing, and free updates are available from the PARIS Web site (I even downloaded an update during the course of writing the review), so "early adopters" will be covered.

Ensoniq is promising a lot for the future, and it's all very enticing — but given the nature of vaporware, can be risky for the consumer. Fortunately, Ensoniq has a long track record of updating products with significant upgrades. Judging by the rate at which updates are coming (another one is due shortly after I have to turn in this article), as well as by Creative Labs' recent acquisition of Ensoniq, I feel confident that not only will any shortcomings be ironed out, but that Ensoniq will definitely deliver on its promise to grow the system.

The bottom line: During installation and operation, PARIS rarely tried my patience or got in the way — and that's saying a lot. Those who are willing to spend a bit more compared to budget systems will be rewarded by a sleek, fast, hardware-intensive recorder that works hard, sounds excellent, and is actually fun to use. EQ

INTUIT QUICKBOOKS

continued from page 127

of finances like expenses, income, equity, and so on. Other lists let you tell QuickBooks any other elements of your operation you wish, such as items (things you buy or sell) or vendors.

The beauty of QuickBooks' lists is twofold. First, once you key in names, addresses, accounts, and so forth, they're available in every form — from estimate to checkbook register — in dropdown menus. Just a click fills in all the data to make your record keeping faster and more accurate. The other benefit is that when you assign costs or income to an item on a list, QuickBooks keeps track of the data to associate it with the various forms you create throughout a job or billing period.

For example, if you start a new job for an existing client, the first thing you do is enter the new job in the customer list. Open an Estimate form and select the job from the dropdown. Next, the Item column gives you dropdown lists of items including the goods and services you're offering. When you incur expenses, use a journal entry to assign them to this job. As you, your employees, or subcontractors do work, you log it in a timesheet or Single Activity form (fig. 3) which is smart enough to let you pick a Name from a dropdown combining names from both your Vendor and Other Names lists. You don't have to hunt around trying to find the right name. The Invoice form is my favorite. Open it, find the right job from its dropdown, and you can see all the items relating to that job — billable time, expenses, items of work done — just by clicking on its Time/Costs button (fig. 4). Select the ones you want to include, and they automatically appear in the invoice (fig. 5).

When you receive a check, you can log it as full or partial payment, automatically enter it into your checkbook register, and assign it to a tax category. QuickBooks keeps track of outstanding invoices and bills, as well as your bank and credit card accounts. And every item can be traced all the way back to its original appearance on an estimate.

QUICKBOOKS ONLINE

If you sign up for it (and pay for it) at your bank, you can also manage bank accounts with QuickBooks and a modem. QuickBooks 5.0 ships with Netscape Navigator 3.0, giving users free access to Intuit's Small Business Web site (www.intuit.com/quickbooks/). The site offers help in managing finances for a small business, maintenance releases of the software, and the IRS's most recent tax tables. Another site — Quicken.com — offers information on insurance, mortgages, investing, planning, and taxes.

The only downside to using QuickBooks is that it's not simple. It does have a user-friendly "interview" that walks you through setting up your company, even when you've already been in business for a while and have a mess of outstanding accounts and jobs. Though clearly presented, this setup requires you to enter unpaid bills and invoices, jobs in progress, and so forth, and if you get lazy here, it'll make much more work later. You also have to be disciplined about entering records into QuickBooks. It can't track what it doesn't know.

Perhaps best of all is QuickBooks Pro's tech support. Intuit's promos refer to their customer support as "relentless," and my experience supports the claim. Every user gets 30 days free help on a toll-free line, and can buy it for $35 a month thereafter. I called (anonymously) several times while setting up my software and got through quickly each time. All the people I spoke with were pleasant, well-informed, and helpful.

If you have enough business that a simple spreadsheet seems inadequate, or if you're feeling overwhelmed by the job of keeping track of your business, QuickBooks Pro is well worth a try. EQ

World Radio History

MAINTENANCE

continued from page 137

I applaud companies such as Alesis, who, after releasing the XT, sent all registered users a document detailing recommended service intervals (every 250 hours) plus typical maintenance charges for standard procedures. The need for repairs will vary with the type of use/abuse, environment, and tape stock. It is, however, unfair to expect 1000 hours of trouble-free service from a tape machine.

Manufacturers are responsible for compiling all relevant service data into usable documentation — at the very least — for their authorized service centers. Alesis sets the standard by providing the most extensive service literature of any tape machine manufacturer (with the exception of a complete parts list).

American subsidiaries of foreign companies face a tougher challenge — not the least of which is the cultural barrier. One technician openly admitted that he couldn't share certain information with *me* (the columnist) for fear that it might end up in print. His being burned by someone else didn't do *me* (the service technician) any good at all. But I do understand. Manufacturers have marketing departments to generate mass sales; their service departments are not designed to cope with mass hysteria.

To their credit, Panasonic has excellent operating theory manuals, while TASCAM has the most accessible parts department. The reverse, however, is not the case with these respective companies.

WARREN T. MY-FOOT

Pay special attention to the warranty. Parts and labor periods are not always an equal length of time, so be sure to resolve problems before time runs out. Manufacturers may not provide the speediest service, but they are typically more affordable than a local service company. As a rule of thumb, set aside between fifty cents and a dollar for every hour the tape is on the heads for The Repair Fund.

Eddie Ciletti is the chef du jour at Manhattan Sound Technicians, NYC. Send e-mail to: edaudio@interport.net.

RØDE NT1

continued from page 130

more, but it almost seems that a large diaphragm condenser with these looks begs for the comparison. If you compare the NT1 to commonly used studio microphones in the price category such as the RE20 and the previously mentioned 421, the mic exhibits a bigger bottom, better transient response, and higher output.

The bottom line: The NT1 won't fool you into thinking it's a $2000 microphone, but it certainly sounds better than a $500 microphone. This mic won't make you throw away your '87's, but it will make you find a place for it in your mic arsenal. For the project studio on a budget or a large commercial studio looking for a mic for specialty work, the Røde NT1 deserves a listen.

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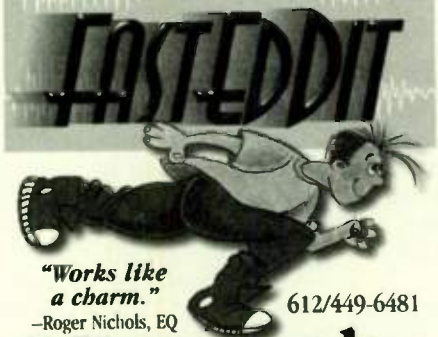

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Telephone Utilities Redux

The one component of your studio that you probably haven't updated — but definately should

BY MARTIN POLON

Having previously discussed the issues involving the electrical inputs and service to project studios (as well as commercial studios), it is appropriate to discuss another side of the utility service triangle — telephone wiring and services provision.

The absolute nonchalance with which most project studio operators approach their telephone and cable options is quite frankly appalling. Consider someone who buys an existing studio dating back to the 1950s and 1960s. This new owner might replace all of the equipment with state-of-the-art gear and completely redo the studio's acoustics. Can you imagine that new owner leaving in the various mic lines and room-to-room transmission lines?

Consider that these existing lines were themselves manufactured decades ago, soldered to connectors similarly eons ago and frequently terminated with 1950s-grade audio transformers so that 150-ohm lines would be converted to 600-ohm lines for long runs and 600-ohm lines would be transformer "repeated." Oh, yes, these transformers would be terminated at the center-tapped secondary to ground at each end. And that really did not work correctly because prior to today's computer-driven transformer winding machines, no one could wind a transformer with exact center taps. *Hello*— phase distortion and impedance varying signal degradation most obtuse!

(Now, I recognize that at least seven of you will be flying out the door to re-create this electromagnetic wiring nightmare of the past described above in hopes of re-creating the Holy Grail of analog recording sound.)

Today's telephone wiring in most studios is analogous to the above studio wiring horror story and is used without a further thought on anybody's part! Many project studios, as well as larger facilities, employ spaces that were garages or spare bedrooms in homes, former retail store fronts, spaces in converted manufacturing facilities or lofts, etc. Telephone wiring is frequently the only element to be reused.

There are similar mistakes made with modern telephone wiring and installation, ordering of services, billing, long distance, etc. What follows is a shopping list of suggestions that will help studio operators to make the right decisions.

1. Whether in a new facility, a rehabilitated facility, or an existing facility, unless the studio was purposely built within the last ten years from the ground up, remove all existing phone wiring and replace with current state-of-the-art telephone interconnection technology. Why? Old wiring will frequently be faulted to ground, faulted to other hot connections present, may have existing power supply units connected from previous occupancy and predigital multiple line phones leaking current and voltage, may have nonexistent extension lines connected to impact transmission quality, high resistance, capacitance, inductance, or all of the above.

All of these conditions, plus the impact of time on by now brittle copper wires connected to terminal blocks mechanically and/or the old-style four-prong portable jacks utilizing badly oxidized spring contacts, are so common in existing telephone wiring as to make a telephone rewire a most important evolution.

Your studio telephone wiring is used for all sorts of business communications: audio transmissions over the public switched telephone network and computer data and computer audio communications. It might be helpful when reading computer modem advertisements to recognize that the transmission problems mentioned that usually prevent 56K modems from reaching full rated speed might just as well be in your basement as across town!

2. Let the telephone company do the telephone wiring or rewiring. There are several reasons for the efficacy of this suggestion despite the fact that studio people have at least some of the skills necessary to do it themselves. First, the charges rarely exceed $500 for an average facility, and considering what one spends on gear, that is a small price to pay. The telephone company will do the job properly with all of the proper wiring, connectors, blocks, etc. If you tally what your time and your staff's time amounts to, add the lost sleep and missed days off, the phone company's price looks good!

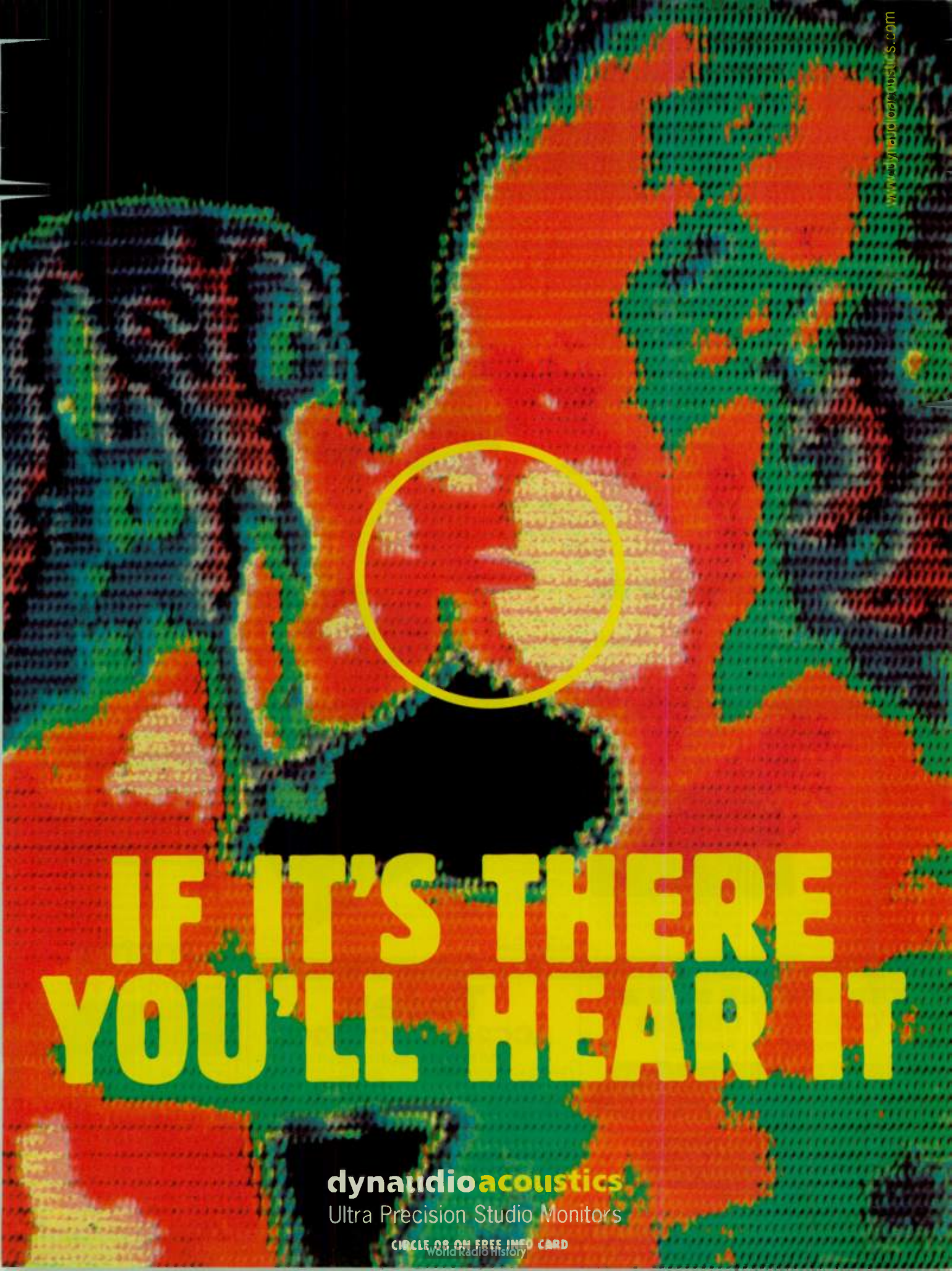
Secondly, if done by "telco," then service calls to repair wiring will be covered under warranty. Business rate telephone repairs in your facility can be a very expensive proposition.

3. Always insist on a fresh wire of the route and loop for ISDN service unless your facility has had a recent clean rewire. It is impossible to guarantee that level of service without cleaning up the studio's wiring act.

4. Always take whatever insurance the telephone company offers for your studio's telecommunications plant. This amenity may not be available for all business users or in all geographic locales, but it is literally priced at pennies per day.

5. Negotiation of long distance rates is a must. There is real competition here, and as you discuss rates with your long-distance carrier, you can force them to pass on to you the savings that exist in some of their most radical but little publicized calling plans. EQ

World Radio History



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HARD DISK RECORDING

digidesign AVID
A Division of Avid Technology, Inc

ProTools Project™
Digital Audio Workstation for Macintosh

ProTools Project is designed to provide ProTools functionality at a more affordable price. The system includes an audio card as well as award winning Pro Tools software and you choose either an 888 or an 882 I/O interface to complete the package. Project also features 8 tracks of record/playback, 4 bands of digital EQ, MIDI record/playback and Quickpunch. Digidesign also has an upgrade path when your ready to expand your system.

REQUIRES–
- Qualified NuBus or PCI Macintosh CPU
- Hard Drive, system software 7.1 or greater
- 24MB RAM minimum
- 14" monitor (17" recommended)

ProTools 4.0 Software-
Pro Tools version 4.0 software provides the next step in the evolution of Digidesign's award-winning digital audio production software for the Mac. Fully Power Mac native, 4.0 features noticeable improvements in every major area. ProControl™ support, improved automation features, relative fader groupings & group nesting, plug in MIDI personality files, multiple edit play lists, Sound Designer II™ functionality, Finder-style searching & sorting, and mmmore.

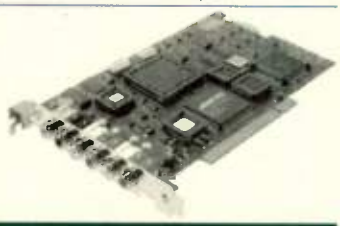
Session 8™
Digital Audio Workstation for Windows

Session 8 is a professional quality digital audio recording, editing, & mixing system created specifically for personal and project recording studios. Designed to operate with Windows 95 or Windows 3.1, Session 8 offers professional recording features, powerful random access editing, automated digital mixing, & unparalleled integration with most popular MIDI sequencers.

FEATURES–
- 8-channel direct to disk digital recording
- Random access, non-destructive editing
- Automated, intuitive digital mixing environment
- Built-in volume & pan automation
- Complete SMPTE frame rate support
- Digital parametric EQ
- Frame accurate sync with built in .AVI video playback window
- Support for multiple hard drive partitions
- Auto sample rate convert to 44.1 or 48 kHz mono .WAV file format
- Choice of audio interface options

digidesign AVID
A Division of Avid Technology, Inc

Audiomedia III™ Digital Audio Card



Available for both Macintosh and Windows OS systems, Audiomedia III will transform your computer into an powerful multitrack workstation. Compatible with a wide variety of software options from Digidesign and Digidesign development partners, Audiomedia III features 8 tracks of playback, up to 4 tracks of recording, 24-bit DSP processing, multiple sample rate support and easy integration with leading MIDI sequencer and other software programs.

PORTABLE HARD DISK RECORDING

Roland VS-880 V2

This new version of the popular VS880 incorporates powerful additional software functions that allow you to get the most out of this baby's incredible creative potential.

FEATURES–
- Auto Mixing Function records and plays back your mix in realtime
- Process the master output with a specific inserted effect such as total compression.*
- Simultaneous playback of 6 tracks in MASTER MODE.
- 10 additional effect algorithms (30 total) including Voice Transformer, Mic Simulator, 19-band Vocoder, Hum Canceler, Lo-Fi Sound Processor, Space Chorus, Reverb 2, 4-band Parametric EQ, 10-band Graphic EQ, and Vocal Canceller.
- 100 additional preset effects patches.

- In total, over 20 powerful and convenient features in editing/sync sections have been added. Some require the optional effects expansion board

Fostex DMT-8 VL

The latest in the Fostex HD recording family, the DMT-8 VL truly brings the familiarity of the personal multi-track to the digital domain.

FEATURES–
- 18 bit A/D, 20 bit D/A
- Built in 8 channel mixer. Ch 1&2 feature mic/line level.
- 2 band EQ and 2 AUX sends per channel
- Cut/Copy/Move/Paste within single or multiple tracks
- Built-in MIDI Sync, 6 memory locations
- Dual function Jog/Shuttle wheel provides digital "scrub" from tape or buffer without pitch change. 1/2X to 16X
- Divide the drive into 5 separate "virtual reels", each with it's own timing information.
- NO COMPRESSION!

CD & CASSETTE DUPLICATION

marantz
CDR615 / CDR620
Compact Disc Recorder

Both next-generation stand-alone write-once CD recorders, the CDR615 & 620 offer built-in sample rate conversion, CD/DAT/MD/DCC subcode conversion, and adjustable dB level sensing. They also feature adjustable fade in/out, record mute time & analog level automatic track incrementing. A 9-pin parallel (GPI) port, headphone output with level control and RC620 remote are also included. The **CDR620** adds a SCSI-II Port, XLR (AES/EBU) Digital In/Out and Digital cascading, 2x speed record, Index Recording and playing and defeatable copy prohibit and emphasis.

Telex
ACC2000/ACC4000
Cassette Duplicators

Designed for high performance & high production, Telex duplicators offer easy maintenance and operation. The **ACC2000** is a 2-channel mono duplicator while the **ACC4000** is stereo. Each produces 3 copies from a cassette master at 16x normal speed & by linking additional copy modules, you can duplicate up to 27 copies of a 60 minute original ***in under 2min!***

ACC2000XL/ ACC4000XL
The XL Series feature "Extended Life" cassette heads for increased performance and wear characteristics. They also offer improvements in wow and flutter, freq. response, S/N ratio & bias.

STUDIO DAT RECORDERS

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.

TASCAM
DA-20/DA-30mkII

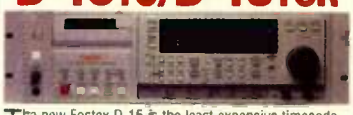
- Multiple sampling rates (48, 44.1, and 32kHz).
- Extended (4-hour) play at 32kHz.
- S/PDIF Digital I/O, RCA Unbalanced In/Out.
- SCMS-free recording. Full function wireless remote.

DA-30mkII Additional Features–
- Variable speed shuttle wheel.
- Digital I/O featuring both AES/EBU and S/PDIF.
- XLR balanced and RCA unbalanced connections.
- SCMS-free recording with selectable ID.
- Parallel port for control I/O from external equipment.

Panasonic.
SV-3800/SV-4100

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The **SV-4100** adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces, and more.

FOSTEX
D-15TC/D-15TCR



The new Fostex D-15 is the least expensive timecode DAT on the market. It has a host of new features aimed at audio post production and recording studio environments. 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)

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
- Parallel interface

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MICROPHONES

AKG

C414B/ULS

A reputation for flawless performance & uncommon flexibility in the most demanding studio & concert sound applications.

- Dual 1" Gold-sputtered diaphrams.
- Flat on-axis response.
- 126dB dynamic range.
- Switchable 10dB and 20dB pad.
- 20Hz–20kHz.

CAD

E-300
Studio Condenser Microphone

A multi-patterned side address mic that combines vintage capsule design with advanced headamp electronics, the E-300 has an unusually wide frequency response of 10Hz to 20kHz & an exceptional dynamic range of 137 dB. It also features extremely low self noise of 11dB. Ideal for even the most critical studio applications.

Shown with optional ZM-1 Shockmount

Unique powering of all Equitek Series microphones is accomplished with a pair of rechargeable nicad 9-volt batteries in combination with 48V phantom power. This overcomes inherent current limiting associated with most phantom power supplies & can supply 10x the current.

audio-technica.

AT4050/CM5
Cardioid Capacitor Microphone

The AT4050 multi-pattern condenser expands upon the AT4033 to set the standard for studio performance mics.

FEATURES–
- 2 capacitor elements.
- Cardioid, Omnidirectional, & Figure 8 polar pattern settings.
- Vapor-deposits of pure gold on specially-contoured large diaphragms are aged through 5 steps to ensure optimum characteristics over years of use.
- Transformerless circuitry results in exceptional transient response and clean output even under extremely high SPL conditions.

SENNHEISER

MD 421

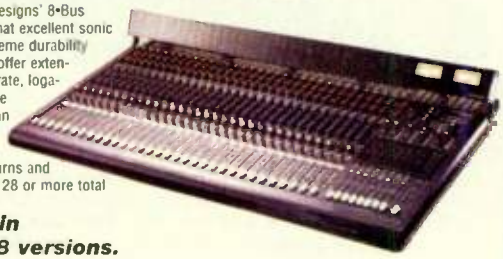
For over 20 years, the MD 421 has been one of Sennheiser's most popular dynamic mics. The large diaphragm dynamic element handles high sound pressure levels, making it natural for recording guitars and drums. The MD 421's full-bodied cardiod pattern, and 5-position bass control make it an excellent choice for most instruments, as well as group vocals, or radio broadcast announcers. One listen and you'll know why its a classic.

MIXING BOARDS

MACKIE.

Get on the 8-Bus!

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



Available in 16x8, 24x8, & 32x8 versions.

FEATURES–
- Each channel includes Mackie's well-known Mic preamp and a -10/+4 switchable tape return
- 8-assignable submasters and a L/R mix master
- 4-band, true parametric EQ
- Extensive routing capabilities
- Optional Meter Bridges available
- Optional 24•E Expander console available
- Rugged all-metal chassis
- In-line monitoring effectively doubles input channels

TASCAM M-1600
16 & 24 Channel 8-bus Consoles

Great for modular Digital Multitrack setups and hard disk recording, the M-1600 is part of Tascam's next generation series of recording consoles. It features multiple options for inputs and outputs and uses the same, easy to install D-sub connectors as Tascam's more expensive consoles, all in a compact design.

FEATURES–
- XLR Mic inputs w/phantom power on 8 channels.
- Signal present/overload indicators on each channel.
- Balanced & Unbalanced tape returns & Balanced Group/Direct outputs using D-sub connectors.
- TRS Balanced Line inputs on all channels.
- 3-band EQ with sweepable mids.
- 5 Aux sends (1 stereo).
- 4 assignable aux returns.

Perfect for use with DA-88 and ADAT setups.

MINIDISC MULTITRACKS

TASCAM 564 Digital Portastudio

The Tascam 564 Digital Portastudio combines the flexibility and superior sound quality of digital recording with the simplicity and versatility of a portable multitrack. Using MiniDisc technology, the 564 has many powerful recording and editing features never before found in a portable 4-track machine.

FEATURES–
- Self-contained digital recorder/mixer.
- Uses low cost, removable MiniDiscs.
- 2 AUX sends / 2 Stereo returns.
- 4 XLR mic inputs.
- Channel inserts on inputs 1 & 2.
- 5 takes per track, 20 patterns, 20 indexes per song.
- Random access and instant locate.
- Non-destructive editing features with undo capability include: bounce forward, cut, copy, move.
- Full-range EQ with mid-range sweep.
- S/PDIF digital output for archiving.
- MIDI clock and MTC.

SONY MDM-X4 MD Multi-Track Recorder

MD recorders are here! Offering up to 37 minutes of high-quality 4-track digital recording, the MDM-X4 is truly the next generation of personal multi-tracks. With a built-in mixer, exclusive Track Edit system, and a Jog/Shuttle wheel for sophisticated editing with ease, the MDM-X4 will encourage you to flex your creativity.

FEATURES–
- Records on high quality, removable MD data discs.
- 3.5-gen. ATRAC LSI for wide dynamic range.
- 10 Input / 4Bus mixer.
- 2 AUX sends, 3-band EQ. • 11-point locator.
- Random access memory for quick playback and record from anywhere on the disk.
- Editing features include Undo, Redo, & Section/Song editing for flying material between different tracks.

STUDIO MONITORS

ALESIS

Monitor One

The award winning Monitor One provides the last critical link in the recording studio's signal chain, giving you an accurate reproduction of what is being recorded.

FEATURES–
- Excellent image and transient reproduction, powerful bass, and smooth, extended high frequency detail.
- Exclusive SuperPort speaker venting technology.
- Ferrofluid cooled 1" silk-dome driver.

TANNOY

PBM 6.5II

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

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

JBL

4206 & 4208

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

- Multi-Radial baffle ABS baffle virtually eliminates baffle distortion.
- Superb imaging & reduced phase distortion.
- Pure titanium diaphragm high frequency transducer provides smooth, extended response.
- ***Magnetically shielded for use near video monitors.***

SPIRIT

Absolute Zero

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

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

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PORTABLE DAT RECORDERS

TASCAM DA-P1

- Rotary 2 head design, 2 direct drive motors.
- XLR mic/ line inputs (w/phantom power)
- Analog and S/PDIF (RCA) digital I/O.
- 32/44.1/48kHz sample rates & SCMS-free recording.
- Built in MIC limiter and 20dB pad.
- TRS jack w/ level control for monitoring.
- Includes shoulder belt, AC adapter, & battery.

HHB PDR1000/PDR1000TC

The PORTADAT has fast become an industry standard location DAT machine. Popular for film and video production use, as well as ENG/EFP, the PDR1000 features a large backlit display, 4 motor transport and AES/EBU and SPDIF digital ins and outs. The PDR1000TC adds the ability to record, generate and reference to timecode as well as jam sync to convert absolute time to timecode.

FEATURES-

- 4 head Direct Drive transport
- XLR mic & line analog ins, 2 RCA line outs. Digital I/O includes S/PDIF (RCA) and AES/EBU (XLR).
- L/R channel mic input attenuation selector(0dB/-30dB)
- 48V phantom power, limiter & internal speaker.
- Illuminated LCD display shows: clock and counter, peak level metering, margin display, battery status, ID number, tape source status and machine status.
- Nickel Metal Hydride battery powers the PDR1000 for 2 hours. AC Adapter/charger included.

PDR1000TC Additional Features-

- All standard SMPTE/EBU time codes are supported, including 24, 25, 29.97, 29.97DF, & 30 fps.
- External sync to video, field sync and word sync.

NEW Options-

- **MS1000 Master Sync module** ensures drift will be no more than 1 frame every 10 hours.
- **HM1000 Headphone Matrix** provides a rotary switch for selection of Stereo, Mono Left, Mono Sum, & M/S (mid-side) Stereo modes.

SONY TCD-D10 PROII

A reliable, high-performance DAT recorder, the portable TCD-D10 PROII is designed with rugged professional use in mind. It has many enhanced features including absolute time recording, allowing immediate use of the tapes as source material for Sony's PCM-7000 series DAT editing system.

FOSTEX PD-4 V.2

The second-generation portable, professional TC DAT recorder from Fostex. Version 2 software includes many features and functions for improved performance in the field.

FEATURES-

- 4-head design • Punch-in/out
- Pre or post striping of SMPTE/EBU timecode
- 3 in X 2 output mixer with 3-position pan functions
- Selectable 48V phantom powering and variable low-cut filters

EFFECTS PROCESSING

lexicon PCM-80 & PCM-90 Digital Signal Processors

A great combination for any studio owner with an ear for the best. The **PCM-80** delivers high quality multi-effects based on the legendary PCM 70, maintaining Lexicon's high standards for sonic clarity and extraordinary processing power. The **PCM 90** is a digital reverb with its roots stemming from the studio standard 480L and 300L effects systems. Reverbs from telephone booths to the grand canyon, the PCM 90 is incredibly realistic, an excellent addition to any rack mount arsenal.

Buy a PCM-80 from B&H before December 25th, 1997 and receive a FREE Pitch FX Card & $100 - a $350 Value!

Buy a PCM-90 from B&H before December 25th, 1997 and receive a FREE Dual Reverb Card & $250 - a $500 Value!

lexicon MPX-1 Multi-Effects Processor

Lexicon's latest addition to their Digital effects family, the MPX-1 features top-quality effects in an easy to use, 1 rack space unit. With 56 Pitch, Chorus, EQ, Modulation, Delay, and world-class reverb effects accessible from the front panel, as well as TRS and XLR balanced I/O and complete MIDI implementation, the MPX-1 creates a new standard for cost and quality in a multi-effects device.

t.c.electronic Wizard M2000 Studio Effects Processor

The M2000 features a "Dual Engine" architecture that permits multiple effects and 6 different routing modes making it a great choice for high-end studio effects processing.

FEATURES-

- 250 factory programs including reverb, pitch delay, chorus, flange, phase, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement
- 20-bit A/D conversion, AES/EBU and S/PDIF digital I/O
- "Wizard" help menus, 16-bit dithering tools.
- Tap and MIDI tempo modes.
- Single page parameter editing, 1 rack space.

SONY DPS-V77 2 Ch. Master Effects Processor

Sony's latest effects processor, the DPS-V77 yields excellent sonic quality combined with realtime control, a digital I/O and many more features that will put a smile on the face of any discerning studio engineer.

FEATURES-

- 198 preset &198 user-definable programs.
- Control up to 6 parameters in realtime via MIDI information and an optional foot pedal
- Use the AES/EBU & SPDIF digital I/O to link multiple V-77s together & when working with digital mixers
- 10-key pad input
- Shuttle-ring equipped rotary encoder allows for quick patch changing.
- A noise gate circuit is provided ahead of the input for guitar players and other instrumentalists who want top quality effects without sacrificing tone.

Roland SRV-330 Dimensional Space Reverb

The SRV-330 provides exceptional sound quality, using proprietary Roland Sound Space technology to achieve three-dimensional spatial effects with conventional two-channel playback.

FEATURES-

- Discrete stereo reverb algorithms for independent processing per channel
- 30-bit internal signal processing for a clear and accurate sound
- 300 preset and 100 user patches
- MIDI and realtime control via remote, control and expression jacks

PRO HEADPHONES

AKG K240M

The first headphone of choice in the recording industry. A highly accurate dynamic transducer and an acoustically tuned venting structure produce a naturally open sound.

- Integrated semi-open air design.
- Circumaural pads for long sessions.
- Steel cable, self-adjusting headband.
- 15Hz–20kHz, 60Ω

SONY MDR 7506

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

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

beyerdynamic DT 770 Pro

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

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

SENNHEISER HD 265/HD580

The **HD-265** is a closed dynamic stereo HiFi/professional headphone offering high level background noise attenuation for domestic listening and professional monitoring applications. The **HD 580** is a top class open dynamic stereo HiFi/professional headphone that can be connected directly to DAT, DCC, CD and other pro players. The advanced design of the diaphragm avoids resonant frequencies making it an ideal choice for the professional recording engineer.

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KEYBOARDS & SOUND MODULES

Roland® A-90EX
Master Keyboard Controller

The A-90EX is an 88-note, weighted master controller with one of the best keyboard actions currently on the market. It offers incredibly realistic piano sounds, powerful controller capabilities and 'virtual' programmable buttons which can be configured to operate your software and other devices. The A-90EX combines the majestic sound of a concert grand, the expressive action of a fine acoustic keyboard and the comprehensive MIDI functions of a master controller—all in a portable stage unit.

FEATURES–
- Master Volume Slider and Global Transpose features
- Proprietary 88-note hammer-action, velocity sensitive keyboard with aftertouch
- 2 types of stereo-sampled grand pianos, various acoustic and electric pianos (including a great classic Rhodes).
- Stores up to 64 Performances

Roland® JV-2080
64-Voice Synthesizer Module

Roland resets the standard with the incredibly expandable JV-2080 64-Voice Synthesizer Module. This amazingly powerful package offers unprecedented expandability, digital signal processing, and remarkable operational ease, all housed in a 2-unit rack-mount design.

FEATURES–
- 64-Voice / 16-part multitimbral capability.
- 8 slots for SR-JV80 Series wave expansion boards.
- 3 independent effects sets plus independent reverb/delay and chorus.
- 6 outputs, Main Stereo and 4 assignable.
- **NEW** patch finder and Phrase Preview functions for easy access to all patches.
- Large backlit graphic display
- Compatible with JV-1080, XP-50, & XP-80.

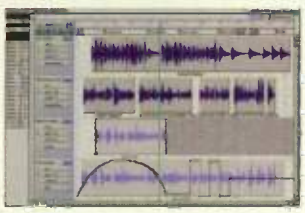
KURZWEIL
K2500 Series Music Workstation

Building on the same features that made the 2000 series popular, the 2500 utilizes the acclaimed V.A.S.T. technology for top-quality professional sound. Available in 76-key (K2500), 88 weighted key (K2500X) and rackmount (K2500R) configurations, the K2500 combines ROM based samples chosen from the best of Kurzweil's collection, on-board effects, and full sampling capabilities on some models (K2500S, K2500RS & K2500XS).

FEATURES–
- True 48-voice polyphony
- Fluorescent 64 x 240 backlit display
- Up to 128MB sample memory
- Operating system stored in flash ROM (for software updates via floppy disk and SCSI)
- Full MIDI controller capabilities
- 32-track sequencer • Dual SCSI ports
- Advanced file management system
- Sampling option available
- Optional **DMT**i Digital Multitrack interface for data format and sample rate conversion with ADATs/DA-88s

MIDI SOFTWARE

Mark of the Unicorn
Digital Performer 2.1
Macintosh MIDI Sequencer w/ Integrated Digital Audio



Digital Performer contains all of the sequencing capabilities of Performer V.5 and adds Digital Audio to the picture. Apply effects such as Groove Quantize, shift, velocity scaling and more- ***All IN REALTIME.***

FEATURES-
- MIDI Machine Control, Quicktime Video playback.
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OPCODE
Studio 64X
Cross Platform Interface

The Studio 64X is part of Opcode's new Studio X Series. This 64 channel MIDI interface is compatible with both Macintosh and Windows and features SMPTE synchronization as well as OMS (Open Music System) compatibility for total integration with any OMS compatible application.

FEATURES–
- Cross-platform Mac and Windows compatibility
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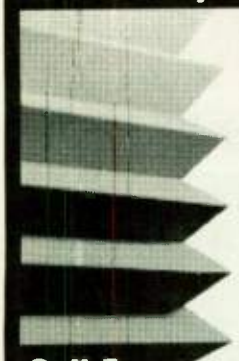

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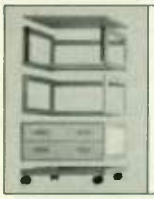

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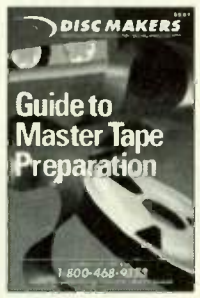

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World Radio History

BILL LASWELL

continued from page 85

They probably had to have a lot of credentials. Still, the way it was mixed is the problem for me. It was recorded fine and clean but when it comes to mixing a record like "On The Corner," musically it's more like the beginning of hip-hop. It's got nothing to do with jazz or classical. It should be raw, it should be big, and the bass should be huge. That wasn't evident on that original mix. And on "In A Silent Way," aside from the weird ending, there's one part where a glass or something falls from a table or a piano and hits a mic and that's the loudest thing on the record. When we got the multitrack I said, "Wow, that's amazing, it's really loud." So I went back and studied the CD release and that's still the loudest thing on the record. All they had to do was duck it for two seconds. The piano parts were fragments and you could have just moved the faders in the mix — which we did. Then there's talking, I think it was Miles talking, whispering to Wayne Shorter, which is also easy to duck, but those things were left in there. They let a lot slide by. I think that was the system of "let's hurry up and get out another record," because at that time there were so many records coming out. Miles himself recorded 20 albums from '69 to '70, and that's not including live recordings. That was the period where every day something would get recorded. I have six reels of outtakes of "On The Corner" alone, with a lot of Indian instruments. It's kind of a mess, but it could be an incredible record on its own.

You did add some instrumentation to the Marley tracks, correct?

In one case there was a song that had a vocal melody, and I thought it would be interesting with a 10-piece string group. I felt that it wouldn't take too much away from the melody. There was percussion added to the same track because I felt like it needed another pulse. I also added some weird sort of electronic things that add to the ambience of the whole track.

Where those live overdubs or were they sequenced?

All live.

Did you overdub directly onto the safety master or did you set up a slave?

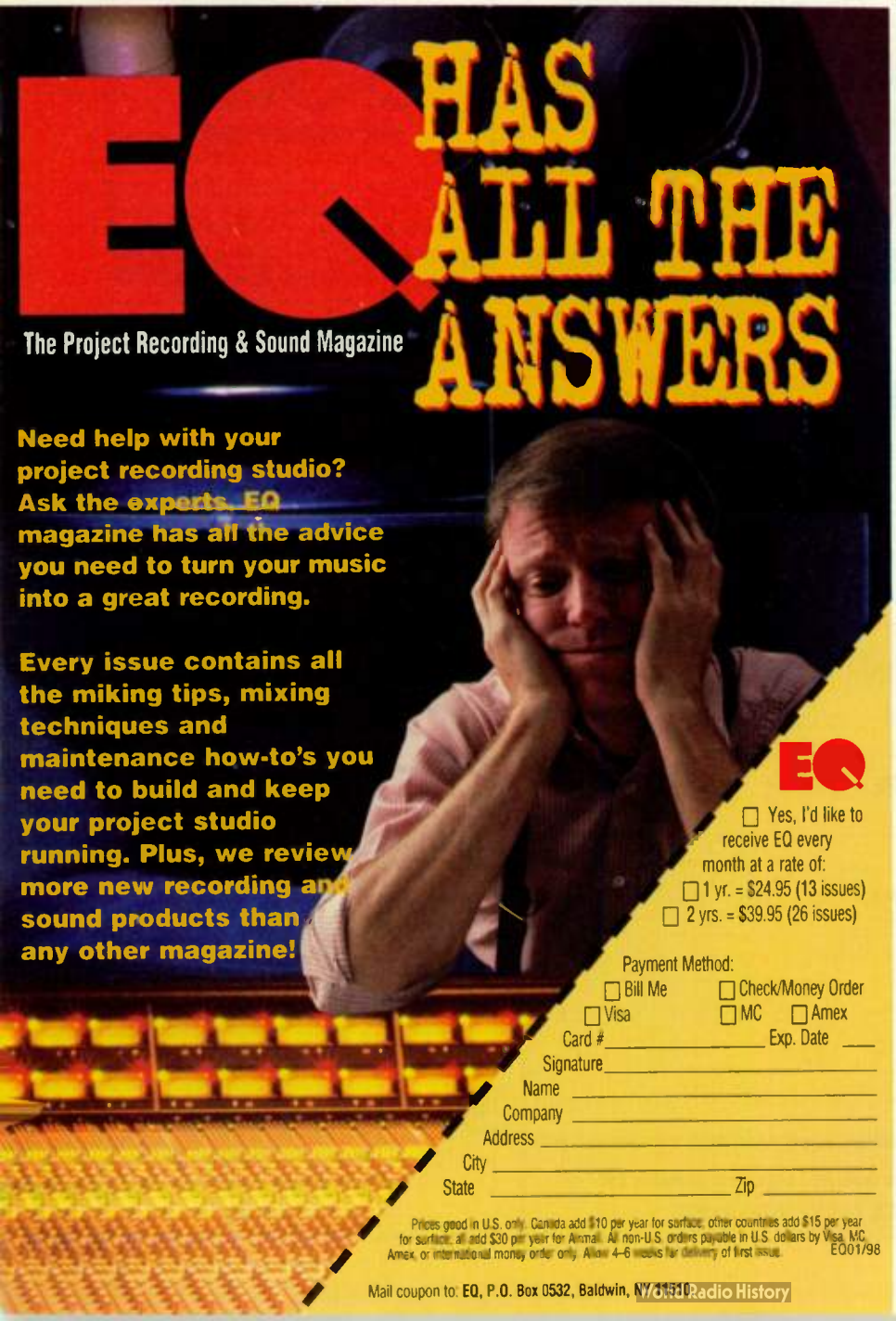
For the Marley project, we recorded directly onto the safety master because the original tracks spread across 16 and we had 24 tracks total. That was also good because we could take a drum and make it bigger by printing the effect right on the tape. In some cases that's really good for dub material.

How did you sonically avoid presenting these new overdubs from sounding like they were recorded many years later?

I wasn't conscious of it. I was just adding to the music at the time and hoping that the end result would be sort of coherent. At the point of mixing the tracks, I forgot what the track was — I wiped out the importance of it — and I just dealt with the sound. I wanted to have all that stuff as a background but didn't want to apply it, I just wanted to feel it. So I didn't want to think, "This is an important song, I've got to do this and that because it used to sound like this on the radio." I was more worried about capturing that moment that I had created listening to the track.

So you didn't use any musical reference points when you mixed?

None at all. I would even go so far as to try and forget the song — take out the vocal and print. I might print 16 bars of the first part, go back, print the same 16 bars again but with something else on it so it immediately becomes longer. From there I might drop the whole middle and go to the end or put the end at the front. So we were re-arranging sections as well. EQ



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Plug-In *Mania*

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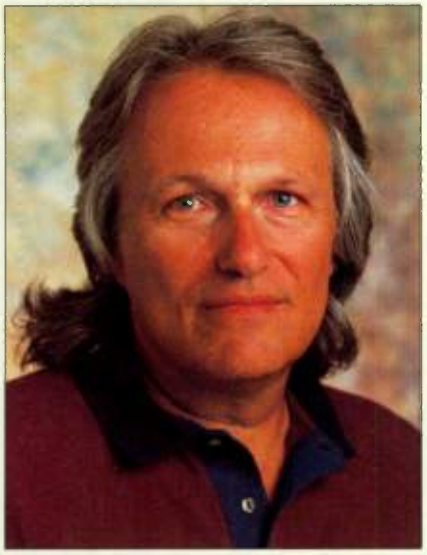

BY ROGER NICHOLS

Forget the year of the donkey, nevermind the year of the pig, 1998 will definitely be the year of the plug-in. No matter what you want to do, no matter what your budget, there are plug-ins that add functionality to whatever software you may have. But not all plug-ins are created equal.

THE ROUND UP

First of all, I imagine that most of you are interested in plug-ins for Digidesign's Pro Tools, right? Well, there are plenty of them to go around. There are plug-ins to enhance your stereo image, plug-ins to make better mono, plug-ins for compressing, plug-ins for limiting, gating, EQ, surround sound encoding, digital watermarking, noise reduction, de-clicking, de-lousing, normalizing, reverberating, delaying, synthesizing, bass expanding, tube guitar amp simulation, auto conform sound-to-picture, aural excite, audio EDL for video, auto tune, batch process, MIDI sequencing, Focusrite, lo-fi, time compress/expand, Doppler shift, looping, randomizing, spectrum matching, de-essing, liquefy, CD master, 3D soundfield, lip-sync'ing, file compression, bit reduction, breast enhancement, pitch change, spectralizing, tempo change, loudness maximizing, fidelity restoration, accordion removal, dithering, noise shaping, soundfile organization, analog tape simulation, foreign file import and export, harmonizing, and aesthetic judgment evaluation.

I also consider hardware that adds functionality to be considered in the plug-in department. The Apogee AD-8000, for example, or the Mackie HUI hardware interface for Pro Tools, or the 888/24-bit I/O upgrade from the 888 or 882. These are like hot-rod parts for your car. You buy the basic model, then slowly add plug-ins to transform it into the car that you really wanted. Bigger wheels with rubber band tires, a plug-in chip that enhances performance "for off-road use only," and things like that.

If I am not mistaken, it was Adobe and Photoshop that started the whole plug-in fad. Some of the same companies who make plug-ins for Pro Tools, also make plug-ins for Director, Deck II, and other digital-audio-based applications. If you are on a budget, some of these plug-ins are actually cheaper than their Pro Tools TDM counterpart, so you can import your audio to Deck II, tweak it, and then send it back. If you have more time than money, this may be a temporary solution.

Web browsers now have plug-ins. Some of them make icons crawl around on your screen, while some allow real-time playback of audio (and video) from Internet sites.

Digital consoles now have plug-ins. You can add some of your favorite EQ to the big Sony Oxford or the Neve Capricorn. You can add JL Cooper automation to the Yamaha 02R, or add external MIDI controllers to change parameters that you can't get to as easily as you want to.

Digital consoles now have plug-ins. You can add JL Cooper automation to the Yamaha 02R, or add external MIDI controllers to change parameters that you can't get to as easily as you want to.

Digital cameras have plug-ins. Sony has a new model that stores digital photos on floppy disks, while most of the newer ones let you plug in ATA memory cards. To take this a step further, the little ATA chip plugs in to a PCMCIA carrier so that you can then plug the memory directly into your laptop computer's PCM slot.

Not to bypass the GPS industry, Magellan and Garmin have GPS receivers that accept plug-in cartridges that add map detail to the area of most interest to you. There is a GPS plug-in that contains the GPS coordinates of all the greasy burger stops from Maine to San Diego, however, sales seem to be getting off to a slow start. My purchase of one unit doubled their sales volume for the forth quarter. Or if that is a little too high tech, plug-in technology has spilled over into the bath and beauty markets as well. There are room deodorizer plug-ins (maybe they will help a stinky mix!).

Whatever your desires, when it comes to enhancing your recordings, just remember to keep on plugin'.

P.S. No animals were used in the testing of this column, or harmed much during the testing of the various plug-ins. EQ

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