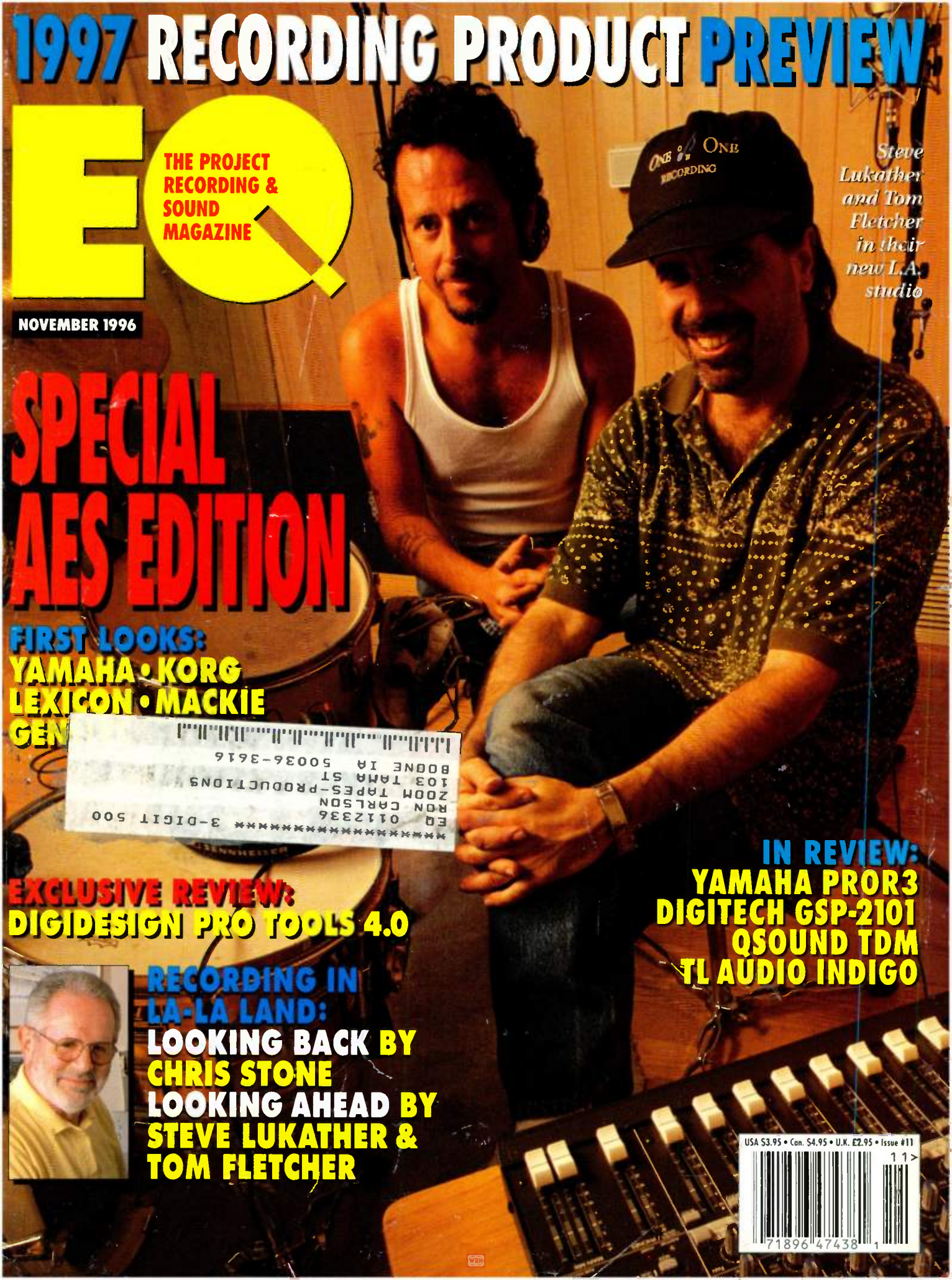
1997 RECORDING PRODUCT PREVIEW

EQ

THE PROJECT RECORDING & SOUND MAGAZINE

NOVEMBER 1996



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EXCLUSIVE REVIEW:
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IN REVIEW:
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DIGITECH GSP-2101
QSOUND TDM
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RECORDING IN LA-LA LAND:
LOOKING BACK BY CHRIS STONE
LOOKING AHEAD BY STEVE LUKATHER & TOM FLETCHER

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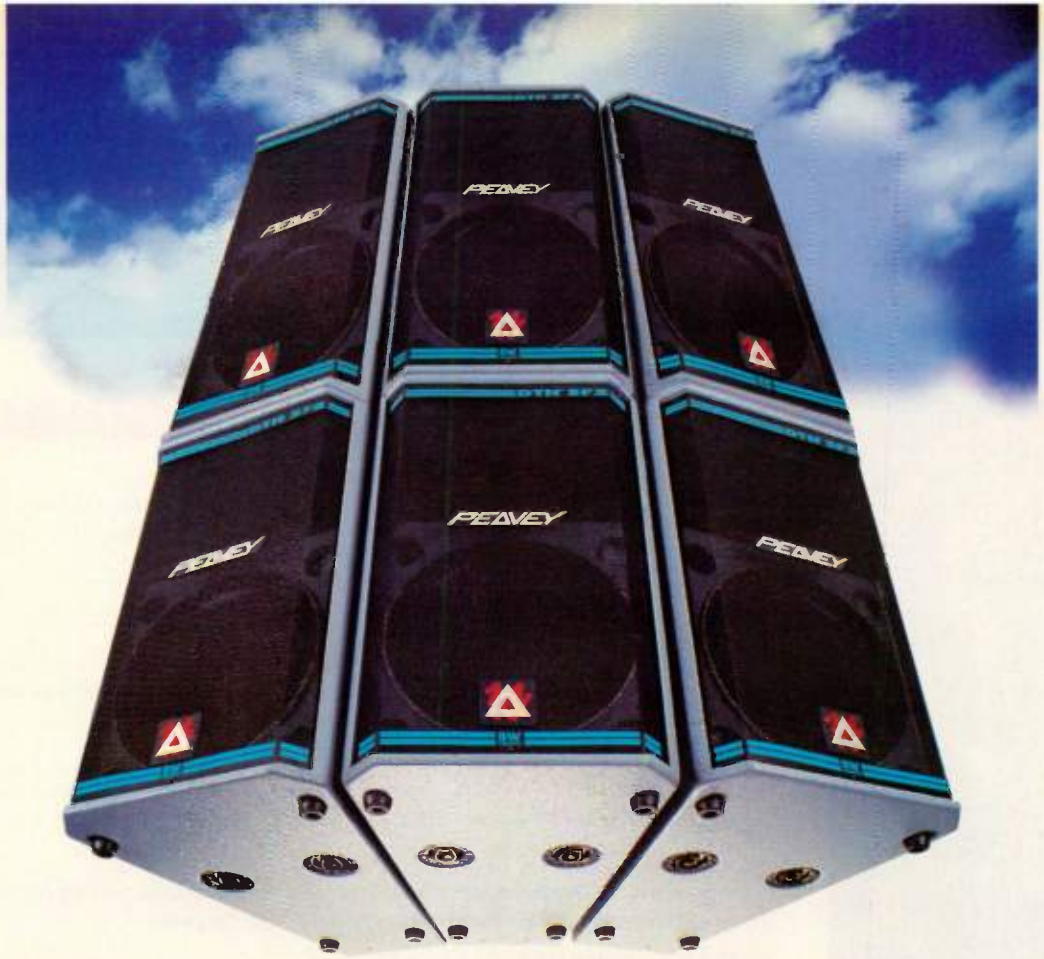

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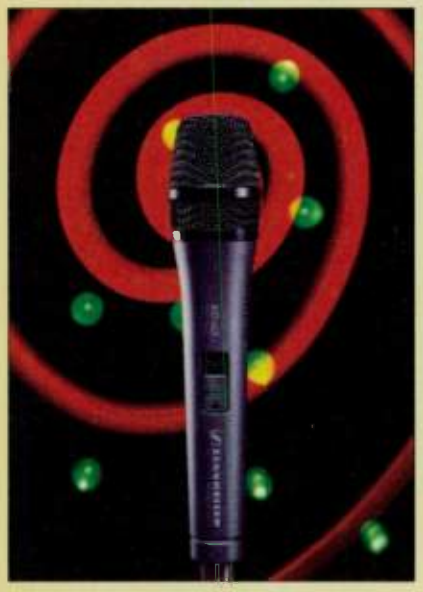

ON THE COVER: *Steve Lukather (standing) and Tom Fletcher. Photo by Peter Figen. Inset: Chris Stone by Ed Freeman*

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We Have Met the Enemy, and **It Ain't US**

More than five years ago, many of the usual suspects you see rounded up each month in *EQ*'s masthead were released into the august halls of an unsuspecting AES convention. Our goal? To show the industry that a huge segment of the recording and sound community was going undefined and, therefore, unnoticed. In effect, we were there to wave the flag of the project arena.

Hoping to be met with open arms (we're modern-day optimists; our hard disks are always half empty, not half full...), we were instead met with all the enthusiasm of Rush Limbaugh at a N.O.W. fundraiser. The convention air had that distinct aroma of disinterest and distrust.

The disinterest came from many of the attending manufacturers, which — to a great degree — were not aware of (or were confused by) the project audience. We explained that we hadn't made this audience up with smoke and mirrors, and that, as a point of reference, many of these folks were former Portastudio™ babies all grown up and looking to move on. This audience, we said, is out there making music, commercials, efx, and soundtracks — only they're doing it in nontraditional fashion and in homes, garages, and small business spaces. And they're looking for new gear that answers their needs. We also told the live sound manufacturers that if they'd look at their consumer profiles they would find that some 70–80 percent of their gear was being sold to local and regional users.

The distrust came from the commercial studio sector, which believed that by definition a project studio was a recording facility working outside the law. One that operated without paying taxes and without proper zoning approval. Ergo, if *EQ* supported project studios, we were consorting with the enemy. Nay, I say.

EQ magazine wanted to bring commercial and project rooms together. Why? Because each could benefit from the other. The project rooms had lots of new talent with fresh ideas ready to use commercial facilities for recording acoustic instruments, overdubbing, and mixing. The commercial studios had all that uptown gear and great real estate waiting for new talent. *EQ* has never supported commercial or project rooms doing business outside the law. Running such an illegal business cheapens the industry, creates unfair advantages and contributes to the destruction of the legitimate facilities. Besides, did I say it's illegal?

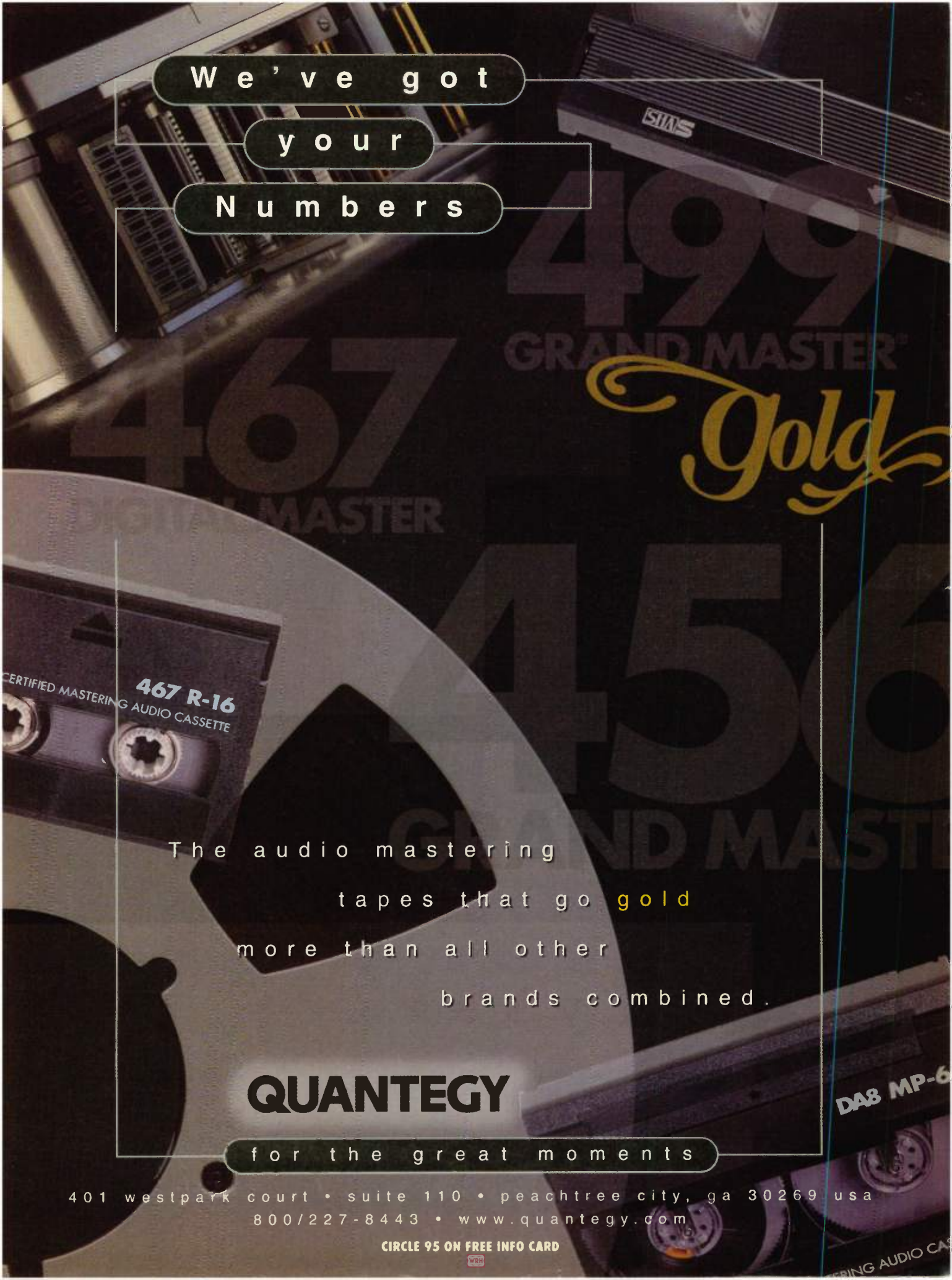
The project arena, in its purest form, is known for its entrepreneurial owners, be they players, producers, or engineers. They work on projects because of their talent — it's why they're called upon: to create. The commercial studio is known more for its physical plant and sophisticated equipment. By working together, each party can create business for themselves and the other.

That was then; this is now. I am pleased that *EQ* has at this juncture been so well accepted and integrated into the audio community. "Project" has become a market-defining word for manufacturers; even other publications have taken up the word (imitation being the sincerest form of flattery, we're happy). Furthermore, *EQ* is proud to be well accepted by the AES and other music/recording organizations. No other magazine, for example, was so well represented at last year's AES workshops and panels. And this year again, columnists Eddie Ciletti and Craig Anderton both chair and appear on panels. We expect a sustained and growing presence.

In upcoming months, *EQ* will continue to further define the project arena; an arena that is still growing at a rapid rate. Look for new columns, more pertinent reviews, more helpful tips, and more questions being answered. We will also endeavor to bring the sometimes seemingly disparate sectors of the music and sound world closer to each other. The more we communicate, the better music we'll make.

It's a brave new project world. Welcome to it.

Hector G. La Torre
Executive Director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A TRUE SCHOOL

Dr. Sanders's article on "Choosing An Audio School" (August '96, *EQ*) covers many of the most cogent points in the selection of an institution. In addition to everything that Dr. Sanders noted, your readers have to keep in mind that technical education is still a business. As such, prospective students have to put the school's profit motive into perspective.

Any institution, public or private, has a bottom line to worry about. Management has to find a balance between the investments they need to make (e.g., facilities, hardware, staff, etc.) and cash flow. Students have to ask questions and, if necessary, make compromises based on their needs and their own budgets. But you have to ask questions — and you have the right to ask questions — before making a decision. Prospective students should shop for a school the same way they would for a new piece of equipment for their studio or a new instrument.

They should never stop with the Admissions Office. Speak to a few current students. Sit in on one or more classes. Meet with members of their faculty. Ask for their placement records. Talk to a graduate. Call a company that hires their students and ask how well the school prepares graduates. A quality institution should have no concerns about providing this kind of information. Beware of a school that does.

Students choose to attend an audio school for a variety of reasons. The profit motive may be one of them. Audio schools share that reason for being. With the right research and diligence, the two are not mutually exclusive. I certainly wish them luck in finding a place that is right for them.

Keith Bloomfield
via Internet

REVEALING LOOK

Did Cyndi Lauper know you were going to run that particular photo of her on the cover of the October issue? The gapping blouse, while in no way salacious, does have a potential spinach-caught-between-the-teeth embarrassment factor to it.

Mark Tomlonson
Kalamazoo, MI

SAMPLER UPDATES

I enjoyed Craig Anderton's article "Understanding Sampler Features" in the October issue and found it to be a useful discussion of the most important points to consider when selecting a sampler. I would, however, like to clarify a couple of points regarding Kurzweil instruments.

REVEALING LOOK: Cyndi Lauper at her upstate NY project studio.

Photo by Julian Jaime

When discussing the blurred line between samplers and synthesizers, the article states that, "Peavey's DPM series started the trend by adding sample RAM and sample editing to a...synth," when in fact this is an area pioneered by Kurzweil, first with the K250, then later with the K2000. Although others are now offering this type of functionality, we certainly have a head start.

Regarding file compatibility, the article mentions the myriad formats supported by the Kurzweil K2500R; I would like to point out that the entire K2000/K2500 line supports these various formats.

An area not discussed, but one that we consider important, is software upgrades. Look for a sampler (or is it a synthesizer?) that offers periodic software upgrades. We are about to release new software for the K2000 series (version 3.5) and for the K2500 series (version 2.3). These upgrades include new features and bug fixes; for example, version 3.5 for the K2000 series increases the number of "drum channels" from 1 to 8 if the P/RAM option is installed. These software upgrades help to ensure that your investment retains its value over time.

John Teele
Young Chang R&D
Designers of Kurzweil Products

IN DEFENSE OF MAC

I just read the EQ&A column on page 12 of your August '96 issue entitled "EMAGIC Moment." I read James S. Puff's question about the ability to trigger sounds within his Mac via his controller with sampled soundfiles of a drum kit, and was appalled at Robert Hunt's [product support manager for EMAGIC] response.

He wrote, "We will be implementing this type of feature in LOGIC Audio for the PC. This is because the Windows OS offers a relatively easy way to trigger Wave files in real time. Unfortunately, this is not really feasible within the Mac OS."

Now I can tell simply from the way James Puff talked about his computer and how he used it that he was a relatively new Mac user. But from the response, it sounds to me like you only roughly know the Macintosh's architechture. Two comments on the response:

1. Under the proper instructions and format, the Mac OS can trigger 22.0 kHz .snd resource samples, in real time, off the hard disk or directly from RAM, faster and more accurately and seamlessly to real time than a Windows-based machine playing WAV files. Even a Mac as old as the Performa 410 can do this.

2. I am a PC and Mac user. I am a proud owner of a Quadra 840AV, one of the first ever desktop computers to offer 16-bit stereo, 48.0 kHz input and output. I know this computer inside and out, and I know its programming capabilities better than even Apple (I think),

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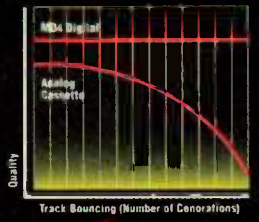

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and I know that as I type this, I have 34 different drum sounds playing with each keystroke, each assigned to a different key, playing up to five samples at once, without the computer being busy. So I happen to know for a fact that it is possible to do what he is asking with a little MIDI wizardry. I guess EMAGIC fails to recognize the contributions Mac has made to the computer industry. The bottom line is that anything your enhanced PC with cards in tow can do, I can find you two Macs or Mac-compatibles that can do it better.

If James Puff was a new user, I hope you didn't scare him into selling his Mac and buying a PC. I cringe at that thought.

Greg Dress
Mt. Holly, NJ

PATCH WORK

After reading the EQ&A entitled "Patch Things Up" in the October issue, I couldn't help but send a note about patchbays and their labeling. Although this isn't exactly what the question was about, the labeling aspect will come into play sooner than later...and most of the time it turns out to be a royal pain in the rear until some proper programming for layout is done.

As far as I know, there aren't any real programs out there with prefabricated templates for patchbay labeling. The problem with labels is the enormous variety of bays and the spacing they allow for labeling. The next complexity multiplier is the fact that each installation is unique and requires a whole new way of thinking that follows the visions of the end user. I've been using various layout/design programs to do custom layouts, which 99 percent of labeling jobs wind up being anyway.

For those who just can't see themselves getting into this paper-wasting aspect of final touchup, I'm available for consulting on this matter and can make your multicolored "labeling hell" a nicer one.

T. Tissari
Tissi@lnx.net

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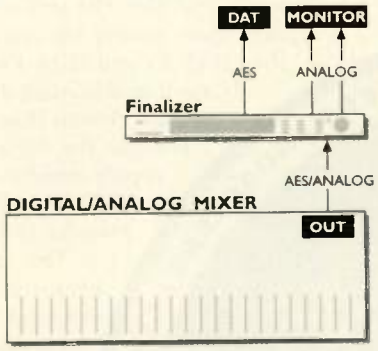

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EQ&A

RADAR FORECASTING

Q Does the Otari RADAR system come with the hard drives? If so, how much recording time is offered? Also, is it true the [standard 24-track] RADAR system can also be purchased as an 8- or 16-track system? Finally, do you need a separate computer to operate RADAR's graphics software?

Floyd Medina
Paterson, NJ

A First, yes, RADAR comes with the hard drives and therefore is ready to record right out of the box. There are three different configurations that provide 23, 45, and 90 minutes (1, 2, and 4 GB, respectively; 48 kHz sampling rate) of recording time. Since RADAR is a nonlinear recording device, copies of songs (projects) can be made without using up additional hard-disk space. This feature is very useful when trying out different arrangements of a song or for "comping" vocals. Just imagine being able to try your ideas up to 99 different ways without taking up additional drive space.

Next, RADAR can indeed be purchased as an 8- or 16-track machine to start and can be upgraded by your local dealer. There is no cost penalty for starting out with a smaller configuration.

Finally, a separate computer is not necessary as RADAR has its own built-in computer that handles everything. Just plug-in a standard SVGA monitor into the VGA connector on the back of the RADAR and you're ready to go. The screen shows an informative display of all session parameters, including metering, track and locate names, SMPTE (bars and beats) display, and much more. RADARVIEW does not cost anything extra as the software comes included with your RADAR purchase. And you won't need a mouse or scrolling menus to figure it out either — RADAR's RE-8 remote controller handles all controls with an intuitive control surface with a button for just about everything imaginable!

Chris Schilling
Sales Manager,
Disk Recorder Products
Otari Corporation

SEPARATED AT BIRTH?

Q I am looking for information on the difference between an Alesis ADAT-XT and the Panasonic MDA-1. Is there any difference in the way they sound? I find my subscription to your magazine invaluable.

Mike Schroeder
via Internet

A The Alesis ADAT-XT and Panasonic's MDA-1 are both ADAT-format, 8-track digital audio recorders, based on S-VHS technology. The two recorders are identical in every way except for their +4 dBu balanced audio connections. On the Alesis ADAT-XT, this interface is accomplished via its servo-balanced 56-pin ELCO (also known as EDAC) connector that provides eight inputs and outputs on a single jack. The Panasonic MDA-1 utilizes eight inputs and eight outputs on XLR connectors to accomplish the same purpose. Other than this small difference, every feature and function on the ADAT-XT and the MDA-1 are exactly the same, including their unbalanced –10 dBV phono plug connectors and their proprietary ADAT Optical Digital and ADAT Sync interfaces.

You'll find that the sonic quality of both recorders is excellent, since they both employ high-quality, 18-bit, 128x oversampling A/D converters and 20-bit, 8x oversampling D/A converters. To ensure that you'll be able to enjoy that great sonic quality for years to come, the ADAT-XT and MDA-1 offer a sturdy, custom-designed, die-cast aluminum chassis that physically isolates the internal power supply from the tape head mechanism. This chassis lessens torque stress on the transport, keeping it better aligned, lessening mechanical vibration, and protecting the components for superior long-term performance.

Of course, the best way to determine whether the ADAT-XT or the MDA-1 is more appropriate for your specific application is to go to a professional audio dealer and try them out for yourself.

Jeff Klopmeyer
Advertising/Promotion
Manager
Alesis

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CIRCLE 41 ON FREE INFO CARD

PRO CREATING

Q I currently have an Intel-based workstation using SAW+, CARDD, and Cakewalk, and want to collaborate with an associate who is using a Mac/Pro Tools III setup. It would seem that the sensible way to gain total compatibility is for me to acquire a Mac/Pro Tools system. Is Pro Tools III totally compatible with Pro Tools 4.0?

Gordon J. Gray
via Internet

A To clarify, Pro Tools III is the designation for the complete *system*. For example, when you purchase a Pro Tools III Core System (both NuBus or PCI versions are available), it consists of a Disk I/O card, DSP Farm Card, and the current version of Pro Tools software. Optionally, additional Disk I/O and DSP Farms can be added to expand the system. In addition, an 888 or 882 I/O interface unit is also required.

Currently, a Pro Tools III Core System, if purchased today, would contain either Pro Tools software version 3.2 (NuBus) or 3.21 (PCI). The next major software release will be Pro Tools v4.0 scheduled for release in November. [See Roger Nichols's exclusive review of 4.0 in this issue.]

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Bill Woods
Digidesign

A LITTLE LOOPY

Q I am currently using a Roland SDE-330 for vocal effects. I have been trying to find a product that would allow me to take a sample from my 330 and loop it, then be able to bend the pitch and adjust the tempo. I'm looking for something I can work with on the fly while onstage. While singing, I would to hit a record button and then loop it instantly and play with it a bit. Is there a digital device that can do such a thing?

FunkJunki
via Internet

A With some simple programming, your SDE-330 can be used to achieve the desired effect. Start by setting your SDE-330 to the Pitch Shift Delay program. Then maximize both the effects level and the feedback level. This will cause your audio signal to be repeated endlessly — like a looped sample. Stop sending input after you've captured the "sample" you want. Once this material is looping, you can change its pitch by editing the program in real time, varying the pitch chromatically, as well as fine tuning it.

The BOSS SE-70 Super Effects Processor can perform this operation even more effectively. It features a preset algorithm called "Sampler 1," which lets users record a "loop" and change its pitch by +12 or –12 or fine tune it by –50 to +50.

Jim Norman
Sampler Product Manager
Roland Corporation U.S.

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Port Washington, NY 11050
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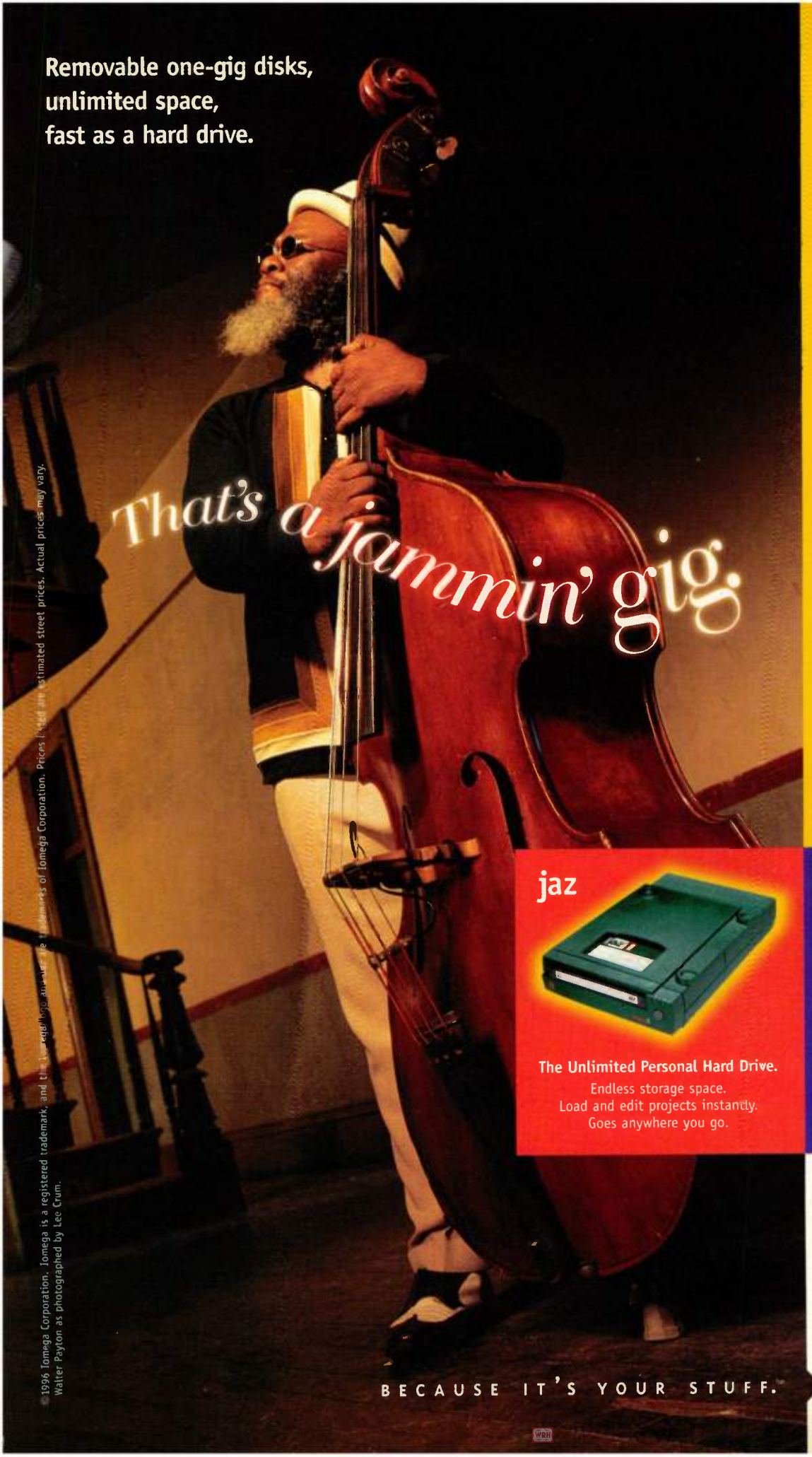

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CIRCLE 42 ON FREE INFO CARD

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Walter Payton as photographed by Lee Crum.

7 REASONS TO BUY OUR TO MIX MORE CREATIVELY,

1 **VLZ CIRCUITRY FOR ULTRA-LOW NOISE AND CROSSTALK.** *A fancy new name for the same old circuitry? Nope. VLZ (Very Low Impedance) is a Mackie innovation based on solid scientific principles. Through the careful deployment of high operating current and low resistor values at critical points in our consoles, thermal noise & crosstalk are dramatically reduced. Open up all the channels, subs and masters on an 8•Bus console and compare what you hear (or rather don't hear) with any Brand X console. And because VLZ circuitry needs loads of high current, we ship a humongous, 220-Watt power supply with every 8•Bus & 24•E expander.*

2 **IT EXPANDS ALONG WITH YOUR NEEDS AND BUDGET.** *You'd be surprised just how many 8•Bus console setups like the one below are currently in use. But you don't have to start out this way. Start out with a 24•8 or 32•8 and then grow your 8•Bus console 24 channels at a time with our 24•E add-on modules. 1, 2 or even 3 of 'em connect in minutes. They come with their own 220-watt power supply; optional meter bridges are available.*

3 **IMPECCABLE MIC PREAMPS.** *A console can have motorized dooflammers and an optional MIDI espresso attachment, but if the mic preamps aren't good, you don't have a fully-useful production board. Our discrete preamps with large-emitter-geometry transistors have won a critical acclaim for their exceptional headroom, low noise (–129.5dBm E.I.N.) & freedom from coloration. VLZ circuitry in the preamp section also reduces crosstalk.*

4 **THIS CONSOLE JUST PLAIN SOUNDS GOOD.** *Sure, you may be able to buy a Brand X console for less. But you end up with a console that sounds like...well...a Brand X console. Granted, we're getting into a pretty subjective area here...but we have tall mounds of 8•Bus warranty cards that rave about our consoles' "clarity," "sonic purity," "sweet sound," "transparency," "lack of coloration" and a lot of other superlatives we wish we'd thought of first.*

Above: 24•E 24-ch. expander with optional MB•E meter bridge and stand.

Above: 32•8 with optional MB•32 meter bridge and stand.

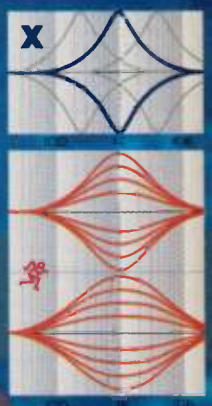
7 **MAC® & WINDOWS® 95-BASED AUTOMATION THAT'S RELIABLE, PROVEN AND AFFORDABLE.** *Along with affordable digital multi-track recorders, the Mackie 8•Bus has made it possible to do world-class productions on a modest budget. But until now, Big Studios have still had one remaining and unattainable creative "secret weapon"... computerized level automation. That's why we developed the UltraMix™ Universal Automation System. It gives you fully editable and recallable control of input, channel and master levels – plus features not found on even the most expensive proprietary Mega-Console automation systems. Equally important, it doesn't degrade sound quality, introduce zipper noise or cause audible "stepping." UltraMix is currently being used to mix network television music themes and on several major album projects – by seasoned engineers who grew up on Big Automation Systems. Their verdict is that UltraMix is a serious automation solution – stable, reliable and frankly easier to use than more expensive systems. The basic system controls 34 channels and can be expanded to as many as 128 channels. UltraMix Pro™ software, for 030/040 & Power PC Macintoshes and PCs (Windows® 95 required), includes a wealth of features like editable fader curves, built-in level display, up to eight subgroups, SMPTE time code display, event editor with pop-up faders, optional control of outboard effects devices, and the ability to play Standard MIDI files from within the program.*

UltraMix™ includes the Ultra-34 Interface, UltraPilot Controller and software for $2797 suggested U.S.. retail. Macintosh® or Windows® 95-compatible PC not included.

8-BUS CONSOLE... AND 2 TIPS ON HOW EFFICIENTLY AND, WELL, MORE FUNLY.*

5 PROFESSIONALS REALLY USE THEM. *The members of Boyz II Men could have afforded any console they wanted for their studio's second room. They chose an 80-input 8•Bus setup with 102 channels of UltraMix™ automation. In the studios of artists as diverse as k.d. lang[1], Yes, Queensryche, Aerosmith, Lee Roy Parnell, Bryan Adams, Carlos Santana, Whitney Houston, Eric Clapton & U2, our consoles really are used to make great music.*

6 WIDE MID RANGE EQ. *Whether you're tracking or mixing, equalization is one of your most important creative tools. Mackie's 8•Bus consoles feature extremely-wide-bandwidth peaking EQ that can be used to achieve effects that simply aren't possible with narrower EQ. Most Brand X midrange EQs have a fixed bandwidth of about 2 octaves (blue graph at right). You can sweep it up & down the frequency spectrum, but the "sharpness" of the EQ curve is always the same. This kind of EQ is good for some purposes... but if you've worked with it before, you know it's too drastic and localized for gentle changes in overall tonal coloration.*



The 8•Bus' true parametric Hi Mid lets you spread the bandwidth out to as much as 3 octaves (red curves above). That extra octave of "width" gives you a whole new creative palette.

Above: 24•E 24-ch. expander with optional MB•E meter bridge and stand.

Above: The SideCar, matching 8•Bus equipment rack.

8 WHAT ULTRAMIX AUTOMATION CAN DO FOR YOU:

- *Hone a complicated mix one track at a time with every fader move recorded*
- *Clone your best fader moves and use them in other places in the mix*
- *Automute unused sections of your tape tracks or noisy MIDI sound modules*
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- *Save mixes for recall and editing at any time (great for mixes with music beds or "donuts")*
- *Make six voice-over versions of a jingle mix – and then easily make the inevitable nitpicky client changes three days later*
- *Step up to big-league automation without breaking the bank!*

9 LEGENDARY RELIABILITY. *One of those factors you probably don't think much about – until your console goes down in the middle of a critical late-night session. Built with pride in Woodinville, WA USA, Mackie 8•Bus consoles have an enviable three-year track record for enduring continuous, round-the-clock use and abuse.*

* Poetic license applied for.

[1] Mention in this ad denotes usage only, as reported to Mackie Designs, and is in no way intended to constitute official endorsement by the artists or groups listed.

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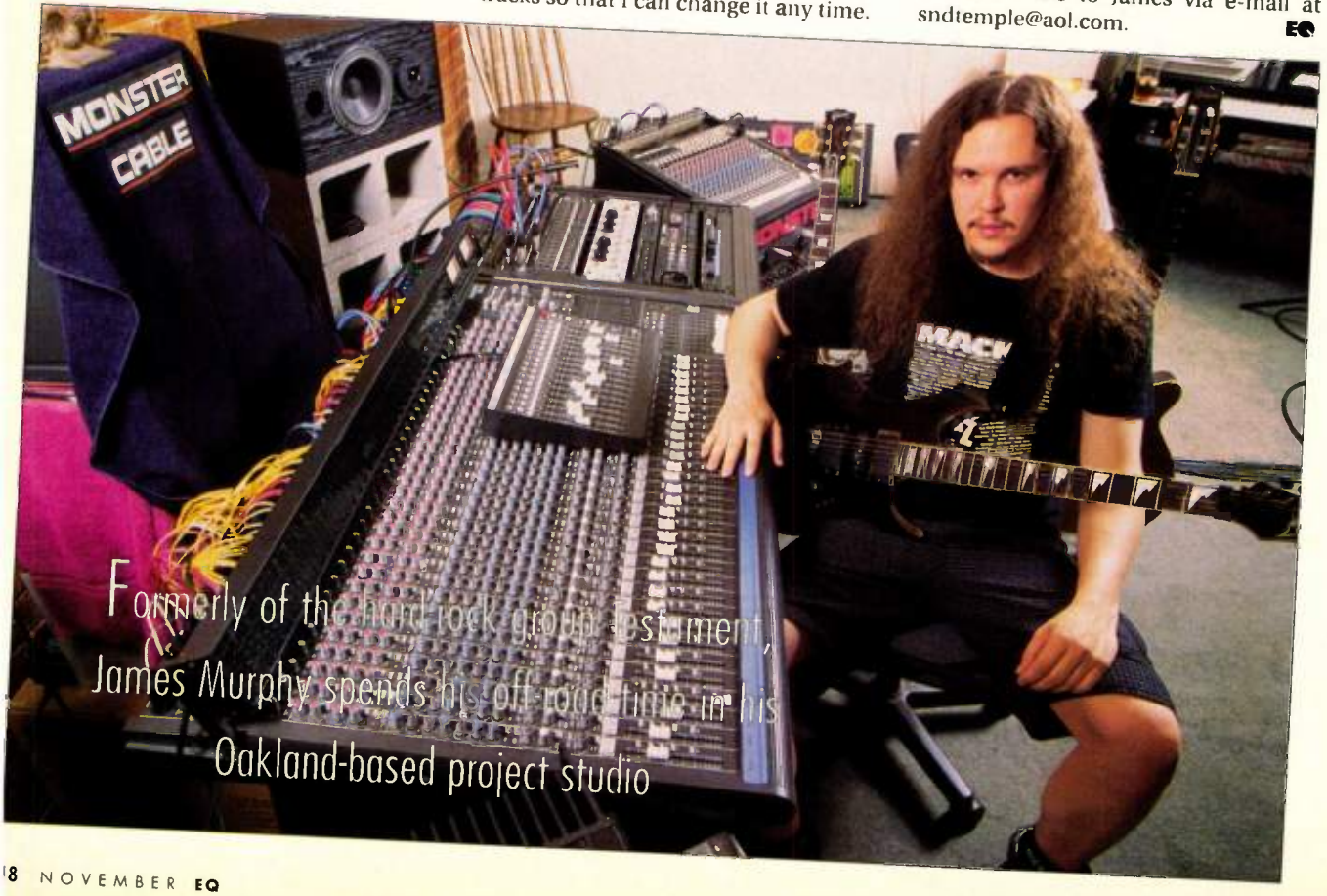
CIRCLE 68 ON FREE INFO CARD

Sound Temple Highlights

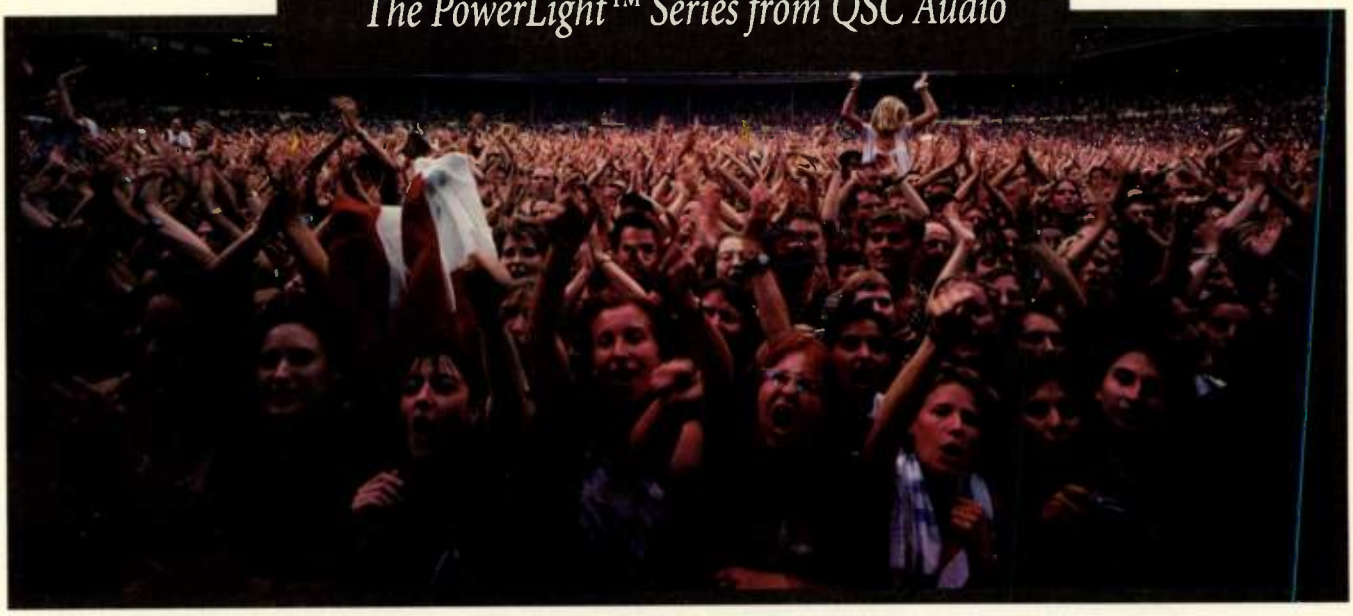
STUDIO NAME: Sound Temple Studio
LOCATION: Oakland, CA
MAIN MAN: James Murphy (owner)
PROJECTS & CREDITS: James has recorded his solo LP *Convergence* for Shrapnel Records; various tracks on the Magna Carta label's Rush tribute CD *Working Man*; and one track on the Century Media label's Judas Priest tribute CD.
CONSOLE: Mackie 32•8 console and 1604 (16-channel mixer)
MONITORS: Meyer Sound HD-1; Yorkville YSM-1 nearfield monitors
AMPLIFIERS: Hafler trans•nova® P3000; Onkyo TX-SV414PRO
RECORDERS: Alesis ADAT [3] with BRC controller; Onkyo TA-RW505 cassette deck.
DAT MACHINE: TASCAM DA-30; Sony 670
OUTBOARD GEAR: Lexicon PCM-80; Ensoniq DP/4+ and DP4; Presonus DCP-8; Peavey VMP-2; RSP Technologies Tube Saturator; Aphex Aural Exciters w/Big Bottom [2]; Alesis 3630, Quadraverb GT multieffects processor, and Microverb III reverb/delay; BBE Sonic Maximizer; dbx 266 and 160; Behringer SNR-202 denoiser
MICROPHONES: AKG C414 and D112; CAD Equitek E-100; AKG C1000S [2]; Sennheiser 421; Shure SM-57 [3] and Beta 58
COMPUTERS & SOFTWARE: Macintosh Quadra 650; Mackie Ultramix Pro Automation package; Opcode Studio 4 MIDI interface and Studio Vision
MIDI GEAR: Kurzweil K2000S keyboard/sampler w/16-track on-board sequencer; Alesis SR-16 drum machine
STUDIO NOTES: Murphy states: For rock rhythm guitars, I like to record two mics (usually a Beta 58 and a 421) direct to two tape tracks through my Peavey tube pre, bypassing the console. This way I can capture different characteristics and change the blend of sounds from the two mics at any time. I often double track rhythm guitars with this method, and that obviously starts to eat tape tracks pretty quickly (four tracks for two performances), so I'll find a blend of mic levels I like and create a submix to one track for each performance, but I set aside a safety of the original individual mic tracks so that I can change it any time.

When I don't have time for the player to double track the guitars, I'll sometimes create a digital clone of the original performance using the BRC and ADAT's digital I/O features. Then I'll EQ the clone somewhat differently and use the BRC's track delay feature to introduce an 11 to 18 millisecond or so delay between the original and clone, and then pan them apart.
EQUIPMENT NOTES: Murphy continues: There are two features in my studio that since I've installed I can't live without: the first is the Mackie Ultramix automation package, which has changed my life. It works very smoothly and I can't detect any coloration to the sound. I can now make much more complex and clean mixes. The second feature is that the studio is now wired from the ground up with top of the line balanced Monster cable. This actually made a *big* difference in sound quality. Since these two elements fell into place, the quality of my work here has increased dramatically.
CONTACT: Write to James via e-mail at sndtemple@aol.com. **EQ**



Formerly of the hard rock group Testament, James Murphy spends his off-road time in his Oakland-based project studio

The PowerLight™ Series from QSC Audio



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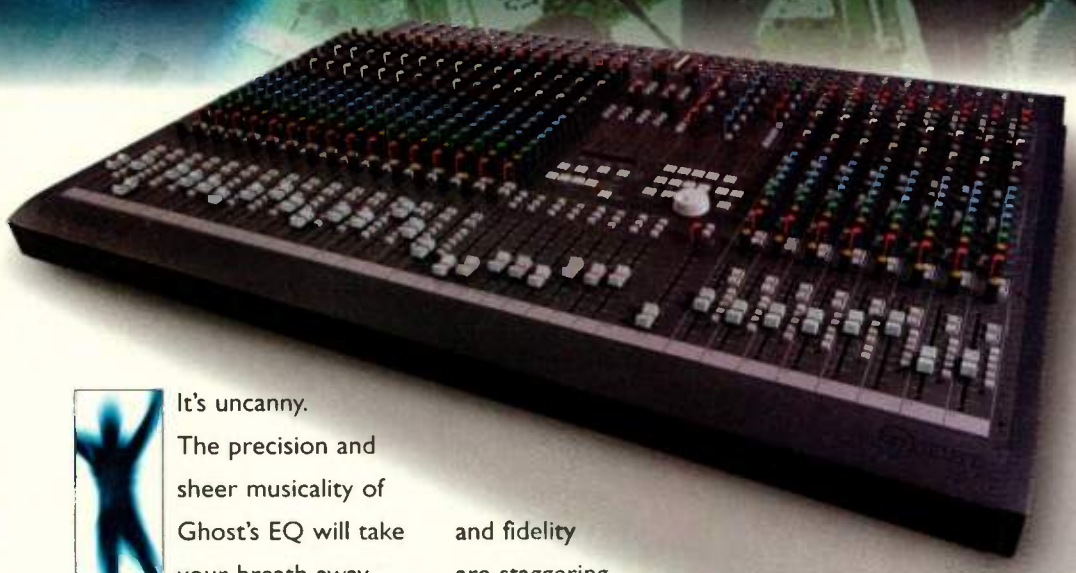
CIRCLE 94 ON FREE INFO CARD

The **Dahl** *House*

A Microtech Geffel tube mic and Mackie board help this Utah-based musician get the job done

STUDIO NAME: ATTACK HEAD 1/4
LOCATION: Salt Lake City, UT
KEY PEOPLE: Patrick Dahl (owner and musical agitator); Eli Morrison (fellow composer)
PROJECTS RECORDED/CREDITS: Polestar Demos (band of Dahl and Morrisson). Mostly other solo experimental home projects recorded by Dahl and Morisson.
CONSOLE: Mackie 24•8
RECORDERS: Alesis ADAT XT [3]; Panasonic SV-3700
MICROPHONES: Microtech Geffel UM92; Sony ECM 999PR; Audix D1, D2, and D3; Sennheiser MD409; Audio-Technica AT4050/CM5 and AT4031; Shure SM91
MONITORS: JBL 4410A powered by Hafler P3000 trans•nova® amplifier
SYNTHS/SEQUENCERS: Ensoniq ASR-10; Mr. Rack; Nordlead virtual analog synth; Sequential Circuits Prophet 5; Oberheim OBMX, OB, and Matrix 1000; Alesis DM5
COMPUTER AND SOFTWARE: Apple Macintosh 7500 Power Mac and 5300cs PowerBook; E-MAGIC Logic Audio; Mackie UltraMix automation and Sound Diver Librarian/Editor
OUTBOARD GEAR: Behringer Edison, Ultrabass, and Composers [2]; Roland SDE 330 Dimensional Space Delay, SRV 330 Dimensional Space Reverb, and SDX 330 Dimensional Expander; dbx 1531X Stereo/Mono Graphic Equalizer; Ensoniq DP4 [2]; TL Audio 8:2 valve mixer and mic preamp/DI box [2]; Peavey VMP 2 and MIDI Express; MOTU MIDI Timepiece 2; JLCooper datasync2
EQUIPMENT NOTES: Patrick Dahl states: Most recently we have been exposed to many breakthroughs in project studio sound recording technology — including tube mics, and the UM 92 is a great example of that. We're really happy with the sound quality from this mic and it is definitely more affordable than some of the other tube mics out there. I pretty much use it for everything except live drums, although if I had a matched pair of them (which some day I might), I would use them for overheads or room mics. I also love using it on guitars, bass, and vocals, usually in the omni setting. On the bass guitar I take a direct out and will also mic a 10-inch speaker with the UM92 for the high-end sound of the bass guitar. I run all of my mics through my TL Audio preamp. When used with the UM92, this brings the fatness and warmth to life.
STUDIO NOTES: Dahl continues: I hope to relocate to a bigger studio within a year, but acoustically the room serves well for mixdown. Three other rooms serve for all types of recording situations, but I would like higher ceilings or just larger rooms to achieve more room ambiance for drumkits. My Mac 5300cs and keyboards are sync'd through Logic by means of the MIDI Timepiece 2 and the MIDI Express, giving me full control in the studio from my Mac 7500 and ASR-10. All the keyboards run through a Mackie 3204, so I can throw them into the mixdown virtually onto two tracks EQ

Paranormal EQ



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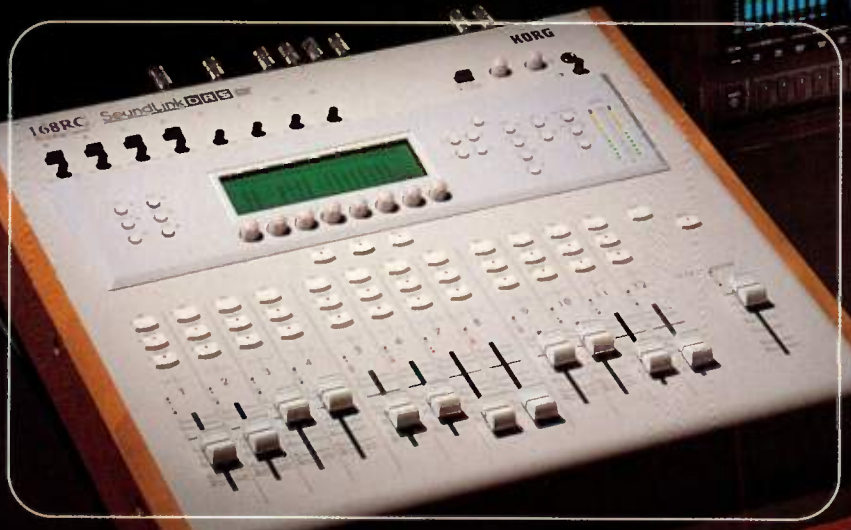

The 168RC is the first truly affordable, fully digital, 8 bus recording console. Use it with your ADAT or other digital recorder equipped with the ADAT optical interface to create the best sounding recordings you've ever made.

168RC Digital Recording Console

The heart of a new, component-based Digital Recording System from Soundlink

SoundLink DRS brings the reality of all digital, fully automated, component based recording to everyone working on the next great recording. For more information about the 168RC Recording Console or any of the SoundLink DRS components, just call ***(516) 333-8737.***

The 168RC is the first digital console to feature two ADAT optical interfaces (yielding 16 channels of digital input) and eight analog inputs as standard equipment. It makes the creative control and sound quality of an all digital, fully automated recording system an affordable reality.

Powered by Korg's proprietary MSP processor, our SoundLink DRS 168RC offers instantaneous control, processing and routing of all 24 inputs, 16 channels of mixing and 8 bus outputs.

With its combination of analog, ADAT optical and S/PDIF I/Os, the 168RC easily functions as the heart of a fully digital recording system while interfacing with any of your existing analog gear.

The 168RC is equipped with three-band EQs featuring semi-parametric high and low bands, fully parametric mid bands and 30 memories for EQ setups.

The 168RC also boasts two internal effects processors that run some of the finest algorithms available. Choose from 32 effects types and 50 preset programs.

The 168RC even provides automation functionality that lets you save and recall console settings or record and playback dynamic parameter changes.

Affordable, fully integrated digital recording is finally here. So check out SoundLink DRS and the 168RC today. You can't beat this system.

SoundLink DRS
Digital Recording Systems

Affordable, fully integrated digital recording
Down to a System.

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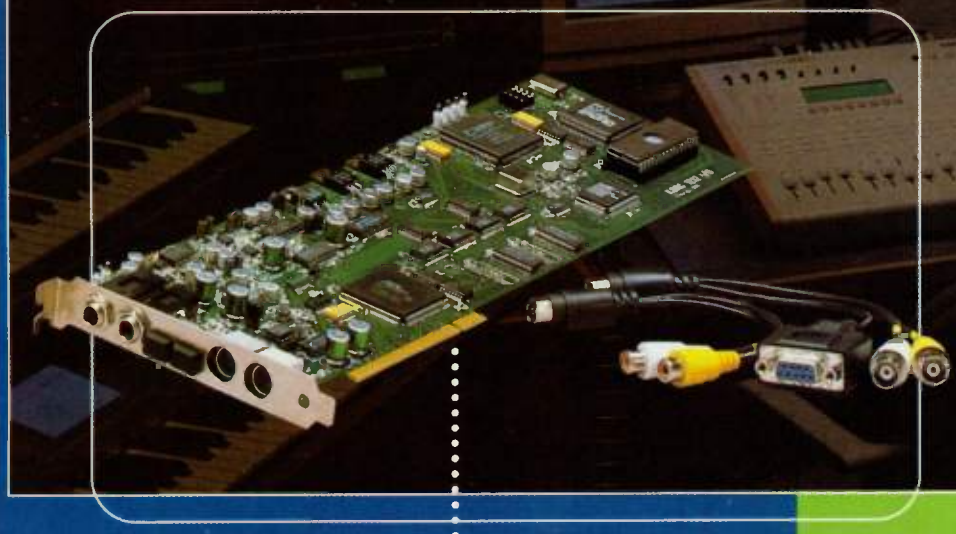
SoundLink DRS 1212 I/O
Multi-Channel Audio Interface



The SoundLink DRS 1212 I/O, along with Deck II software, brings the price of full-function, multi-channel computer based recording to a point that just about anyone can afford. And since the 1212 I/O conforms to the new PCI format, your investment will last longer than just a few months!

With the power of advanced

personal computers, full-function multi-channel recording and editing is possible without the addition of costly, specialized hardware. The only true limitation has been in the area of multi-channel I/O. With the introduction of the SoundLink DRS 1212 I/O Multi-Channel Audio Interface, that limitation no longer exists.

The 1212 I/O features 12 inputs and 12 outputs configured as two analog I/Os, an S/PDIF I/O and an eight channel ADAT optical I/O. All the I/Os can be used simultaneously. For even more control and flexibility, the 1212 I/O connects to Korg's 168RC Recording Console, or to the Korg 880A/D and 880D/A interfaces.

The new 1212 I/O even offers a Word Clock input and output, plus an ADAT time code input, for system synchronization. Between the 1212 I/O with Deck II software, the 168RC Recording Console, an ADAT and a Trinity Music Workstation DRS, the combinations and configurations can meet the needs of just about any music production application.

168RC Recording Console, the heart of the SoundLink Digital Recording System.

For more information about SoundLink DRS components, call (516) 333-8737.

All of the devices will interface with your existing analog equipment and form the basis for a completely digital system that will give you sound and creative control that simply isn't possible in the analog world.

Affordable, fully integrated digital recording
Down to a System.

SoundLink DRS
Digital Recording Systems

CIRCLE 185 ON FREE INFO CARD

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KORG

Schoeps CM 65

Take a look at this real "smoothie" from the past

MICROPHONE NAME: Schoeps CM 65
PRICE WHEN NEW: Around $480 (1964), including N-60-B power supply, SG-5 holder and KC 10 cable
TYPE OF MIC: Vacuum tube condenser
FROM THE COLLECTION OF: Ray Kennedy
TUBE: EF94 or 6AU6A
POLAR PATTERN: Omni or cardioid
DATE OF MANUFACTURE: 1962 to 1969 (approximate)
FREQUENCY RESPONSE: 30 Hz to 19,000 Hz
OUTPUT LEVEL: –40 dBm to –48 dBm (depending on model)
OUTPUT IMPEDANCE: Properly built to match 150/250 ohm or 30/50 ohms inputs
NOISE LEVEL: 14 dB to 19 dB above .0002 ubar (depending on model)
DISTORTION: Less than 0.3% up to 115 dB
POWER REQUIREMENTS: Outboard power supply
MIC NOTES: The specs listed for output level and noise level apply to the CM 60 line of mics. Schoeps's CM 65 was part of a trio of mics that also included the CM 64 (cardioid) and CM 66 (omni, cardioid and figure eight). Unlike many of its contemporaries from other manufacturers, the CM 65 was designed for flat, uncolored response and had a single diaphragm made of pure nickel. Instead of switching pickup patterns via power supply, the pattern on the CM 65 is switched by rotating the ring at the top of the microphone. This action actually modifies the acoustic chamber of the capsule without modifying the electrical characteristics of the condenser, and gives the CM 65 a smooth high-frequency response and higher front-to-back discrimination in the cardioid pattern than is possible with any double-diaphragm system. Some CM 65's have a built-in 15 dB pad; this is characteristic of the mics destined for import to the US, while the CM 65 without pad was supplied to the European market. Attenuation is constant regardless of pickup pattern. At the cardioid setting, the CM 65's response will be most uncolored when the mic is moved away from potentially reflective surfaces, giving an opportunity for the cardioid pattern to develop. *Technical data courtesy of Albert Grundy.*

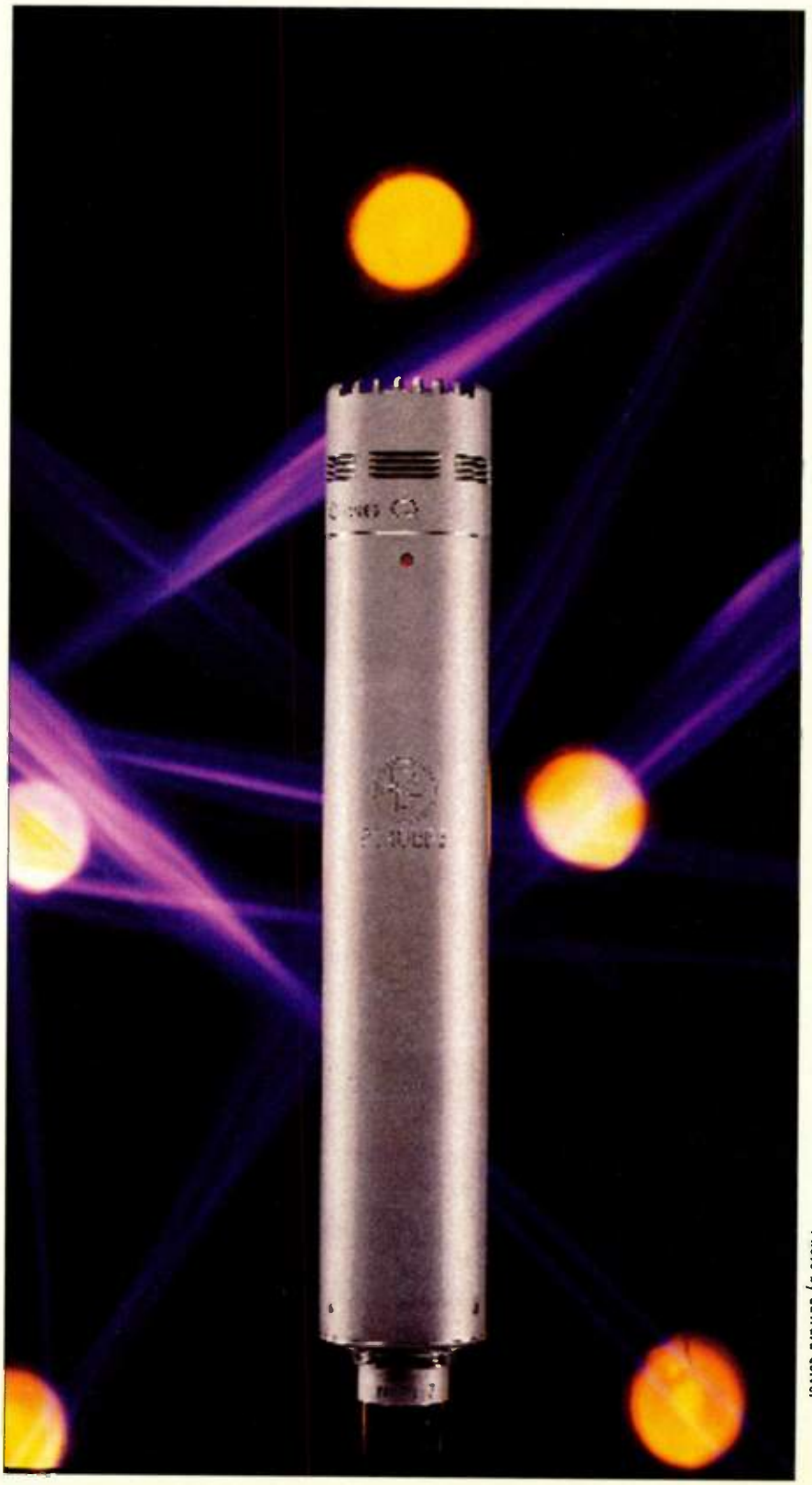

Photo by Edward Colver

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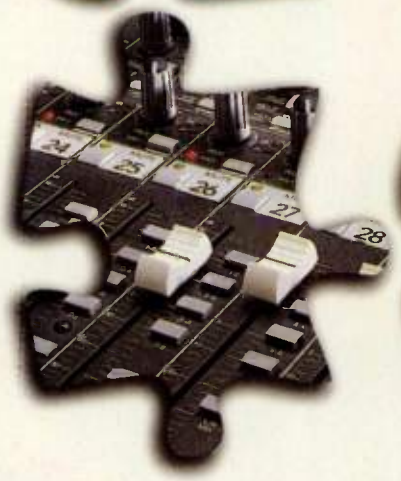

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Sennheiser MD 425

Sennheiser debuts its newest "Classic"

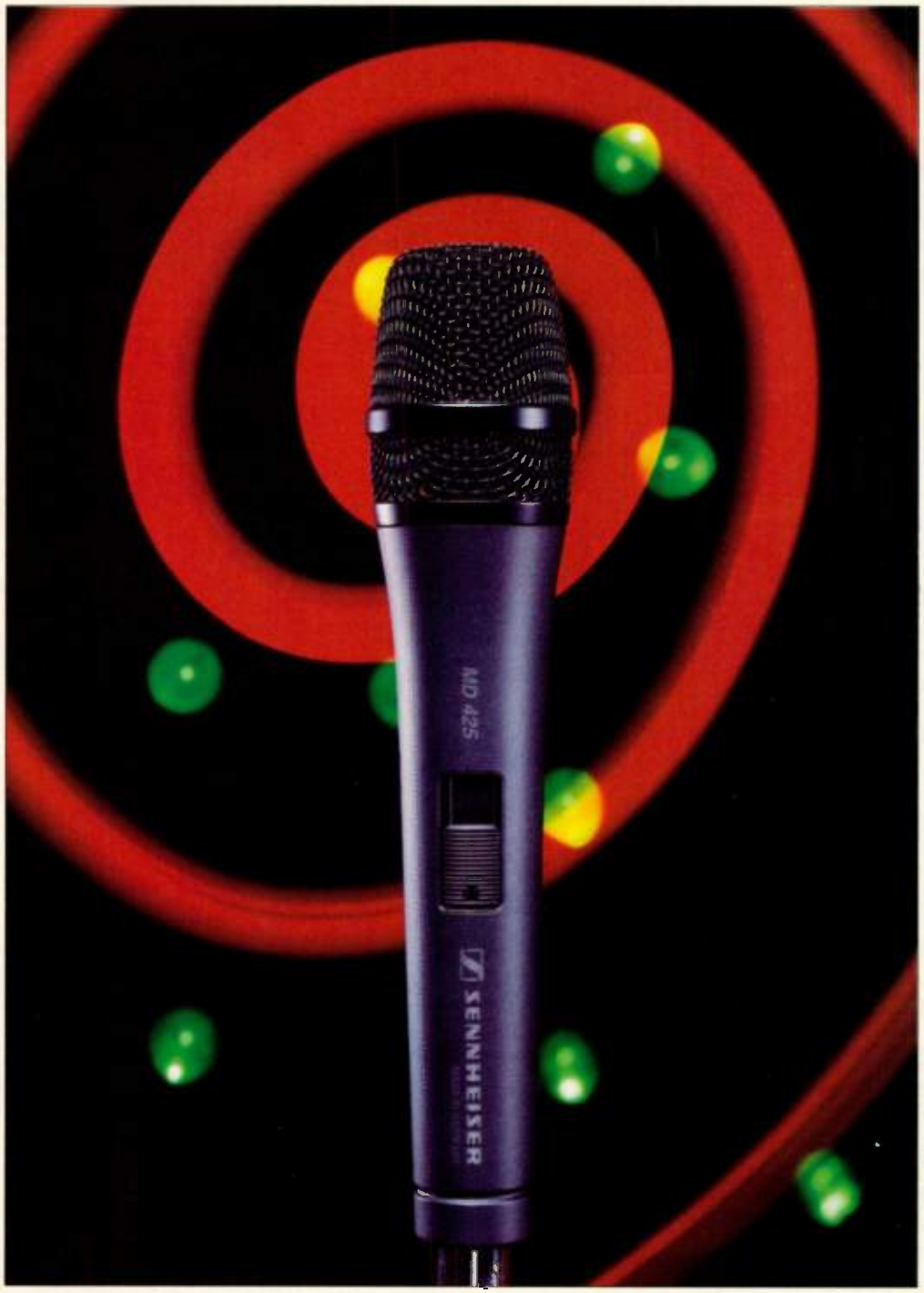
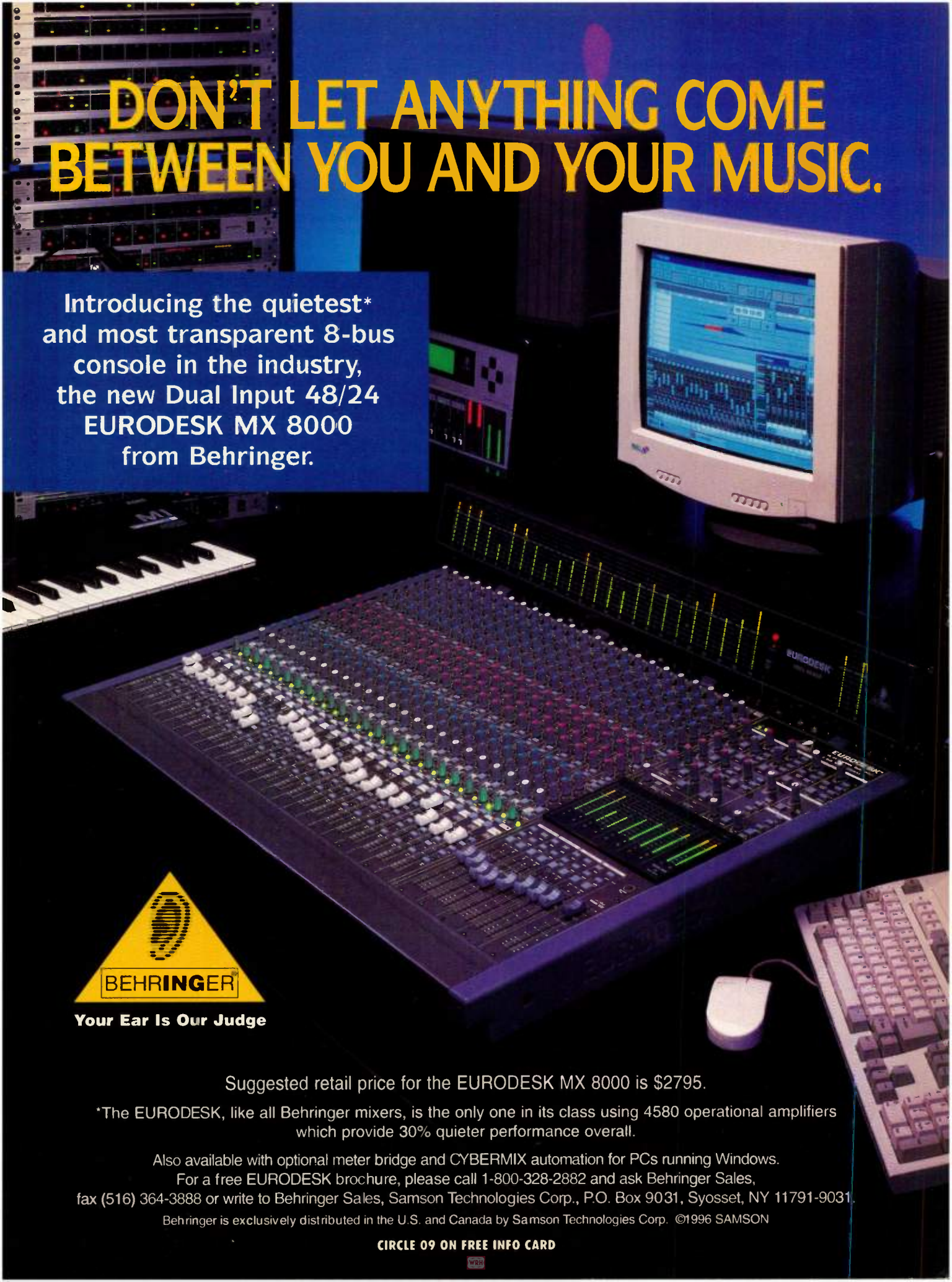


Photo by Edward Colver

MICROPHONE NAME: Sennheiser MD 425
PRICE: $395
ACOUSTIC PRINCIPLE: Pressure-gradient
TRANSDUCER PRINCIPLE: Dynamic
POLAR PATTERN: Supercardioid
FREQUENCY RESPONSE: 40 Hz to 18,000 Hz
SENSITIVITY: 1.6 millivolts/Pa, ±3 dB
NOMINAL IMPEDANCE: 350 ohms (at 1 kHz)
MINIMAL TERMINATING IMPEDANCE: 1000 ohms
MAGNETIC FIELD DISTORTION LEVEL: Less than or equal to 35 microvolts
MAXIMUM REJECTION ANGLE: 120 degrees (greater than 20 dB at 1 kHz).
CONNECTOR: Three pin XLR: pin 2 hot
DIMENSIONS: 44 mm (maximum diameter) x 207 mm (length)
WEIGHT: 320 grams
MIC NOTES: The MD 425 is the newest member of the Sennheiser "Classic" line of dynamic microphones, which includes the tried-and-true MD 441, MD 431 II, and MD 421 II microphones.
USER TIPS: Intended to withstand heavy use under live sound reinforcement and touring conditions, the MD 425 is primarily designed for vocals. A steel-mesh basket surrounds the microphone element, protecting it from shocks and bumps while an internal damping system helps reduce handling noise. The on/off switch built into the '425's handle is a reed-type for noiseless operation and can be locked to the "on" position to avoid onstage accidents. A low profile, anodized blue finish gives the MD 425 a low visual profile for applications where unobtrusiveness (such as podium miking) is desired. Note the maximum rejection angle: stage wedges used for monitoring purposes should be placed to the side of a vocalist rather than directly in front.
CONTACT: For more information, contact Sennheiser, 6 Vista Drive, Old Lyme, CT 06371. Tel: 860-434-5220. Circle EQ free lit. #101. EQ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CIRCLE 09 ON FREE INFO CARD

Garbage's "Stupid Girl"

Butch Vig explains how samples, loops, and other garbage make up this interesting track

BY LIANA JONAS

EQ: What kind of studio setup did you use to record "Stupid Girl"?
Butch Vig: We had a low-fi "demoey" set-up in Steve's [Marker] basement: a TASCAM DA-88, two Akai S-1000 samplers, a basic drum kit, a Fender Vibrolux amp, and a DI for the bass. Steve had sampled a beat from the Clash's "Train in Vain" and then I set up a keyboard and started getting all these weird noises. Duke [Erikson] came up with the twangy guitar stuff. I kept yelling at Steve to play a mutated "Suzy Q" groove by Creedence Clearwater Revival. That's where the repetitive bass line comes from.

Because we didn't really have any song structure, we would play for ten minutes and then sample bits. First we sampled the bass and repeated that all the way through the song. When the song went to the bridge, we muted the bass. Then we sampled Duke's guitar (Gibson 335), and then Steve's (Telecaster). We only had one mic down there; a Shure SM57. All the music was recorded in Steve's basement, and then Shirley [Manson] came in to help us finish writing the lyrics and sing the lead vocal. So our basic process was to record material on the DA-88, lay it into the samplers and then print onto our Otari MX-80 24-track at Smart Studios.

The song is a composite of loops. Why so much sampling?
We did all of this sampling for remix purposes. So in essence we have 24 tracks of loops, which is what we did for remixes. We define the song by way of how we mix and what parts we choose to use.

Where does the song's "dark" sound come from?
There's a piano riff that Duke played that we ran through a Harmonizer to give it a weird "ghost-like" sound. That goes all the way through the song and, again, we'd turn the part on and off as desired. There's a kind of Eno-ish droney guitar that we brought up and down when we wanted to. We also used a lot of these old pedals to saturate the tracks and fuzz them out. Space Echos, Echoplexes, and some others; they're all originals that have been laying around the basement at Smart Studios.

The guitar part has some interesting things going on...
There were some scrapes at the end of the song that you can hear clearly. There were also some mistakes that didn't sound very good, which Steve sampled and flew in at the top of the song. This was common Garbage practice; Duke and Steve making some weird sounds that we sampled.

What's that reversed sound that alternates with Shirley's vocal?
It's a guitar. It wasn't actually played, it was more banged. It's bending the guitar and hitting it as hard as possible to make it sound like a backward guitar. It sounds reversed because of the way the sound ends on a clunk. We were actually trying to achieve more of a percussive hit to lock to Shirley's vocal.

More information is revealed each time you listen to the track. More "noises" seem to pop out at you.
We thought that it would be a challenge to make a pop album that had character. The disc is very layered and it's got a lot of depth to it. One of the more interesting noises on the track is this "computer chatter" that comes in, which is actually digital feedback. Steve was trying to bounce tracks on the DA-88 and it froze up and began to make this kind of chatter. It sounded cool, so he recorded it onto a DAT for about ten

"STUPID" TALK: Noted engineer and Garbage member Butch Vig talks about the popular track.

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minutes and sampled about ten seconds of it. We timed it to give the sound a weird percussive feel and it sounded so cool that we turned it way up under Shirley's vocal.

How did you decide which samples should be used among the many that you created?
That was the hard part! When we got more into the arrangement mode of the songs, we had to cut what didn't fit the song. We could probably make an interesting album out of the sounds that didn't make the final edit.

Tell me about the Clash loop.
This Clash loop is what the song has been based upon since day one. We wound up sampling it as opposed to playing it because no matter how hard we tried, it just didn't sound quite exactly like it. I did some drum fills; some snare, and kick under it. The snare triggered a "clacking" noise in one of the samplers. Then I hit a floor tom that I ran through a Tech 21 SansAmp that's super distorted, which was then run through a gate. That's that big "hit" you hear in the song.

What mic did you use on Shirley's vocal?
We used an old 1957 Elam 250. It's an old tube mic that we heard came from RCA Studios. So we like to think that Elvis or Bing Crosby sang on it. Of course, we don't know that, but we pretend that. It's a gorgeous-sounding mic. We use it here in the studio all the time.

What kind of processing was used?
Once we sampled something and printed it to tape, we'd run it through one of our old guitar pedals (Big Muff, Boss, Electroharmonix, Morley, Echoplex, Nady, The Experience, Roland Space Echo, The Wringer) to give it some character. A lot of times running these old analog boxes gives a lot of depth to material. We also used an Eventide H3000 or 4000 Harmonizer for warmth or reverb, as well as some old API notch filters. Our board, which is a 32 x 32 Harrison, is actually two old Harrisons soldered together, so it's got 56 inputs that have these great EQs and severe filters on them. We would run two tracks of a sample and filter one heavily at an extremely narrow frequency. By doing this we found certain things that just sat in a pocket in the mix. We were able to mix the sample really low for coloration, but without clouding the mix up. EQ

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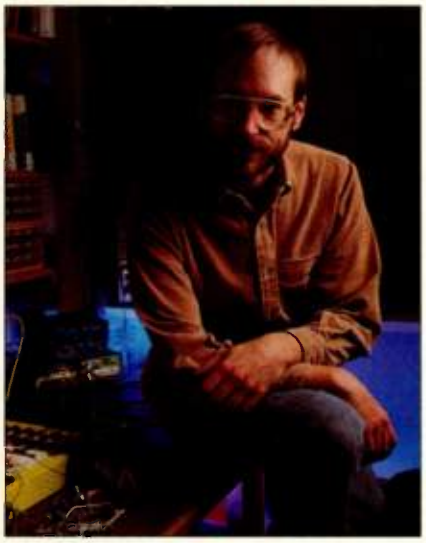
A Side of **Chains**



If you haven't put your compressor's sidechain jacks to good use, then here's what you're missing

BY CRAIG ANDERTON

Does your "exciter" make sibilants a little *too* overexcited, so that they splatter treble all over your mix? Is there a vocalist who blows out the woofers upon uttering a "p" or "b"? Does that singer/songwriter's acoustic guitar drown out the vocals during verses? And when the narrator starts talking during your latest audio-for-video project, does the background music step on the narrator instead of stepping politely out of the way?

The answer to all of these problems is the proper use of a compressor's sidechain jacks — one of the most misunderstood and underutilized set of audio jacks you'll find. Available on almost all but the lowest-cost models, sidechain jacks let you control the compressor's characteristics with something other than the original input signal. This can be a modified version of the original signal or a completely different signal altogether. Let's look at some typical applications.

HOW SIDECHAIN JACKS WORK

To understand how to best apply sidechain jacks, we need to understand basic compressor theory (fig. 1).

Ignoring the sidechain jacks for now (assume the send is patched into the return, which is the normalled connection), a detector circuit monitors the audio out and sends a control signal to a gain-control element. This in turn alters the gain of a high-gain preamp.

As the audio output increases, the detector senses this and generates a control signal that turns down the preamp gain to maintain a consistent level. Conversely, if the output decreases, the control signal turns up the preamp gain to compensate.

The sidechain jacks insert prior to the detector. The return jack is usually a switching type, so that plugging into it breaks the connection between the audio out and the detector. Inserting a signal processor into the sidechain jacks can allow only a certain portion of the signal to be compressed, and that's where the fun begins.

DE-ESSING

This is a "classic" sidechain application. By inserting a high-pass filter in the send and return, only high frequencies feed the detector. Signals below the cutoff frequency are attenuated, so they do not provide the signal increase needed to kick the compression into gear. However, high-frequency signals pass through the filter and to the detector; therefore, the greater the high-frequency content, the greater the amount of compression *when high frequencies are present*. This brings the highs into line with the rest of the signal.

A graphic or parametric equalizer usually works well as the high-pass filter, however, setup goes a lot faster if you can monitor the sidechain return signal. To do this, unplug the filter output from the return and patch it to your mixer temporarily, or add a "Y" cord so the filter output feeds both the sidechain return and your mixer for monitoring. Now as you adjust the filter, you can monitor its output and tweak the filter so it zeroes in specifically on those frequencies where the "essing" is most pronounced.

Some higher-end compressors thoughtfully include a sidechain monitor jack or pushbutton for momentarily sending the sidechain out into the compressor's main audio output. As to other compressor settings, you generally want a fast attack along with a faster-than-average decay so that the signal doesn't remain compressed after the initial burst of treble goes away.

BASS IS THE PLACE

For p-popping problems or any bass-

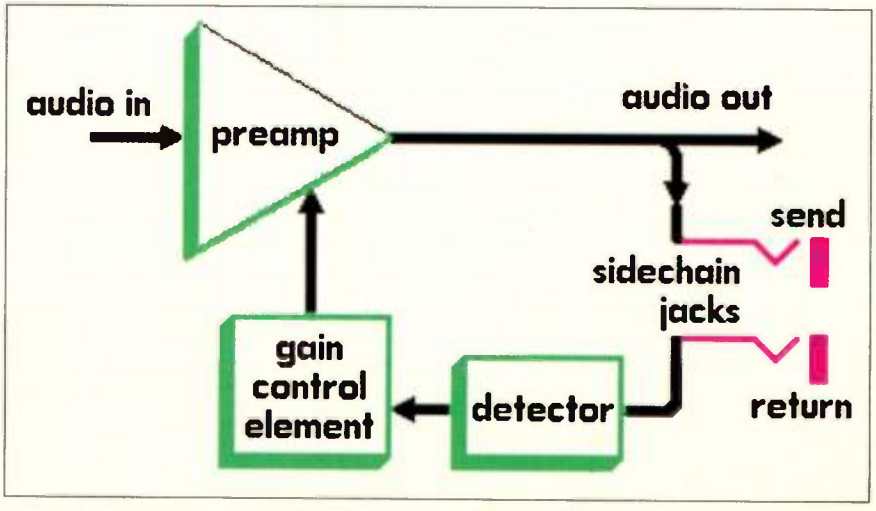
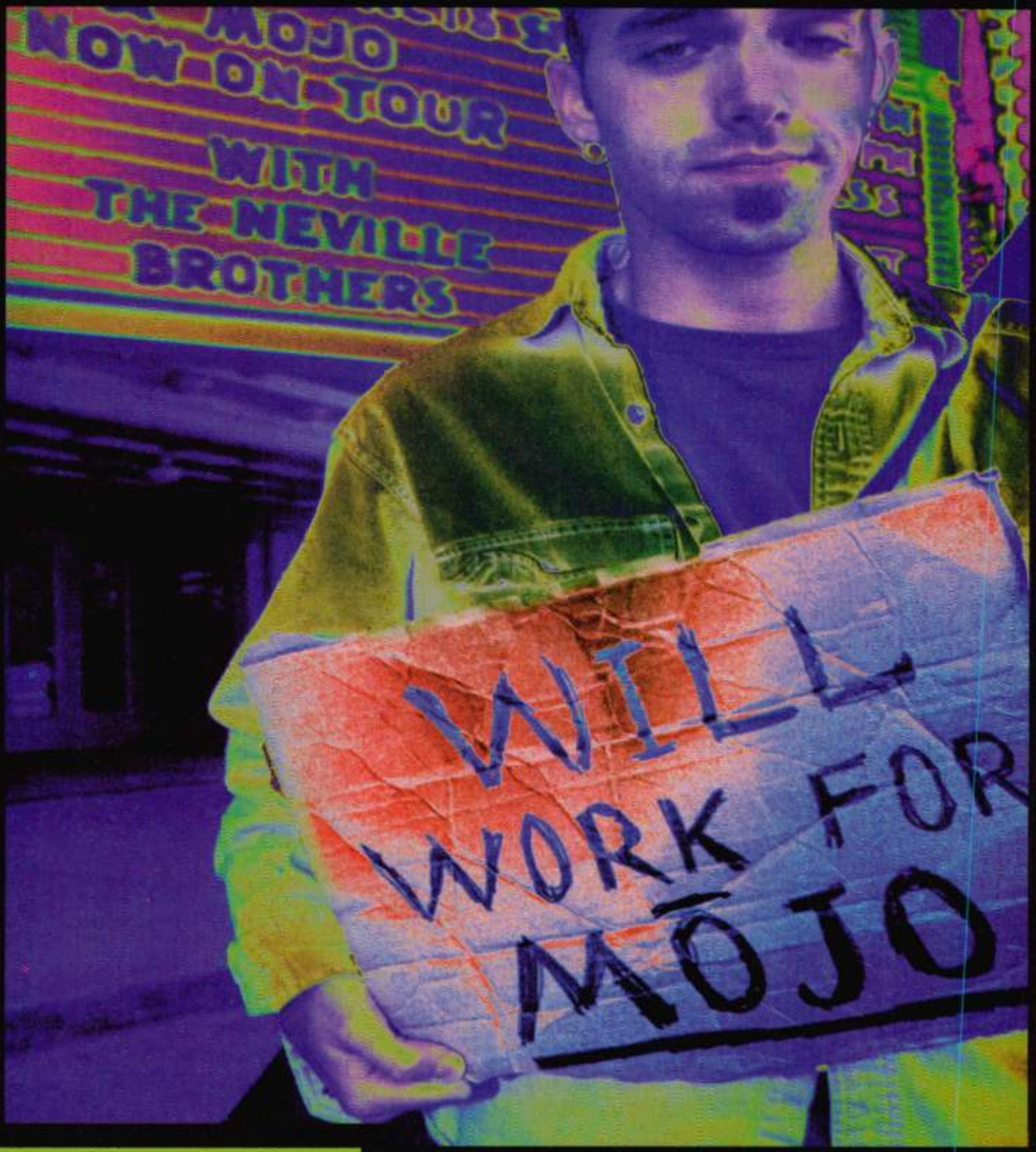


FIGURE 1: Basic compressor block diagram.



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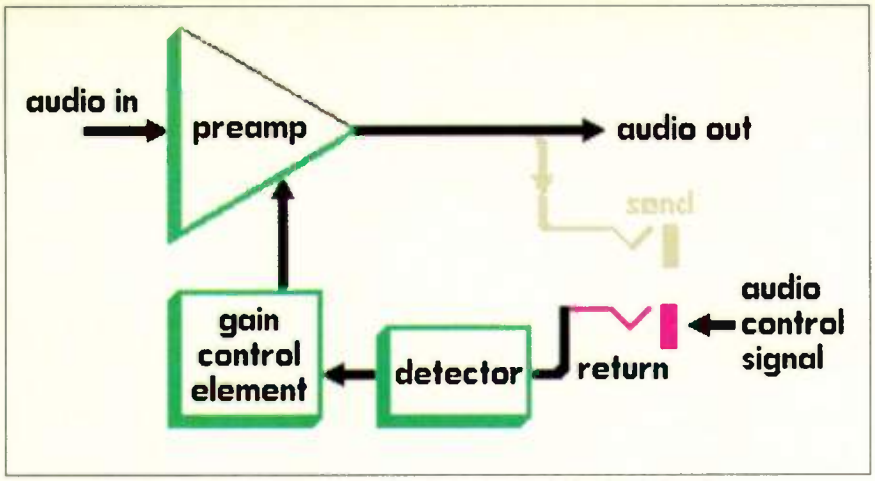

FIGURE 2: Using an external control signal with the sidechain jacks.

heavy "plosive" sound, patch a low-pass filter into the sidechain jacks. This leaves higher frequencies alone, but any increase in bass content causes compression to occur. Again, monitoring the output makes it easy to find and isolate the frequencies that are causing the problems.

This same technique can similarly provide a solution for drum tracks whose kick drum is too high or program material premixes that sound "muddy." This technique also works well with guitar when you want to compress the bulk of the signal, but let the treble sparkle a bit.

DUCKING

Although noise gate key inputs are often thought of as the way to go when you need to control one signal's amplitude with another, compressor sidechain jacks can do the job better in some cases.

For example, suppose you're doing a live recording of a singer/songwriter who plays guitar. You want the guitar to sneak down a bit in level when the singer sings and come up again when there aren't any vocals. You can either learn the song and do the changes manually (which is pretty imprecise), or let a compressor automate the job for you.

The signal whose level you want to change (in this case, guitar) plugs into the compressor input. The vocals are the control signal; take a feed from something like the vocal channel's direct out or effects loop send, and plug it into the sidechain return jack. Do not plug anything into the sidechain send jack.

When the singer is silent, there's no control signal telling the preamp to turn down, so it runs at whatever gain you set. However, as soon as vocals appear, the detector interprets this as an increase in the compressor's output level, and turns down the preamp to compensate. Net result: The guitar becomes softer whenever the vocals appear. This same basic concept also works splendidly when you want background music to truly move into the background when narration or dialog kicks in.

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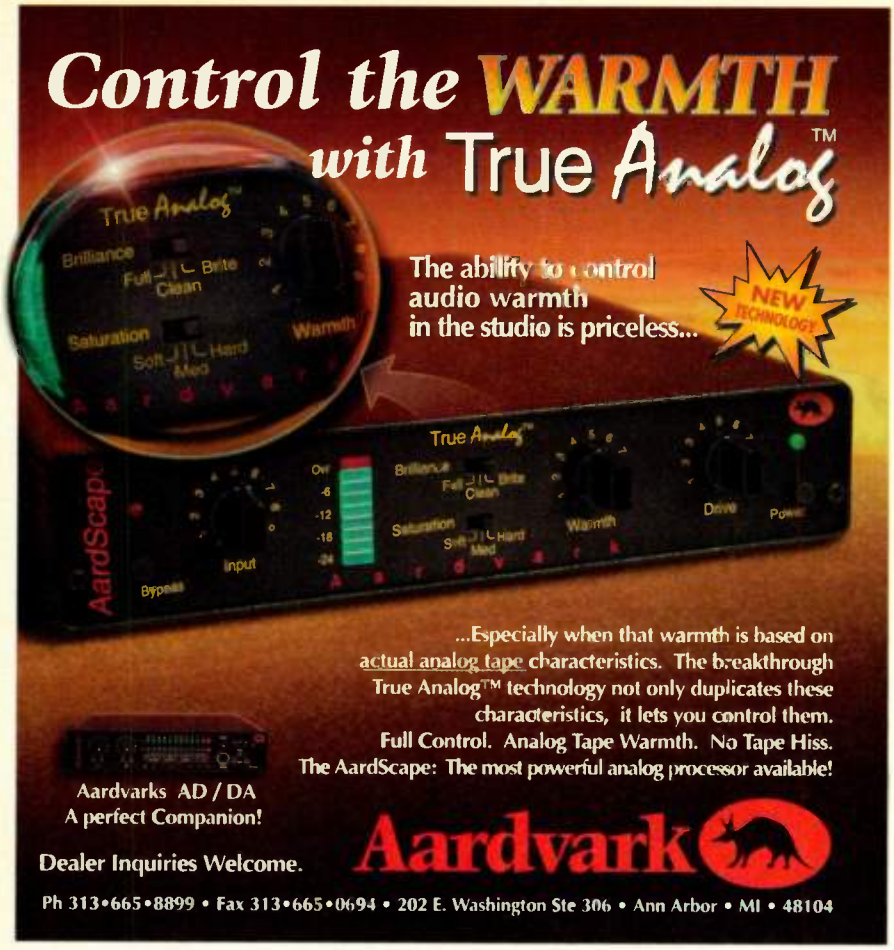

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called the "Stage Center" reverb. It gave the same kind of effect you hear on vocals when you're center stage: the vocals drown out the reverb while you're singing, but you hear the reflections coming back at you when you're quiet. Sidechain processing can give a similar effect by quieting the reverb when you're singing. This can often clean up a vocal in a very interesting way — it's tough to describe in print, so I guess you'll just have to try it yourself. (Or you can download an audio example file in WAV or AIFF format from AOL; the path is keyword SSS > EQ Online > Review Unit Demos.)

Patch the vocal reverb's output into the compressor input and a mult from the main vocal into the sidechain return (this is similar to fig. 2). Now, whenever the vocals hit, the reverb will turn down a bit. Try this technique with reverberated drums as well; depending on how you have your compressor set, the reverb change can be anything from fairly subtle to more of a "sucking" effect.

EXPERIMENTATION PAYS

The compressor attack and decay controls can make a huge difference in tailoring the sound for a specific application, so be sure to fool around with them, as well as threshold and other controls. You may also have to play with the level going into the return jack; although it's unlikely that there will be enough level to cause an overload, if overloading does occur, bizarre and unpredictable volume-changing effects will result.

Also try soft-knee and hard-knee compression characteristics to see which works best for you. It seems for most applications that soft-knee is most natural, but that's a subjective call.

In any event, try exercising the sidechain jacks sometime — you just might be surprised at what they do to clean up your signal, and even automate functions you would normally have to do by hand.

Craig Anderton still hosts the coolest noncorporate site in cyberspace for recording fanatics — next time you're on AOL, use keyword SSS to uncover a world of samples, lively discussions, reference articles, event listings, and more.

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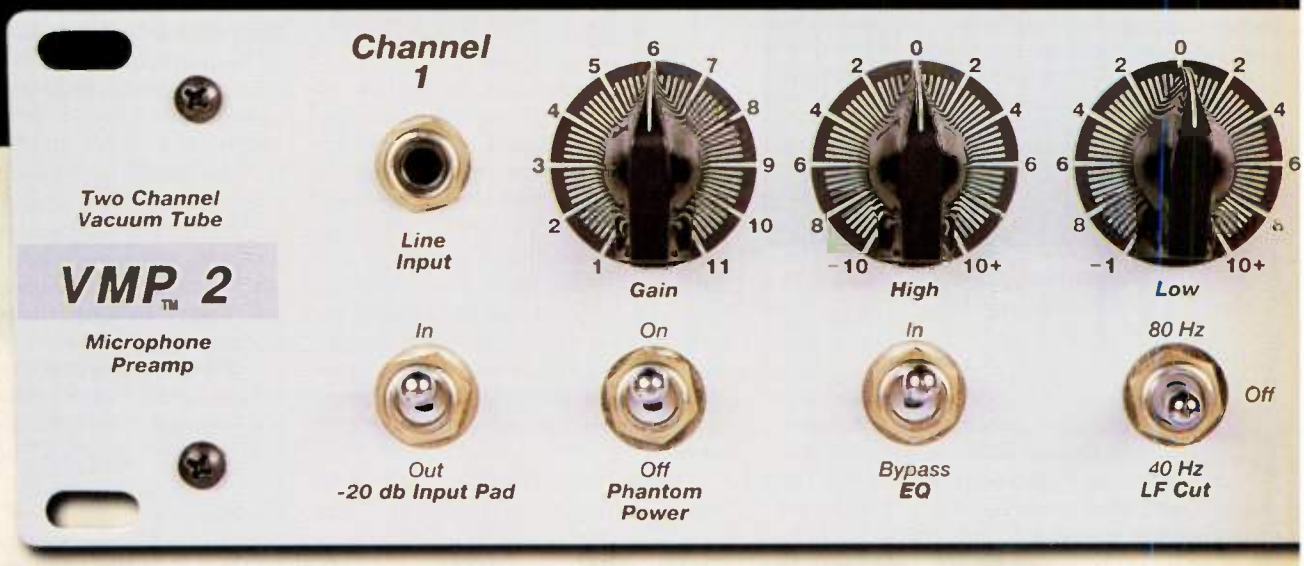

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CIRCLE 62 ON FREE INFO CARD

Kooper's **Konsole**

A hot new console — straight from my head to your studio...

BY AL KOOPER

My project studio (Subterranean Homesick Studios) works quite well, thank you. But who doesn't sit around and fantasize, "What if....," at the first sign of a problem? From my vantage viewpoint on Kooper's Kouch, I watch all the technological updates and marvel at how things have changed since the early '60s, when I used to bounce my ideas back and forth from one mono machine to the other.

For the past two years I have had a vision of the future. I instinctively know that as I type this, geniuses are hard at work implementing this idea into forthcoming software. As the smoke clears, I see a virtual control room replicated in one exciting piece of software. With all the extras built in, I see consumers replicating dream control room environments in their project studio computers for under $10,000.

Here's how it works for me, ideally. I'm a Mac guy, so my orientation is that way. I don't mean to slight anyone, but I don't do Windows! You build your console to suit your project. There are no unused faders or buttons here. Let's say you are dealing with drumkit, bass, keys, guitar, horns, strings, backup vocals, and lead vocal. You could build eight modules for your kit:

1. Bass drum
2. Snare drum
3. Overheads (L)
4. Overheads (R)
5. Toms (L)
6. Toms (R)
7. Percussion (L)
8. Percussion (R)

One module each for guitar and lead vocals, and stereo faders for strings, horns, background vocals, and keyboards. Depending on whether your bass was MIDI'd or live, one or two modules would be allotted. If it was a live recording, you would have a miked amp track and a direct injection track. So you construct a 20-module console plus a stereo master fader.

Then you open your floppy disk (or removable HD, if you're a storage queen) collection and modify certain modules. For instance, you have a wonderful EQ setup for bass drum stored either on floppy or HD. You bring it up on the computer and drag and drop it onto the bass drum module. Voila! All the sympathetic frequencies for your bass drum are at your fingertips, custom mounted in your bass drum module. Little by little, you bring up various custom EQ setups *and* EFX setups!

When your console is all built and customized, you save it. Next time, you won't have to take all those floppies out *or*, if your storage or hard disk space is huge, you'll *never* have to take them out after the first time you upload them.

Now your console is all ready to go. You go to your sequencer and assign the various tracks you've sequenced to the corresponding ones on the console, the virtual equivalent of patching. Are you beginning to see how handy this all is? If your sequencer, computer, and your console are all talking to each other, you have eliminated pieces of equipment like Opcode's Studio 5 or Mark of the Unicorn's MIDI Timepiece. You also have eliminated those expensive, clunky digital multitracks. No more waiting for rewinds or formatting *or monthly payments*! Is this a golden future or what?

Once you've sequenced your song, the various sequencer tracks get assigned to the various modules. They can remain in the sequencer straight through the mixing process. I'm drooling as I'm typing this. I am so tired of gremlins in various middlemen pieces of equipment; stones in the passageways of clean signals. To eliminate all that and simplify the entire recording process is a beautiful thing. You'll also pick up all the obvious advantages of hard-disk editing (e.g., only sequencing one verse on your basic track and then adding as many as you want with your HD editing).

A final look at the downside. You'll need a prodigious amount of memory to work this thang, *but* take the money from the resale of your three or four digital multitracks and use it to defray *that* cost. Standardization and third-party support will take some time, as well. And there's always the danger of what I call riding the wrong wave. I now hesitate to buy the first version of any product that comes out because the manufacturers are in such a hurry to get to market, that certain bugs remain intact and you've bought yourself an extermination nightmare.

My first digital multitracks worked for five minutes each before going completely buggy. I went through eleven (!!!) machines to get three that worked. I rode the wrong wave, but I'll never do *that* again.

Let a few competing manufacturers all have their wares on market for six months to a year before you make your purchase. And follow all the reviews of said products in *EQ* magazine. Ask your dealer if there are any noticeable returns on any of these products. Try them out in the store and see which one feels most responsive to your particular needs.

This dream of mine is just around the corner now and I can't wait to install it and start advancing my work ethic. See ya down the basement! EQ

They Make Records That Break Records.

Producers Chris Kimsey (left) and Eddie Kramer at New York's Electric Lady Studios.

Twenty years after its release, "Frampton Comes Alive" still holds the record for the best selling live album in history.

But for veteran producers Chris Kimsey and Eddie Kramer, it's only one credit in a body of work that spans three decades, includes more than 50 gold and platinum albums and reads like a who's who of rock history.

Kramer's work with Jimi Hendrix is legendary. Not only has he recorded 11 Hendrix albums, but he collaborated with Jimi to build a rock shrine: Electric Lady Studios.

Kimsey's credits are equally impressive. To date, he's been behind the board on nine Rolling Stones albums, in addition to his work with scores of other internationally acclaimed artists.

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And although the music they've recorded has changed over the years, their choice in microphones hasn't.

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"Success over time comes from constantly reinventing yourself," adds Kramer, "something Shure has done consistently through the years." Which is why Kramer and Kimsey are frequent users of newer Shure models like the SM98A, SM91A and VP88 condensers and Beta dynamics — along with performance-proven favorites like the SM7, SM81, SM57 and SM58.

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CIRCLE 161 ON FREE INFO CARD

A View on the Project Studio

Wherein the opinions expressed are not necessarily those of my employer

BY PETER ASHER OF SONY MUSIC

If you are reading this magazine, then you are already aware of the fact that the development of affordable recording technology has permanently changed the audio industry. But it has also changed the practical side of the record-making process for labels and artists as well. As a record producer and senior vice president of Sony Music Entertainment, I see the gap between demo and finished record ever-diminishing. By the time a band comes in with their demo there's a chance that we could put it out as-is, or maybe just remix and then release it. Years ago, we expected the demo to consist of just the artist with minimal accompaniment, or a very rough garage tape — but that is no longer the case. By the time a record company gets to hear a song it is at a more advanced stage than it ever used to be say, 15 years ago.

In fact, artists are much more aware of what can and cannot be done (as well as what works and what doesn't) in the studio because they have done a lot of it at home already. It has probably made the producer more of a collaborator rather than an authoritarian, which, overall, is a good thing. As a result, bands are more prepared for the actual record-making process.

The danger (of which we are all well-aware) arises when the demo is really good but not quite "right." Then the artist tries to recut it in a real studio to make it "right" and everybody ends up suffering demo fever because the demo was better. In the old days, the demo was nothing like the finished record, but increasingly home studios are getting so advanced that you can do pretty much anything you want at home and get very close to the desired sound of the finished record.

Quite often we find that projects started in project studios are transferred to a professional format. As a producer I find that even if a project is started in a home studio it usually ends up being mixed in a commercial studio, which can be preferable for several reasons. One is that commercial studios have automation, and most home studios — when I say 'home studio' I don't mean a room like Mariah Carey's home studio — usually don't have automation. And project studios usually don't have super-sophisticated outboard gear. So you do gain by mixing in a professional room.

But that is also changing: automation is getting cheaper, and the sorts of reverbs offered for relatively little money is changing drastically. It used to be that if you bought a cheap reverb it sounded really crappy, but now some of them sound great. The project studio is getting cooler all the time, and sooner or later you'll be able to mix there as well. The professional recording engineer's art of recording live, acoustic instruments is not going to go away.

LABEL MAKER: Peter Asher lends insight into what the big record companies think of project studios.

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CIRCLE 87 ON FREE INFO CARD

But I think that the more freedom people have, and the more time they have to play around in the studio, the more creative, interesting arrangements and musical ideas we will have to listen to. In the end it's a positive thing. People don't have to rush and settle on their ideas. If you're in an expensive studio, you usually have time to try an idea two ways and then pick one. If you're home, you can try it a hundred different ways. You can also get obsessive and ruin the whole thing, but that can happen anyway.

Then of course there are a lot of records that you simply couldn't make in a project studio. I love real strings, the sound of an orchestra, and real drums as well — especially when they are recorded in a big room. Certainly not every record needs these things, but they are things that I like to have the ability to do. You can't do that sort of thing at home — particularly live drums, which have made a big comeback in the last few years (and people have gotten really good again at recording live drums). I'm still quite happy to listen to a piano and vocal demo because I can sit there and come up with ideas for trying different things such as adding a string section. It gives a producer more flexibility if someone comes in with a bare-bones demo, but that is becoming less and less common.

Major labels are supporting the concept of artists having their own recording setups. In some cases, labels have their own demo rooms available to artists for writing and demoing, and I have even seen some contracts specifically structured to provide the artists with "X" amount of dollars to either upgrade, finish, or even buy a project studio, and then there will be a certain limited budget for the album. I have even heard of cases where a band's manager comes in asking for the first step in a deal to be finishing the project studio, whether it is used for the demos or the album.

[To see Peter Asher's project studio philosophies in action, take a look at the next story, which features one of Asher's artists — James Taylor. —Ed.]

Peter Asher is currently senior vice president at Sony Music Entertainment. Peter's legendary career began back in 1964 as one-half of the singing duo, Peter & Gordon. Asher has produced a total of 40 gold and platinum albums as well as eight Grammy Award-winning recordings by artists including James Taylor, 10,000 Maniacs, Diana Ross, and Cher.

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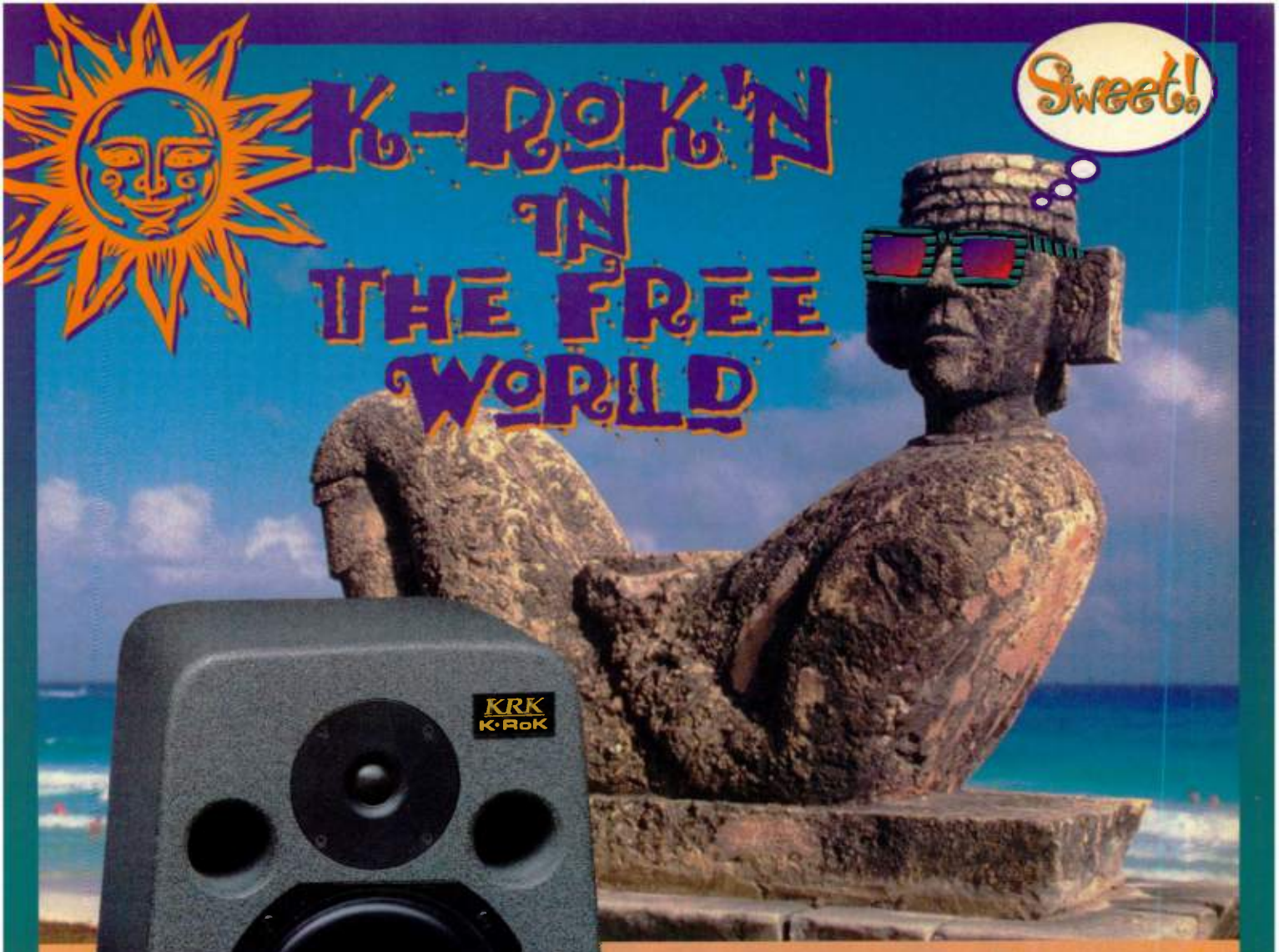
CIRCLE 46 ON FREE INFO CARD

K-RoK 'N THE FREE WORLD



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CIRCLE 61 ON FREE INFO CARD

Taylor *Made*

James Taylor builds an island studio for some quick recording for his upcoming album

In what may foretell the future of recording trends to come, pop-folk legend James Taylor recently settled in with three members of his band and noted recording engineer Frank Filipetti into a cozy old house on the island of Martha's Vineyard, in Massachusetts. Recording for two weeks in early May in an improvised studio, Taylor took advantage of a break in his touring schedule to lay down tracks for a new album on Columbia Records in a relaxed, informal environment close to his home.

Key to the success of the sessions was a compact, yet versatile recording setup based on Yamaha's 02R digital recording console and TASCAM DA-88 digital multitrack recorders. Requiring a minimum of physical space and without the de rigueur team of technicians needed for large-format consoles, the 02R-based setup rendered "master quality" tracks that may likely be used on J.T.'s next album, according to Filipetti, who is coproducing along with Taylor.

Taylor wanted to do some preliminary recording in Martha's Vineyard before hitting the road for his 46-city summer tour, which kicked off on June 28 in Salt Lake City, UT. "It was beautiful," recalls Filipetti. "The house we were in was very comfortable and it ended up being ideally set up for us. We just walled off one room for the drums and put up a big sheet of Plexiglas. We had a view overlooking Menemsha Pond, a fireplace, and the whole deal. You couldn't get a more ideal environment to record in. It was very magical.

"We went up there with the idea of taping a rehearsal, but with the option that if we got something we really liked, we could actually use it for the fi-

Photo by Alison Shaw

HANDYMEN: Frank Filipetti and James Taylor work the Yamaha 02R console at Taylor's Martha's Vineyard project studio.

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nal album," adds Filipetti. "As it turns out, we ended up getting 12 very good tracks, all of which sound amazing and are absolutely usable for the final album. Everybody was very excited and impressed. We were all blown away."

Filipetti's initial instinct was to use a small analog console, but upon further investigation he became curious about the 02R. "It just so happened that the following week, [producer] Phil Ramone (who I have worked a lot with) came back very impressed from an 02R demo in L.A., so I said, 'Let's go with it.' I did a demo myself and found it to be quite interesting, and we went up there and used it and it turned out to be great."

Filipetti felt the built-in features and sonic quality of the Yamaha 02R enabled him to record master-quality tracks with a minimum of space, fuss and personnel. "It would have been much more difficult without it," he remarks. "We didn't want to go up there with 10,000 pieces of outboard gear, for one, and we were able to use all of the EQ, dynamics, and effects processing capabilities built right in to the 02R."

The other aspect of the 02R that really impressed Filipetti were its new built-in 20-bit A-to-D converters. "Had we used another analog mixing board," he says, "we'd have to use the A-to-Ds in the DA-88's. I found the converters in the 02R to be not only usable, but very musical and quite good."

Filipetti also found the console's snapshot memories very helpful. "It's incredibly flexible," he states. "With James, we'd work on a track and then go to a new track and then maybe return the next day to the original track. With the 02R, all I had to do was hit a button and a snapshot of the original came up immediately, bringing up the original mix, headphone balance — the whole situation — within seconds."

For a nonstudio or project recording environment, Filipetti named the Yamaha 02R/TASCAM DA-88 combination as "probably my first choice. I certainly wouldn't hesitate using it again in a similar situation."

The May Vineyard sessions were mostly comprised of tracking and some minor overdubbing, says Filipetti. "We didn't get into the heavy overdubbing stages yet," he adds. Following the completion of Taylor's summer tour, the team returned to the same location in mid-October for final overdubbing and recording of new tracks using two 02R's and Sony PCM-3348 recorders. EQ

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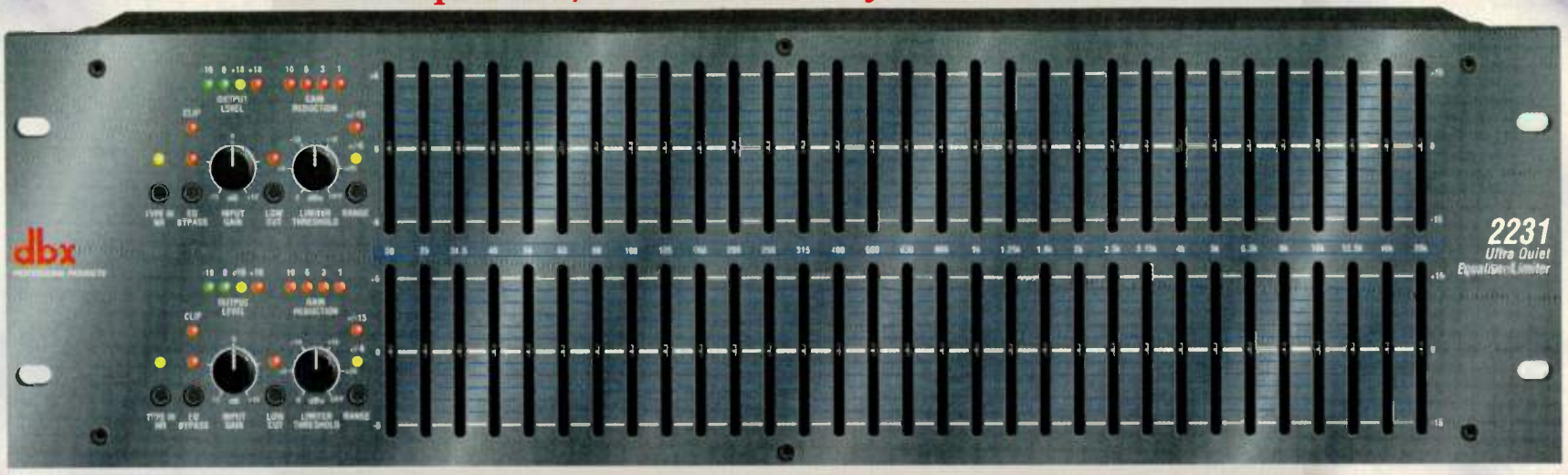

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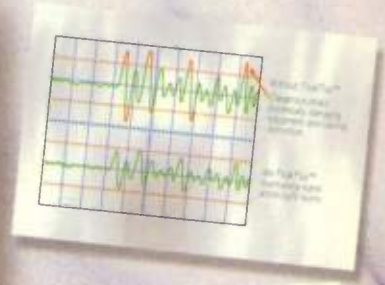

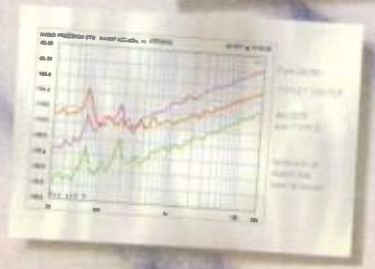

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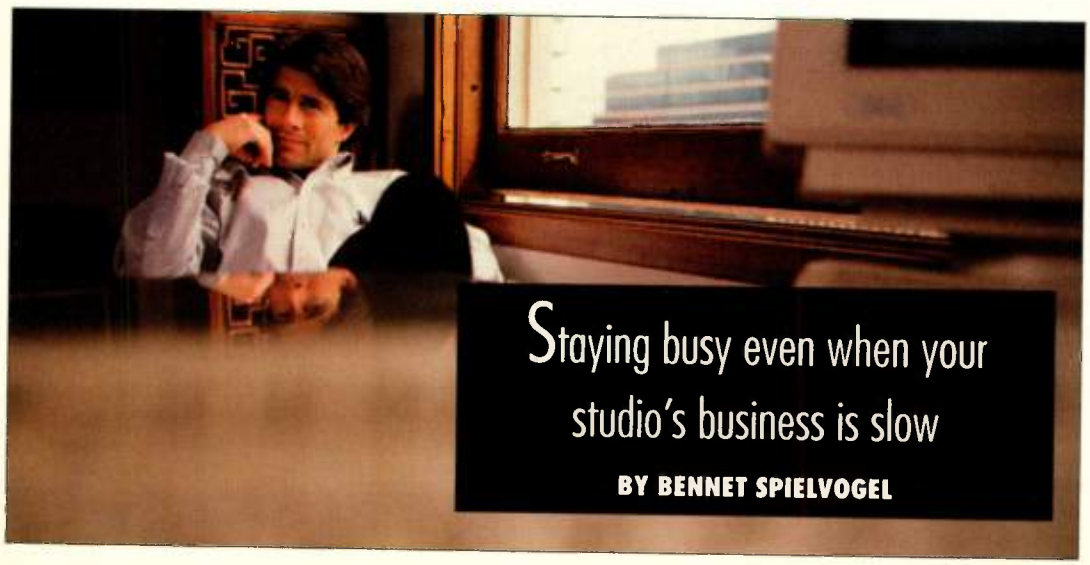

Staying busy even when your studio's business is slow

BY BENNET SPIELVOGEL

Is your business calendar a sea of penciled-in names and times? Do you have the ultra-happening place that everyone loves to track in? Or maybe you've aced the golden-goose supply of those big money corporate gigs? If not, and your studio exists in the real world of competition, varying client budgets, and periods of little incoming cash, here are some ideas and actions you can take to change the situation.

If your business is anything like mine, you've probably experienced the busy-to-bleak cycle of studio life — bleak being when things dull down and your studio seems like a sleeping giant that won't ever get up; the calendar remains spotty for many moons, the phone seldom rings, and you become depressed.

During the busy cycle, though, you rock; things keep jumping, you're booked solid, the phone doesn't quit, and you can't offer three days in a row until nine weeks from now (and they book that). Everyone has a project they want to do at your place.

In almost five years at my current location, the summer months mean slow times. Projects continue to happen, but not at the pace I'd prefer. For the last two years I tried something different from my usual pissing and moaning about why won't the calendar fill. This advance planning and action hopefully can work for you when the tempo around your console begins to drag.

BARTER SHOP

Bartering in its purest form involves people trading goods and services to each other. It's not about money. It's about value and time. Barter is a terrific way to get specific work done by a professional. You trade studio time (room and engineering) for a job well done (e.g., carpentry, plumbing, custom cabinets, auto repairs, HVAC, painting, wiring, legal advice, etc.).

Unfortunately, many people who've participated in a barter transaction feel like they got screwed in the deal. For example: "I crawled around in that damn fiberglass for days and all I get is four hours of time?" Use these guidelines when bartering to ensure all parties get a fair deal. Remember, you're bartering for two reasons: (1) you need the work done; (2) you want your studio booked and busy.

BARTER BY THE RULES

First, find someone who needs your studio and has the professional services you need. This could be, for example, an auto mechanic that has a hot blues band.

Second, it's work that you need done *now*. You've chosen the auto mechanic because you need new brakes and a valve job *now*. Or you decide on carpentry because the studio is slow *now* and you won't be disrupting anything with the cutting, hammering, and construction noise and debris.

Third ("The Big One"), determine and spell out C-L-E-A-R-L-Y what you want done and *then* agree on the value. For instance, I recently bartered on a drywall tape and float, painting, texturing, and trim carpentry job. The young woman doing the work is a hot singer who desperately needs a four-song demo, plus she's an expert painter and carpenter. She looked at the job and estimated I was looking at $1400 of work excluding materials. I said she could have 35 hours worth of studio time as a trade.

Fourth, write the agreement down and keep track of the hours. Both parties should state in writing exactly what they plan to do:

- **SHE:** tape and float office and lounge, caulk where necessary, texture walls and ceiling, paint walls, stain and urethane ladder to the loft, and cut-fit-prime-paint baseboard and door trim. Studio provides, paint, mud, tape, caulk, primer, and trim board.
- **ME:** I provide 35 hours of engineering and studio time (setup, record, mix). Client, is responsible for producer, musicians, meals, and audio tape.

Bartering is a great means of exchange as long as both parties are honest in their dealings with each other. The area where most folks blow it is by failing to specify the value of their agreement. Expressions like, "I know you won't screw me"; "What goes around comes around"; and "Just give me a call and I'll record your band," are minefields.

One other thing to consider when bartering is time limit. You can specify that the 35 hours must be used within the next 90 days. It's also your job to help your prospective

continued on page 50

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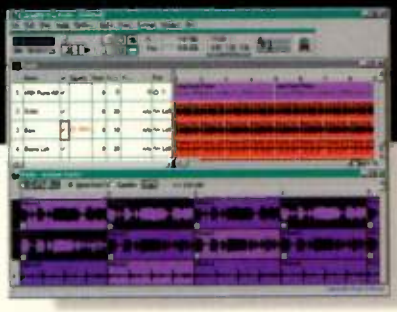

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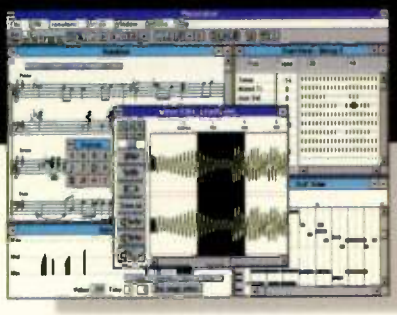

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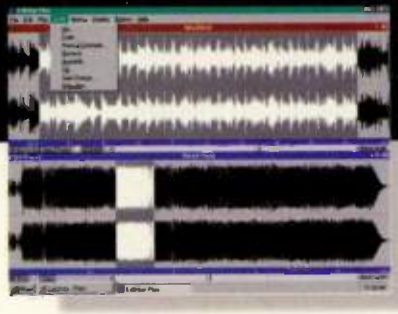

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client form a reasonable goal, especially if they're going into the studio for the first time without a producer (i.e., four songs recorded and mixed with overdubs in 35 hours).

LET'S MAKE A DEAL

Besides bartering you can do "the special cash deal." Austin, TX, where I live, is blessed with some of the most talented players on earth. More often then not, some of the most gifted, who do nothing but play gigs to survive, are the folks least able to afford studio time. These people play drums or fiddle or guitar on everyone else's project, but don't have anything out that's theirs. They've written a bunch of tunes, other musicians owe them favors, and this is a person you'd like to work with.

The candidate for this deal should be a person you know and trust. As for me, I've got a soft spot in my heart for great sidepersons who are also songwriters. They're not necessarily in the spotlight, but they're part of the juice that keeps that light focused. The special cash deal is not easy to pull off because perils exist that, at first, may not be obvious.

On the plus side: You'll get to hear some great music; there's potential for new musician blood to record and use your studio (the session players and other artists your friend will bring in); and the studio is booked and you get some cash coming in.

On the down side: Mixing business and friendship can be risky; the low prices can set a precedent and rising expectations in your friend's mind when it comes to future projects; the deal needs to be a confidential agreement; and, finally, what if you get some "real" bookings, can you do a short-notice cancellation? These are all real issues that need to be discussed and worked out before you press Record.

This deal (like a straight barter arrangement) must be specific to the situation. "You can have the studio for $200/day plus whatever you and the intern agree to for engineering." Structure the deal according to what the person can afford. You're going to be empty anyway. Getting busy starts the busy cycle going, and you'll have some incoming cash.

The person you're doing this favor for should be an experienced studio musician with a plan of what he/she wants to do. Whatever you agree to, keep it short term and specific ("$500 gets you three days for rhythm tracks, and I can only do this during the summer when things are slow"). Be ready to make the deal flexible. Discuss going to an hourly rate when your friend doesn't need large blocks of time and then agree on what that rate should be.

Some things to consider are, "Will you be doing the engineering?" and "Will they bring in an engineer, and can you use an intern to do some of the engineering?" If the money thing gets weird (they've owed you $500 for the last six months) will that ruin the friendship? To minimize the money problems, be upfront about billing, arrange for installments, and discontinue the project until the account is brought up to date.

Special deals require special handling in order to produce desired results. Remember why you're doing this: you're feeling somewhat benevolent; your place would be empty if they weren't in there; and these super players could bring in other players who could turn out to be new customers.

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THE WORKSHOP

This idea requires the most preparation on your part, but a variety of things are accomplished. It introduces new people to your studio, puts you in a positive light, has the potential of generating a lot of cash, and can align you with other businesses in town. I'm talking about running an audio workshop. Even if you've never taught a class or spoken in front of a group, you can do this successfully if you follow some simple guidelines. To produce an effective workshop you'll need (at least) five things:

1. A subject — what will this workshop cover?

2. Someone to lead and direct the workshop — hopefully you.

3. An audience — high gear shameless self-promotion: getting the word out to your prospective audience.

4. Space, equipment, and course materials — avoid the lecture approach, it puts people to sleep and makes doing workshops a drag.

5. A registration and money collection system — you already book sessions, collect deposits, and deal with scheduling; administering a workshop is very similar.

DEVELOPING THE WORKSHOP IDEA

Running a workshop puts you in front of people and in the role of a teacher. Choose subject matter you are comfortable with and that lends itself to a workshop environment. For instance, let's say you know how to do basic ADAT maintenance. Try an evening workshop that covers, head cleaning, lubrication, and pinch roller and idler wheel replacement. Or suppose you're known for getting great drum sounds. You might offer a two-part workshop. Part one (which would involve the help of one of your drummer buddies) covers setup, drum tuning, and miking and recording techniques. Part two offers mixing tips and suggestions.

Once you've decided on a topic, you'll need to publicize your workshop. Hopefully you've got a database of past clients. Some of these folks might be interested, and direct mail is a good route to go. If your town has an entertainment paper, you might consider taking out a display ad (perhaps you could work out a trade with the paper to cover the cost of the ad). You could also post notices on bulletin boards (campus, music stores, laundromats, and alternative bulletin boards).

Include date, time, price, a phone number where people can get additional information, and, most important, list the benefits that your workshop offers. Avoid getting too wordy; keep your promo focused on what the attendees will be able to perform once they complete the workshop.

One other area of publicity involves a team effort between you and a local music store. Music stores sell a lot of recording gear and many stores offer instruction. But usually it's of the guitar and piano variety and not oriented toward the technical (recording studio) side of things. In some cases their facility and their equipment will be available during the workshop.

You might consider a workshop that covers various recording topics such as "Using Compression to Get Big Tracks," "Augmenting Drum Tracks with the Alesis D4," "Digital Delay Tricks," and so on. It's beneficial for the music store to get potential customers in and their equipment demoed, plus they can help you advertise the workshop as part of an overall promotional or tie-in campaign.

Think about your prospective audience and choose when to offer the workshop. Will most of them have day jobs? When could they attend — evenings, weekends?

COURSE LOGISTICS

As I mentioned earlier, develop a workshop that revolves around activity. Don't be a talking head. Ask open-ended questions, the ones that can't be answered "yes" or "no." These stimulate discussion and thinking ("What's the most difficult thing about miking a drum kit?" "Can anyone tell me how to determine if the overhead mics are phased correctly?")

Don't judge the answers, instead write them all down on a large pad. From there you can demonstrate some of the ideas, techniques, and equipment you use to solve the problems that the class suggested.

With the ADAT workshop, I encouraged people to bring in their own machines. I rented a few tables and chairs, rounded up a bunch of Phillips head screwdrivers, gave away some Chempads™, made a few handouts (parts suppliers, error indications), and had a great time doing the workshop.

Once you figure out a workshop topic, determine where you will hold the

continued on page 150

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1997 EQ preview

It's the most wonderful time of the year — the time of year when lots of sparkling brand-new products appear in your favorite manufacturer's product line. Of course, we're talking about the AES Convention. To keep you up to date, EQ took Los Angeles by storm and presents to you a gathering of products to keep an eye out for.

THEY'LL MAKE A CONVERT OUT OF YOU...

Apogee Electronics' FC-8 digital format converter was designed to allow the transfer of eight channels of audio between Alesis ADAT and TASCAM DA-88 and compatible digital multitracks. It is powered by a plug-in PSU and features a DB-25 connector at one end for bidirectional TDIF interfacing. It has a suggested retail price of $549. For more information, contact Apogee Electronics, 3145 Donald Douglas Loop S., Santa Monica, CA 90405. Tel: 310-915-1000. Circle EQ free lit. #101.

SEE YOUR ANALYST

AudioControl Industrial's new electro acoustic analyzer, the Iasys™ is shipping. The unit goes through several tests including: crossover point, crossover level, limiter, delay, and polarity. The Iasys gives information in dB, Hertz, SPL, and feet, and has a help feature for easy operation. For more information, contact AudioControl, 22410 70th Ave. West, Mountlake Terrace, WA 98043. Tel: 206-775-8461. Circle EQ free lit. #103.

LONG WINDED

The Whirlwind MD-1 is a compact, battery powered mic-to-line driver with built-in headphone monitoring and line input capability housed in a steel chassis. Typical applications include use by shotgun, parabolic, and boom mic operators who want to monitor their pickup and drive long cable runs. The MD-1's input stage features a level control with a 40 dB range and a mic/line input level switch, along with switchable 18 V phantom power. The MD-1's transformer-isolated output stage is also equipped with a mic/line output level switch. Power is provided by two 9 V batteries. For more information, contact Whirlwind, 99 Ling Rd., Rochester, NY 14612. Tel: 716-663-8820. Circle EQ free lit. #104.

FOURSOME

Pinnacle Micro has a new recordable CD system with 4X write and 4X read capabilities. The RCD 4x4 ships complete with easy-to-use software designed for backup, audio/video, and data distribution applications. Free backup software (Disc Archive 95 for PC and RCD Backup for Mac) also comes bundled with each system. The RCD 4x4 PC internal is $995 and PC/Mac external is $1095 complete with hardware, Easy-CD Pro software from Adapted (PC) or CD Burner software (Mac), backup utility, blank CD, and more. Additional blank recordable CDs are $15. RCD 4x4 supports many of the most popular CD creation formats such as mixed mode, ISO 9660, HFS, disc-to-disc, multisession, and others. For more information, contact Pinnacle Micro, 19 Technology, Irvine, CA 92618. Tel: 714-789-3000. Circle EQ free lit. #105.

RAISE THE FLAG

Acoustic Control, a division of Samick Music Corp. has released the Flagship Series professional speaker systems. The Flagship Series incorporates Samick's patented Line Array technology and includes a complete line of full range and full range/biamp capable enclosures, monitors, and subwoofers. Highlighting the lineup is the SubTeq 2.6 subwoofer. It recognizes signals under 40 Hz as sound and has diaphragm movement measuring four inches. For more information, contact Acoustic Professional Audio Systems, 18521 Railroad St., City of Industry, CA 91748. Tel: 800-592-9393. Circle EQ free lit. #106.

CLASSIC SOUND

Classic Audio has introduced the Classic Blackface 1176 peak limiting amplifier, a replica of the series "E" original. Where available, all original part sources have been used and where transformers, for example, were not available, Classic has had them custom-wound to exact specifications. For more information, contact Classic Audio, P.O. Box 1456, Lennox Hill Station, New York, NY 10021. Tel: 212-570-1872. Circle EQ free lit. #107.

1997 EQ preview

SECOND GENERATION

Fostex has released a second version of its PD-4 DAT recorder. The PD-4 Version 2 features Fostex's 4-head design to provide off-tape monitoring. Other features include: 3 x 2 channel mixer with 3-position pan functions; selectable 48 V phantom power; variable low-cut filters; three sampling frequencies of 44.1, 48, and 40.048, which are specifically designed for downloading to workstations and digital pulldowns when transferring to video; three-position mic attenuator, 1 kHz slate tone generator, remote control port, and more. The PD-4 Version 2 recorder costs $7395. For more information, contact Fostex, 15431 Blackburn Ave., Norwalk, CA 90650. Tel: 310-921-1112. Circle EQ free lit. #108.

THE STYLES OF MILES

The new Miles Technology MPR-450 power amplifier is housed in a compact two-rack-space chassis and features six independent channels delivering total power in excess of 450 continuous watts. Each pair of channels is bridgeable with the flip of a switch for higher power with three, four, or five channels. Independent gain controls allow the level of each channel to be tailored. At 8 ohms, the MPR-450 delivers more than 60 watts of power per channel, while at 4 ohms, it supplies more than 75 watts per channel. Bridged at 8 ohms, it provides more than 150 watts per channel. Other features include: internal heatsinks and direct-contact transistor mounting, variable-speed fan, and a three-year warranty. For more information, contact Miles Technology, 1826 S. Third Niles, MI 49120. Tel: 800-280-8572. Circle EQ free lit. #109.

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107: The award winning, #1 selling Tubessence mic preamp is the perfect marriage of solid state and vacuum tube circuitry. Upgrade the sound of all your mics with uncolored detail, presence and warmth.

These products are covered by one or more of the following U.S. Patent numbers: 4150253, 5359665, 5334947, 5450034, 5424488, 5483600.

THE EQUALIZER(S)

The Q2031B, GQ1031C, and the GQ2015A are Yamaha's latest equalizers. The GQ2015A is a two-channel, 15-band equalizer that carries a retail price of $429. The 2U Q2031B is an independent two-channel equalizer with full 31-band control over the entire 20 Hz to 20 kHz range. It retails for $749. For monaural equalization, Yamaha offers the GQ1031C ($399) with full 31-band control. Variable high-pass filters are available on both channels of the Q2031B, providing 12 dB of rolloff. The GQ1031C and GQ2015A models feature a built-in 80 Hz high-pass filter activated by a single switch. An EQ LED on/off switch provides easy EQ bypass. Balanced 1/4-inch phone jacks and XLRs provide signal input and output; all three units are 19-inch rackmountable. For more information, contact Yamaha, Audio, Guitar and Synthesizer Division, Professional Audio Products Department, P.O. Box 6600, Buena Park, CA 90622. Tel: 714-522-9011. Circle EQ free lit. #110.

NEW KID ON THE BLOCK

The PCM-7040 replaces both the PCM-7030 and PCM-7050 recorders in the existing Sony time code-based DAT recorder lineup. The PCM-7040 supports a wide range of DAT recording and editing functions including: a time code reader/generator, digital I/O, memory start, RS232C interface, and edit memory options. The PCM-7040 supports Sony's Interactive Status Reporting (ISR), which allows users to monitor the status of certain PCM-7040 functions. For more information, contact Sony, 3 Paragon Drive, Montvale, NJ 07645. Tel: 800-635-SONY. Circle EQ free lit. #111.

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1997 EQ preview

COMMON SENNHEISER

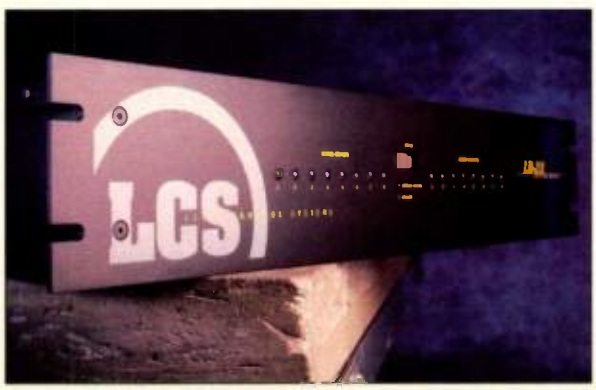
Sennheiser's new stereo headphone systems, the RS 8 and RS 6 feature long range capability. Transmitted signals can be switched in between three frequencies and can be received within a range of 285 feet. The RS 8 consists of the HDR 8 stereo headphone with integral radio frequency receiver; the T 8 radio frequency transmitter; and Sennheiser's HiDyn-plus® noise reduction system. The RS 6 consists of the HDR 6 stereo headphone with integral radio frequency receiver and the T 6 radio frequency transmitter. For more details, contact Sennheiser, 6 Vista Drive, P.O. Box 987, Old Lyme, CT 06371. Tel: 800-434-9190. Circle EQ free lit. #112.

ELITIST

Otari's latest console is the Elite. It is a fully featured, large format, 24-bus digitally controlled analog console. The Elite comes standard with Otari's Image Recall system, which allows all mono input module settings (EQ's, pan pots, faders and switches) to be stored at a touch of a button. Each of the Elite's dual-input (channel and mix path) modules has two enhanced symmetrical 4-band EQs with fully parametric midbands, sweepable high and low frequencies, and high- and low-pass filters on the mix path. For more information, contact Otari, 378 Vintage Park Drive, Foster City, CA 94404. Tel: 415-341-5900. Circle EQ free lit. #113.

SECRET CODE

Dolby has introduced several products for this AES. Its surround encoder and decoder TDM plug-ins for Pro-Tools workstations make it possible to mix Dolby Surround videos, TV shows, ad spots, multimedia, music videos and video games entirely within the Pro Tools environment. Also introduced is Dolby Drive, an all-digital soundtrack dubber system featuring recorders and players that store 45 minutes of eight-track audio at 20-bit resolution on removable 1 GB magnetic disks. For more information, contact Dolby, 100 Potrero Ave., San Francisco, CA 94103. Tel: 415-558-0200. Circle EQ free lit. #114.



BUT IS IT A *CHAMPAGNE* SUPERNOVA?

The new LD-88 digital mixer from Level Control Systems is the first modular building block of the new LCS SuperNova Series. Each LD-88 supplies eight channels of 20-bit audio I/O, as well as eight audio processing DSPs, and a control DSP. Using the NovaBus™, as many as 16 LD-88's can be digitally interconnected for a system that supplies 128 inputs/outputs, and up to 84 audio processing DSPs. The LD-88 is ideal for applications such as sound reinforcement, location-based entertainment, and theater.For more information, contact Level Control Systems, 10061 Riverside Drive #742, Toluca Lake, CA 91602. Tel: 818-506-0051. Circle EQ free lit. #115.

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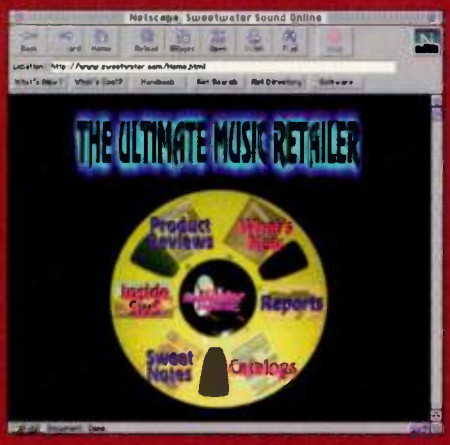

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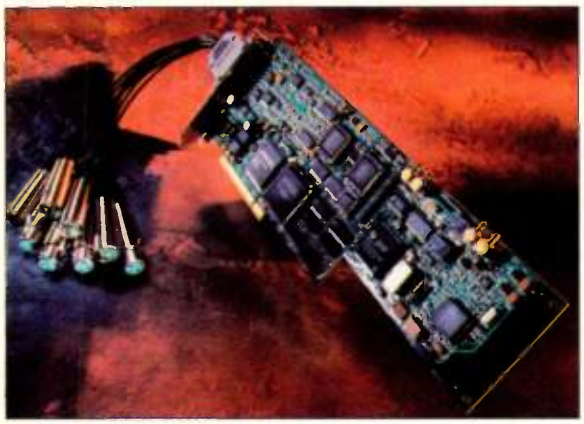
WRH

1997 EQ preview

HOT HEADED

Hot House has introduced its new High Resolution Control Room Amplier line ranging from 400 to 3000 watts that have convection cooling in three of the amps, while the other two units feature fan cooling. Available models include the: 400, which delivers 125 watts @ 8 ohms and 200 watts @ 4 ohms; 600, which delivers 175 watts @ 8 ohms, 275 watts @ 4 ohms, and 325 watts @ 2 ohms; 1000, which delivers 350 watts @ 8 ohms and 500 watts @ 4 ohms; 2000, which delivers 450 watts @ 8 ohms, 700 watts @ 4 ohms, and 1000 watts @ 2 ohms; and the 3000, which delivers 750 watts @ 8 ohms, 1200 watts @ 4 ohms, and 1500 watts @ 2 ohms. Retails prices are: $1199, $2199, $2599, $3599, and $4599, respectively. For more information, contact Hot House, 275 Martin Ave., Highland, NY 12528. Tel: 914-691-6077. Circle EQ free lit. #116.



WILD CARD

The Antex StudioCard™ is a four-channel PCI-based digital audio adapter ideal for mulitmedia and postproduction applications. It provides users with the ability to perform digital multitracking and mixing on their PCs. The StudioCard, with its 32-bit memory offers: 32-bit 40 MHz DSP, four independent I/Os (+4 dBu or –10 dBv), AES/EBU or S/PDIF digital I/O, and an MPU-401 compatible MIDI port. Synchronization via SMPTE, MTC, host clock and external word clock are sample accurate. The StudioCard generates SMPTE as well. Its multiple adapter capability allows users to install multiple StudioCards in a single computer for up to 16 tracks of recording. For more information, contact Antex, 16100 South Figueroa Street, Gardena, CA 90248. Tel: 800-338-4231. Circle EQ free lit. #117.

ON THE RAX

Omnirax MixStation 02R is for, well obviously, the Yamaha 02R. This workstation provides a working environment for the 02R and features a three-section, multi-level design. The center section of the MixStation is recessed to house the 02R and features a padded front-wrist rest with a view of the meter bridge and a shelf above the meter bridge that can support any computer monitor up to 31 inches wide. The left and right sections each have a total of 21 rack spaces: five sloping spaces on the desk surface for patchbays or outboard effects, six vertical spaces for ADATs or DA-88's or any other modules, and 10 vertical spaces below the desk surface for additional gear. All exposed edges are protected with T-molding. The MixStation 02R is available in five colors. It weighs 240 lbs. and has a retail price of $1199.95. For more information, contact Omnirax, P.O. Box 1792, Sausalito, CA 94966. Tel: 800-332-3393. Circle EQ free lit. #118.

TURBO CHARGED

E-mu's EX4 and EX4 Turbo digital sampling synthesizers come standard with more than 400 MB of sound data and thousands of sound presets stored on the hard drive. Digital Modular Sythesis™ is at the heart of the systems. It offers 21 Z-Plane® filter types, 32-voice layering, 128-voice cross switching or fading, and numerous patch cords that enable over 50 different synthesis destinations to be assigned to any of the 58 modulation scenes. Once a sound is shaped and edited, it can be digitally resampled to become the basis of a new waveform. For more details, contact E-mu, 1600 Green Hills Road, Suite 101, P.O. Box 660015, Scotts Valley, CA 95067-0015. Tel: 408-438-1921. Circle EQ free lit. #119.

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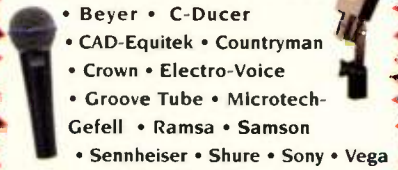

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CIRCLE 34 ON FREE INFO CARD

1997 EQ preview

UD-DERLY WIRELESS

The UDR200B UHF wireless receiver from Lectrosonics offers 256 selectable frequencies, available in 100 kHz steps for operation anywhere in the world. The UDR200B features a "tracking" front end that retunes as the frequency is changed over the 25.5 MHz range. The Opti-blend ratio diversity combining feature blends the audio outputs of two separate receivers together in a seamless manner. Lectrosonics proprietary AutoSearch automatically scans the local RF spectrum, detecting RF signals present in the vicinity. The frequencies of any signals detected are then displayed on an LED character strip on the UDR200B's front panel. A proprietary dual-band compander reduces distortion and noise,while a switchable dynamic noise reduction filter can be used to minimize excessively high-frequency audio noise. For more information, contact Lectrosonics, 581 Laser Rd., NE, Rio Rancho, NM 87124. Tel: 800-821-1121. Circle EQ free lit. #120.

2020 VISION

Sabine has introduced its upgrade to the FBX-1802, the FBX-2020 Dual Feedback Exterminator. The two-channel FBX-2020 automatically senses feedback, determines its frequency, and places a super-narrow notch filter on the feedback frequency. This latest Exterminator provides more gain before feedback and automatic feedback control. In addition to standard FBX features such as lockable fixed filters and switchable 1/10- and 1/5-octave filters, the FBX-2020 adds on several new features. It has improved 20-bit performance. For more information, contact Sabine, 13301 Highway 441, Alachua, FL 32615-8544. Tel: 904-418-2000. Circle EQ free lit. #121.

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WITH A HALF-CENTURY of experience in professional audio tape mastering behind us, Studer announces a new *magneto-optical mastering recorder* that is unrivaled for sound quality. Our new D424 M.O. Recorder features 24-bit recording technology via advanced A/D/A converters and offers over one hour of *uncompressed* audio on standard ISO 1.3/2.6 gigabyte cartridges. The 424's familiar "tape deck" functionality offers non-destructive *LaserBlade*™ editing and is fully file compatible with digital audio workstations for direct file interchange — including EDL's and .WAV Audiofiles. Get more detailed technical information now.

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CIRCLE 157 ON FREE INFO CARD

MADE IN THE USA

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1997 EQ preview

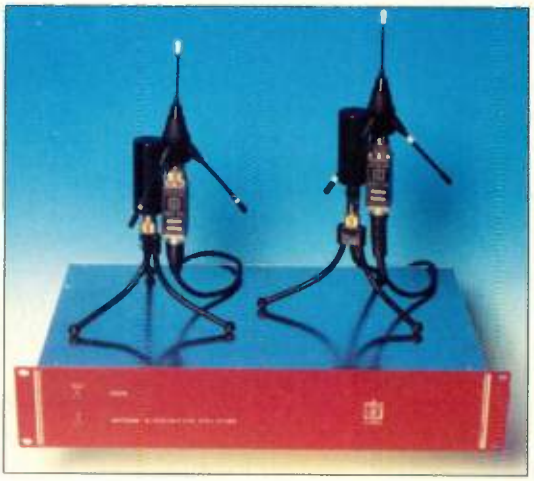
FROM THE SEA

The Octopus is an 8-input multiple output automated sound control system for live-sound applications from Out Board Electronics. The system is 19-inch rack mountable onto telescopic drawer slides, allowing it to be pulled out and pushed for travelling. Fully modular in construction with all channel connections made via the motherboard, the Octopus can be supplied in different formats. "All Input" is for applications that do not require routing such as when the Octopus is patched into the input points of the main console; "All Output" is recommended when more outputs are needed. For more information, contact Out Board Electronics, Unit D, Copley Hill Farm, Cambridge Road, Babraham, Cambridge CB2 4AF UK. Tel: 44 0 1223 837827. Circle EQ free lit. #122.

GOOD THINGS IN SMALL PACKAGES

Compact is the theme with the new Audix PH-15 speakers. Features include: 50 watts peak power, balanced inputs, thermal protection circuitry, 5 1/4-inch long-excursion woofer, 3/4-inch ferrofluid tweeter and IEC power connect. Retail price is $429/pair. For more information, contact Audix, P.O. Box 248, Lake Forest, CA 92630. Tel: 800-966-8261. Circle EQ free lit. #123.

GARWOOD TONIGHT



Garwood's ADA8 is an antenna distribution amplifier that eliminates the need for individual antennas when utilizing numerous wireless mic receiver units. The 2U rackmount unit actively splits the received signal via two antennae that can be placed remotely from rackmounted receiver units. Longer RF cable runs can be achieved without serious degradation to the signal by using Garwood's MA10 masthead amplifier with each of the two antennae. The Garwood MA10 is a new masthead amplifier, phantom-powered by the ADA8, which makes longer runs possible by boosting antenna gain by 10 dB. For more information, contact Garwood Communications, P.O. Box 1505, Newtown, PA 18940. Tel: 215-860-6866. Circle EQ free lit. #124.

MORE MEDIA

HHB has expanded its Advanced Media Products with the new HHB ADAT tape, MiniDisc MD74, the CDR-Printable Cyanine disc and an updated HHB CDR-74 Pthalocyanine disc. The new ADAT tape has 45 minutes of recording time; the MD74 has 74 minutes of recording, a protective slip case with lock-in feature, a precision sputter coated recording layer, and a rigid heat-resistant shell; the CDR-74 features a new matt coated protection layer. For more information, contact HHB Communications, Inc., 43 Deerfield Rd., Portland, MN 04101-1805. Tel: 207-773-2424. Circle EQ free lit. #125.

FOLIO SX

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THE FACTS (& no Bull)

At Soundcraft, designing the mixing consoles people actually want has been a serious business for over 22 years. We've listened to our customers – from budding musicians to world-renowned artists and sound companies – and we've built their wish-lists into our mixers. We don't hype our new features and we don't go in for gimmicks. When you listen to SX you'll realize we listened to you.

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- **Two sub-buses** allow you to record groups of instruments to multitrack, send them to additional speakers, or sub-group to mix. SX also has a dedicated Mono Out.
- **8 Direct Outs switchable pre/post fader,** equally useful when recording in the studio or at a gig.
- **100mm faders** throughout
- **Real British 3-band EQ with swept mid**
- **18dB/Octave High Pass Filter** effectively reduces low end muddiness.
- **3 Auxiliary Sends:** 2 can be pre- or post-fader.
- **Custom-designed consistent controls** give an even spread of control around their sweeps.
- **Surface-mount technology**
- **Rack mount option**

SX's Direct Outs on the first 8 inputs are front panel switchable pre-fader for live track laying or post-fader so you can "massage" recording levels in the studio.

MONO INPUTS

UltraMic™ padless preamp gives 60dB of gain range with 22dBu of headroom
Insert point for effects
Direct Out on channels 1 – 8
100Hz steep slope High Pass Filter
3-Band "British" EQ with swept mid
3 Auxiliaries configurable 2 x Pre/1 x Post or 1 x Pre/2 x Post
Channel "ON" switch
MIX/SUB routing switch
Full 100mm fader
PFL

STEREO INPUTS

13, 14, 17 & 18: simple phono inputs with level and MIX/SUB routing

15, 16, 19 & 20: Balanced jack inputs with Gain, 2 band EQ, Aux levels, Channel "ON", MIX/SUB routing, 100mm fader and PFL

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STUDIO RECORDING
Digital and analogue multitrack (4 & 8 track), small or home studios, pre-production, video post production

SUBMIXING

LOCATION SOUND

TYPICAL SPECIFICATIONS

Mic EIN	-129dBu
Crosstalk (1kHz):	
Channel Mute	<95dB
Fader Cutoff	<90dB
Frequency Response (20Hz to 30kHz)	<1dB
THD	<0.006%

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CIRCLE 22 ON FREE INFO CARD

RDL ME THIS

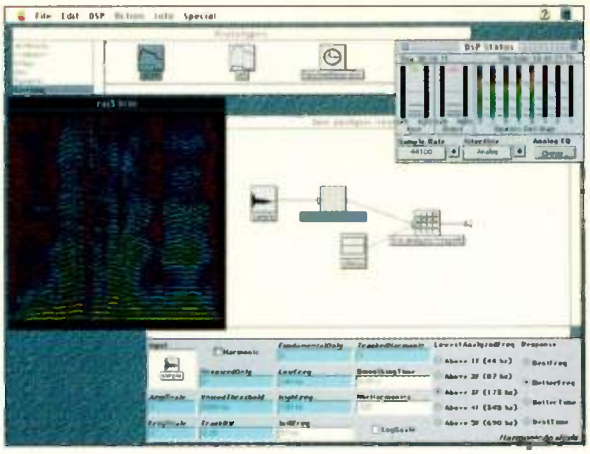
RDL Audio, manufacturer of amplifier and loudspeaker systems has announced its Pro Line range of speaker systems. Available in 200-, 250-, and 300-watt formats, the RDL Pro Line is comprised of trapezoidal cabinets and is manufactured from spray finished MDF. Both model RDL 200 and RDL 250 are full range 2-way bass reflex systems. The RDL 200 is loaded with a Fane Custom 12-inch bass driver, while the RDL 250 has a Fane Classic 15-inch driver combined with a Fane Studio 8M midrange chassis and J105 horn. For further information, contact RDL Audio Manufacturing Ltd., Units 1–5 Jubilee Business Park, Pymore Lane, Pymore, Ely, Cambridgeshire CB6 2EF, England. Tel: 44-0-1353-698589. Circle EQ free lit. #126.

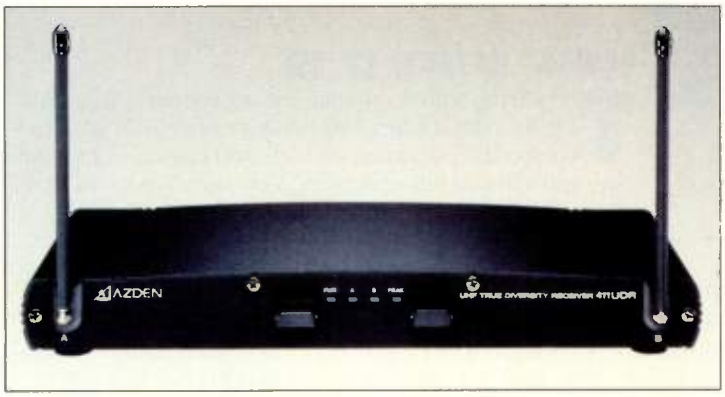
OOH LA LA

EAW has introduced the latest addition to its LA Series Linear Activation Systems. The new LA215 two-way, full-range system has been designed for concert touring to nearfield applications that include live sound, fixed installation, and multimedia presentations. The system is well suited for both stage monitor and small- to medium-sized PA applications. It incorporates a 15-inch woofer in a vented enclosure and a large diaphragm 2-inch exit compression driver coupled to a proprietary Elliptic Conical Waveguide. SPL in excess of 120 dB and peaks of 125 dB is provided by the LA215. The enclosure is asymmetrical and can be positioned horizontally as a low-profile stage monitor, or vertically stand-mounted for PA applications. Included are flying/hanging points that facilitate vertical or horizontal installation. In horizontal mode, the angled surface can be mounted flush to the ceiling, providing the proper downward aiming angle for nearfield installations. For more information, contact EAW, One Main Street, Whitinsville, MA 01588. Tel: 508-234-6158. Circle EQ free lit. #127.

TRULY SYMBOLIC

Symbolic Sound has created several new or improved spectral manipulation tools for the Kyma Sound Design Workstation. Among them is a vocoder that can have up to 80 bands. It provides the traditional analog vocoder effects along with the ability to be set up so that the center frequencies and bandwidths of all the filters vary over time under the real-time control of MIDI faders of following the pitch of the input. For more information, contact Symbolic Sound, P.O. Box 2530, Champaign, IL 61825-2530. Tel: 800-972-1749. Circle EQ free lit. #128.



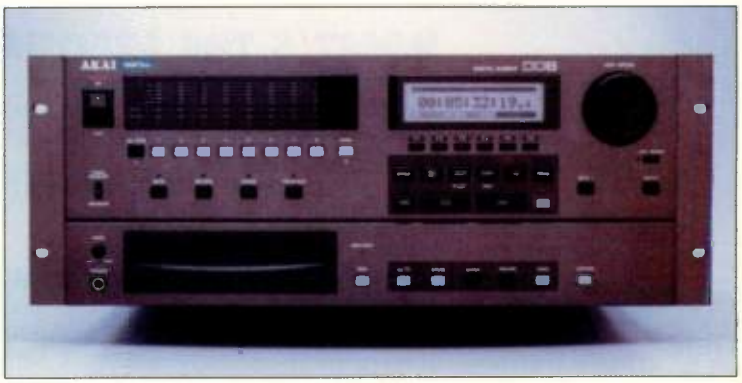


WHAT'S THE 411

Azden has introduced its first UHF wireless microphone system, the 411. The 411 series features the 411UDR dual-conversion superheterodyne true diversity receiver, 41BT bodypack transmitter, and 41HT handheld microphone. The system is crystal controlled, PLL synthesized and has 63 onboard user selectable frequencies with a range of 794 MHz to approximately 806 MHz. The 411UDR is a true diversity receiver containing two receivers, and features a 1/4-inch and XLR output jack with volume adjustment. For more information, contact Azden, 147 New Hyde Park Road, Franklin Square, NY 11010. Tel: 516-328-7500. Circle EQ free lit. #129.

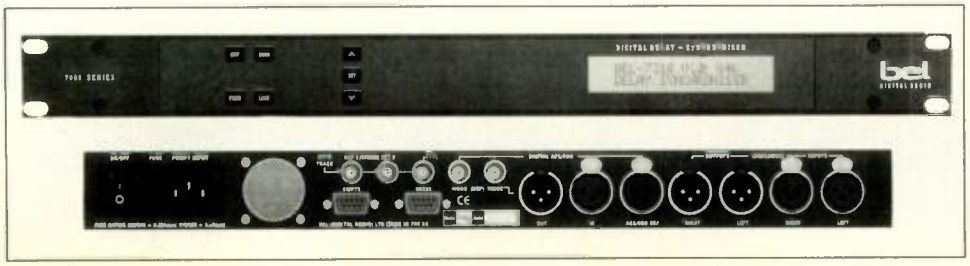
WANNA DD8?

The Akai DD8 is designed as a random-access digital audio dubber that offers plug-and-play replacement of DA-88's. Its onboard Drive Bay can accommodate a removeable hard disk or magneto optical drive. Akai has designed the DD8 to allow post houses to ease the transition from tape-based systems to random-access media by offering options for analog I/O on a 25-pin D-sub connector using the same configuration found on DA-88's. Retail price is approximately $5000. For more information, contact Akai, 1316 E. Lancaster, Ft. Worth, TX 76102. Tel: 817-336-5114. Circle EQ free lit. #130.



HEARING BELS

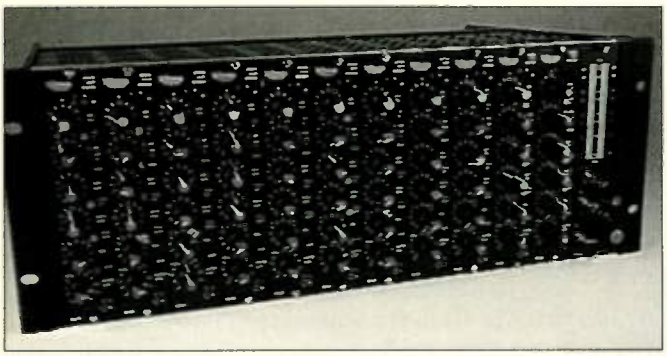
The Bel 7310 Audio Delay Synchronizer from Michael Stevens & Partners is designed for synchronizing audio and video. It features 1.3 seconds of audio delay, analog and AES/EBU digital I/O interface with nominal sampling frequencies of 32–48 kHz and clock referencing to AES, word, or video. In response to external signals, the Bel 7310 has 3 modes of automatic delay adjustment: source and reference video syncs, an active low TTL pulse, and RS232 interface for external control via a standard PC. All modes operate in real time with a choice of algorithms. For further information, contact Michael Stevens & Partners, Invicta Works, Elliot Road, Bromley, Kent BR2 9NT, UK. Tel: 44 0 181 460 7299. Circle EQ free lit. #131.



1997 EQ preview

MAGNETIC APPEAL

JRF Magnetic Sciences has introduced the UltimateAnalog MKII, an improved and lower-cost version of the 2-inch 8-track format for Studer analog recorders. This newer version has the time code channel integrated into the record and play heads at the standard "track 24" position, eliminating the fourth time code head and associated electronics of the original version. Also, track layout is playback compatible with standard 16- and 24-track analog recorders. Each track of the UltimateAnalog MKII fully covers at least one track on a 16- or 24-track play head. The eight audio tracks are each 4.6 mm wide and occupy the portion of the head used by tracks 1 through 22 on a standard 24-track head. To allow playback synchronization on any machine, the time code track is identical in position and width to the standard "track 24." The time code channel uses the existing channel 16 or 24 electronics, and no programming of offsets is required. Cost of the complete set of three UltraAnalog MKII heads is $9000 when mounted on the customer's existing headblock. For more information, contact JRF Magnetic Sciences, 249 Kennedy Road, Greendell, NJ 07839. Tel: 201-579-5773. Circle EQ free lit. #132.



HOW SUITE IT IS

The Mixing Suite® modular mixing system is Millennia Media's latest effort. The Mixing Suite is fully GML bus-compatible, modular, 4U high, and employs 12 module bays and external power supply. Each bay offers +/–28 VDC, along with logic and phantom rails, plus 1000 uF of backplane power filtering at every module bay. All main busses (4) and aux busses (4) are fully balanced. Offering both mono and stereo input cards, the Mixing Suite houses a potential 20 x 4 x 4 configuration with minimum configuration at 3 x 2. Maximum configuration is 80 x 4 x 4. The power supply is housed in a 2U, 19-inch rack providing all GML-compatible rails. Retail price on a 20 x 2 system is $15,690. For more information, contact Millennia Media, 4200 Day Spring Ct., Placerville, CA 95667-9500. Tel: 916-647-0750. Circle EQ free lit. #133.

WHAT'S THE FREQUENCY?

VEGA introduces the U2020, a 100-channel "frequency agile" UHF wireless system consisting of a half rack true-diversity receiver and a choice of bodypack or handheld transmitters. The system is available in two frequency sets: from 746–764 MHz and from: 764–782 MHz, providing a total of 200 possible frequencies. Features include: Dynex III companding circuitry, single-loop synthesis, lock-detect RF mute, front- or rear-mountable antennae, audio and RF meters, low battery and overload indicators, and attenuation controls. The companion MC2020 half-rack multicoupler feeds up to four diversity receivers on a single pair of antennae. The MC2020 also supplies DC power to the receivers. For more information, contact VEGA, 448 Post Road, Buchanan, MI 49107. Tel: 800-234-6831. Circle EQ free lit. #134.

SUPER MODEL

We're all familiar with the Model 107 mic preamp from Aphex. Here's the company's latest effort, the Model 109 parametric equalizer. It features Aphex's patented Tubessence™ tube circuitry and is designed for live or studio applications. The Model 109 includes a mode switch offering either dual (stereo) or mono four-band equalizer configurations in the same unit. Each channel of the Model 109 offers +/–10 dB of gain and two bands of equalization, which each offer +/–15 dB boost/cut with center detent, sweepable frequency adjustment, variable bandwidth, and switchable peak or shelving filter mode. Retail price is $495. Circle EQ free lit. #135.

NICE FORM

The CD-4400 desktop CD-R Duplicator from MediaFORM has been designed for audio production facilities that require high-volume CD-R output. The master unit houses four 4X speed recorders. New features to be offered for the CD-4400 include software upgrades direct from CD and DAT to CD-R interface. The CD-4400 also acts as a control source for up to four MediaFORM CD-2500 Autoloaders and supports all the appropriate CD-R formats. Retail price is $13,595. For more information, contact MediaFORM, 400 Eagleview Blvd., Suite 104, Exton, PA 19341. Tel: 610-458-9554. http//www.mediaform.com. Circle EQ free lit. #136.

BE DISCRETE

Coastal Acoustics, which manufacturers the BOXER monitor systems has introduced the G3 monitor, the first in a new range of powered BOXER monitors. The G3 is a midfield monitor that has a built-in three-way amplifier and crossover. For more information, contact Discrete Research Group, Ltd., Pinewood Studios, Pinewood Road, Iver Bucks SLO ONH. Tel: 44 01753 631022. Circle EQ free lit. #137.

LITTLE IS GOOD

NanoCon is Neutrik's latest three-pole subminiature connector. It is the smallest multi-pin connector in the world measuring in at .19" x 1.22". The NanoCon features a cable and chassis connector both with interchangeable male and female inserts. Male and female contacts are available in hardwire soldering or crimp versions. The NanoCon system also features a fully loaded chassis connector available for both horizontal or vertical PCB assembly. The connector also offers chuck-type strain relief and machined gold-plated contacts. For more information, contact Neutrik, 195 Lehigh Ave., Lakewood, NJ 08701. Tel: 908-901-9488. Circle EQ free lit. #138.

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FIRST LOOKS: IMPORTANT NEW PRODUCTS

Here are some AES-introduced products that just may change the way you do your job

BY STEVE LA CERRA

LEXICON MPX 1 MULTIPROCESSOR FX

The famed Lexicon reverb is finally available in a multiprocessor

Lexicon's MPX 1 is the latest in a line of processors that inherits the sound-quality pedigree of Lexicon BigToys (i.e., the 480L, 300, and PCM 90) with the cost-effectiveness of the LXP series. In fact, the MPX 1 is the first box outside of the former three to possess Lexicon's algorithm for ambience simulation (which, the company stresses, is *not* the same as a reverb algorithm). Up to five simultaneous stereo effect programs may be used, including reverb. In fact, a Lexichip is dedicated solely to reverb and ambience programs while the rest of the effects are handled by a second DSP, allowing the MPX 1 to maximize sound quality and DSP power. As a result, you won't run into a situation where you can't add ambience simulation to a program that already has chorus, delay, and pitch shift.

Let's get the utilitarian stuff out of the way. On the rear panel are XLR balanced and 1/4-inch (balanced or unbalanced) I/Os, a level switch for +4 dB or –10 dB operation, MIDI In, Out, and Thru connectors (with a remote input jack for phantom-powering MIDI foot controllers), S/PDIF I/O, two 1/4-inch controller jacks, and a standard three-pin IEC power connector. Analog-to-digital conversion is 18-bit, D/A is 20-bit, and signal-to-noise ratio is 95 dB, A-weighted.

There's more boring spec- and interface-stuff, but let's get down to the nitty gritty: Lexicon has built a box with six effect "blocks" — reverb, pitch shift, EQ, modulation, chorus, and delay — five of which may be active at a time. Each block has software control that allows you to use it like an independent processor, including the ability to patch them together in combinations that number in the millions.

You are given a software "routing map" by which you could (for example) route a stereo input to a pitch block, route the stereo output of the pitch block to the input of a stereo delay, and then route the output of the stereo delay to a stereo reverb input. The really cool thing about the MPX 1 is that you could also route the stereo output of that pitch block in parallel to the input of a stereo equalizer simultaneously. If that doesn't light your LED, you can run the left input of the MPX 1 to a pitch block, route the output of the pitch block to a delay, and route the delay to the stereo outputs, while at the same time using the right input for a reverb-to-equalizer-to-stereo output.

Of course, no one says that you have to jump into the programming pool. You could just use the programs Lexicon includes and tweak those to your heart's content. Finding programs appropriate for a certain sound is easy since a library is included. It flags programs with descriptive words like "drums" or "guitar" so that you can find all programs that might be used for those instruments. Or, if you find a vocal program that sounds great on drums, you can add "drums" to the library description for that program. Programs can be sorted by name, number, source (guitar, keyboard, etc.), effect type, or even the last ten effects loaded — so if you want to go several programs back, the MPX 1 will tell you which were loaded.

The unit has two modes for program selection: in manual mode, the data knob scrolls to a

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In addition to all of these editing features, the VS-880 comes with a 14-channel digital mixer that's fully automatable via MIDI. And a VS8F-1 Effect Expansion Board can be easily user-installed, giving you two totally independent stereo multi-effects processors.

There are several ways to get to know more about the VS-880. You can try it at your Roland dealer. You can call (213) 685-5141, ext. 798 to order a free demo video. You can visit one of our online sites or use our fax-back number. But don't wait, because this is one decision you won't change your mind about.

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With Scrub Preview, edit points are easy to find because you hear them at their original pitch. With editing resolution for finding edits at 1/3000th of a second, you can make edits precise enough to remove even the tiniest breath or guitar pop.

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With 64 virtual tracks, you'll never run out of room for creative input. Record a solo multiple times, keep tracks you bounce for re-mixing later, edit several versions of vocal tracks for instant comparisons, or keep a "dry" version of your guitar part for adding different effects later.

Just a few of the effects that can be added during recording, bouncing or during final mix in realtime are reverb, 3D RSS® stereo delay, chorus, flanging, phase shifting, Roland's COSM-based distortion/overdrive and guitar amp emulation, vocoder, pitch shifter and more.

Every mixer setting, including virtual tracks and effects, can be saved as a scene. Store a snapshot of a mix when you're bouncing tracks. When you need to re-bounce the tracks to adjust some of the levels, you still have the originals saved on virtual tracks.

Do things that are impractical with tape-based digital recorders. Move percussion parts instantly. Exchange, copy and paste multiple guitar solos. Erase and insert new endings. And just about anything else.

The locators and 1000 markers take full advantage of the VS-880's random-access capabilities. Just choose a point and you're instantly there. Every aspect of the creative process is faster and easier.

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program name (the Program button blinks) and you press Program to actually load it. In Autoload mode, the displayed program loads automatically. Live engineers will love manual mode because it allows you to cue up the next effect while running a different one.

On the front panel of the unit are (among other things) six backlit buttons corresponding to the six available effect blocks. When you load a program, the button lights if the block is active. To bypass a specific effect, press the desired button so that the light turns off. When you enter edit mode (by pushing Edit), pressing one of these six buttons takes you directly to the parameters of that specific block for editing. No scrolling through pages to find the delay feedback parameter. You wanna tweak the chorus? Press Edit, Chorus and you're there.

In program mode you have access to the most useful parameters without entering edit simply by pressing Value. This will bring up a "soft row" of parameters — those most useful for tweaking programs. The < and > buttons select the next or previous parameter while the data knob changes the value. If you don't like the parameters in the soft row, you can change them, and a different soft row is definable for each program.

There's one control on the MPX 1 that you won't find on any other effect device, and that is A/B glide. This is a built-in controller that you may connect to any parameter(s); "A" has a value of 0 and "B" has a value of 127. As a really simple example, you could patch it to the mix parameter and have A=dry and B=wet. When you push the button, the box automatically changes from dry to wet. Transition time is variable from 0 to 100 seconds. When a preset using A/B glide is loaded, the button lights, telling you to push it. You could also use A/B glide to crossfade the mix parameters between a reverb and a chorus to give a "morphing" effect.

These two examples are child's play compared to what you can do in conjunction with the TSW (MIDI touch switch). This latching (software) switch is driven by keyboard aftertouch. It goes on the first time you press and release aftertouch. It stays on until you press and release aftertouch again. You could patch the switch to A/B glide and set glide to control the Speed parameter in a rotary speaker simulator. Pressing the keys down once will kick the rotary effect to fast (at a transition speed of your choice), simulating the inertia of a Leslie. Continue to play with the rotary effect at fast, until you lean on the keys again (kicking aftertouch on a second time), at which time glide goes back from B to A (fast to slow). Very impressive.

If all that isn't enough, there's more, such as a front-panel Tap button for inputting delay times and/or LFO rates via tempo tap (which generates MIDI clock data); tempo can also be driven by MIDI clock input for sync'd delays. Lexicon has included a very useful program called "Capture EQ." You know how, when you're doing a session, it's real hard to EQ the toms because they only happen in certain spots of a song? Well this program has a two-second loop sampler in front of a digital EQ. Run the toms into the MPX 1 and it will loop them continuously while you tweak the EQ. There's even an input-driven, sub-octave generator with an adjustable envelope for adding a big bottom to your kick drum.

List price on the MPX 1: $1299. For more information, contact Lexicon, Inc., 100 Beaver Street, Waltham, MA 02154. Tel: 617-891-0340. Circle EQ free lit. #139.

14 NEW!

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"Cakewalk Pro Audio...un produit fabuleux pour les musiciens"

—PC Loisirs (PC Leisure, France)

"A very good choice for professionals who work on a deadline and demand top performance"

—Electronic Musician

"Excellent—and user friendly—results."

—Musician

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MACKIE HR824 STUDIO MONITOR

Mackie continues to diversify with the debut of its new nearfields

Well, it had to happen sooner or later. First it was recording consoles and then automation. Sound reinforcement consoles and then power amplifiers. It's only natural that Mackie is now introducing a pair of reference-quality studio monitors. These monitors are coming from Mackie, so you didn't expect just another pair of "I'll-sit-on-the-console-and-make-some-noise" speakers, did you? Well, the HR824 High-Resolution Active Studio Reference Monitor (whew!) is not your typical studio monitor.

For starters, the HR 824 is internally biamped with amplifiers that are compact versions of Mackie's recently introduced FR Series M•1200 power amp. There's a 100-watt amp (150 watts peak) for the high-frequency transducer and a 150-watt amp (200 watts peak) for the low-frequency transducer. A polypropylene 8.75-inch woofer is directly coupled to its amplifier in a servo loop, which constantly monitors the driver's motion and applies appropriate correction — thus reducing distortion. Instead of being installed in the more typical ported-type enclosure, this low-frequency driver is coupled to a pair of aluminum, mass-loaded, 6.5-inch passive radiators. Mackie uses this approach to eliminate vent noise and to reduce both power compression and low-frequency distortion. Together with the 8.75-inch driver, the radiators achieve the equivalent area of a 12-inch woofer cone, allowing the HR824 to deliver flat response down to 42 Hz. The 3 dB down point is stated to be at 38 Hz.

Of course, Mackie wouldn't give the HR824 a great bottom without a complementary top. A metal alloy is used for the tweeter dome and the driver is coupled to a proprietary, exponential high-frequency waveguide that maximizes high-frequency dispersion and enables the monitor to produce a large sweet spot. It also time-aligns the acoustic center of the tweeter to the woofer on the 1-inch thick front panel and helps reduce refraction from the enclosure itself.

Because the HR 824 is active, Mackie can match each transducer's acoustical output via electronic adjustments ensuring accurate, consistent response between monitors. In fact, every HR 824 comes with a serialized, frequency response printout verifying the unit's performance. Mackie has also built some intelligent conveniences into the HR 824. Rear-panel audio input jacks (balanced or unbalanced 1/4-inch or XLR) and an IEC power receptacle face downward, allowing the cabinet to be placed close to a wall without connectors getting in the way. A three-position switch helps the HR 824 maintain flat response for locations against a wall, in a corner or free standing. And an 80 Hz low-frequency rolloff switch helps the speaker simulate the limited low-frequency response of a small home stereo speaker.

The HR 824 list price is $1498/pair. For more information, contact Mackie Designs, Inc., 16220 Wood-Red Road, Woodinville, WA 98072. Tel: 800-258-6883. Circle EQ free lit. #140.

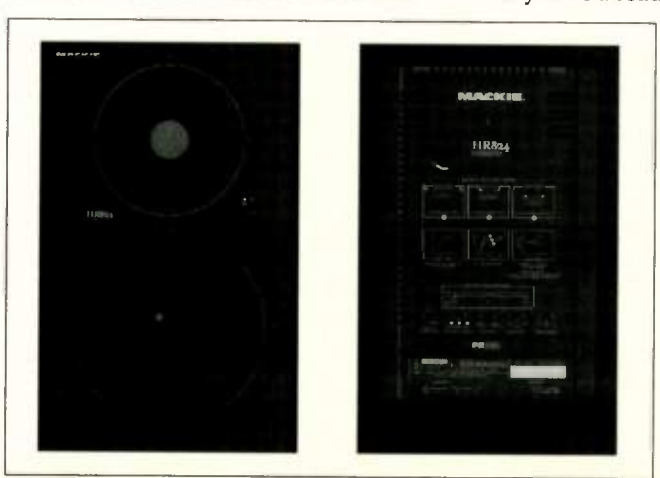
YAMAHA 03D DIGITAL MIXER

Yamaha introduces the "little brother" to the 02R

If you've been dying to get your hands on a Yamaha 02R, but don't quite have the budget, there's a new console that you'll really want to see. The new 03D from Yamaha actually incorporates most of the features of its big brother at a substantially lower cost. But the 03D is not just a scaled-down version of the 02R because it offers features intended to make life easier in the postproduction studio, such as LCRS surround sound capability and an RS 422 interface for linking with video editing controllers.

There are a total of 26 inputs in the 03D; 18 of them are analog with 20-bit A/D and D/A converters; and eight of those have microphone preamps with phantom power. Architecture of the 03D is four bus and each channel can also be directly assigned to the L-R stereo mix bus. In addition to bus assignment routing, each channel has 4-band parametric equalization, a limiter/compressor/gate, and access to the console's six auxiliary sends. Two of those sends are normalled to two internal effect processors that are capable of reverb, delay, chorus, flange, auto pan, and a variety of other effects. Fans of the 02R will be happy to hear that the 03D uses the same 32-bit DSP engine as big brother and that the 03D has built-in automation for dynamic adjustment, as well as snapshot scene recall of all mix parameters.

Owners of DAT, digital multitrack, and hard-disk recorders can keep their recording in the digital domain by using the 03D's interface cards, which can be installed in a slot in the rear panel. These interface cards are actually the same as those used in the 02R, and, when installed in the 03D, accept eight digital channels of audio from multitrack machines. Cards are available to allow the 03D to talk TASCAM TDIF, Alesis ADAT optical, AES/EBU standard, and Yamaha digital formats. Additionally, the card sends a total of eight digital outputs, which comprise the user's choice of busses, aux sends, and channel direct outputs to these devices or any workstation recognizing one of those formats.



If you've already got an 02R in your studio, a cascade kit is available, allowing the 03D to be interfaced with the 02R. When locking to timecode, the 03D's built-in computer handles console automation chores. The 03D also has the ability to act as a controller over a wide range of DSP-based mixers built into popular

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workstations and software platforms. Yamaha expects to begin shipping the 03D in the first quarter of 1997 at a suggested retail price under $4000.

For more information, contact Yamaha, 6600 Orangethorpe Ave., Buena Park, CA 90620. Tel: 714-522-9011. Circle EQ free lit. #141.

KORG SOUNDLINK DRS

The noted keyboard manufacturer takes a stab at digital workstations

While the Korg name is certainly familiar to readers of *EQ*, it's probably more frequently associated with keyboards and synthesizers. Korg is planning to change that with the introduction of the SoundLink DRS — a series of digital studio recording components that can work separately or together as a system. Since this system is modular, a user can purchase the components they need now and plan for expansion in the future. Additionally, owners of Korg's Trinity music workstation can integrate that into the DRS system as well, offering the possibility of leaving the audio signal in the digital domain through final mixdown.

Besides the Trinity, the SoundLink DRS (Digital Recording System) consists of six components: the 1212 I/O, the 168 RC console, RM 8 reference monitors, RMA 240 monitor amplifier, and the 880 A/D and D/A interfaces (any of which can be purchased separately). All of these devices are analog and digital compatible, so you can basically start with the device you feel is most important to your current studio rig. As you add more of the system components, your recordings will progress further and further from the analog into the digital domain.

Let's take a look at a likely place for starters: the 1212 I/O audio interface. Anybody that likes Macromedia's Deck II is going to love the 1212 I/O. It's a multi-channel audio interface card that plugs into your Mac's PCI slot and gives you a total of 12 inputs and 12 outputs. You get two analog I/Os (unbalanced, on stereo TRS 1/4-inch connectors), an S/PDIF I/O, and eight channels of ADAT I/O. Great news: you can use all of them simultaneously.

When you are ready for a digital recording console, the 1212 I/O will connect directly to Korg's 168 RC, which really is the centerpiece of the SoundLink DRS. The 168 RC offers engineers the opportunity to convert their audio to the digital domain and leave it there for recording, processing, and mixdown. Built into the 168 RC are a pair of ADAT optical interfaces, providing 16 channels of ADAT I/O. Your audio is introduced to the system from the analog world through eight inputs, each of which include an onboard, 18-bit A/D converter.

If your recording setup requires only one ADAT but you want more analog inputs, you can opt for an 880 A/D. This is a rackmount box that interfaces to the 168 RC via ADAT optical cable. Connecting the 880 A/D replaces one of the ADAT optical

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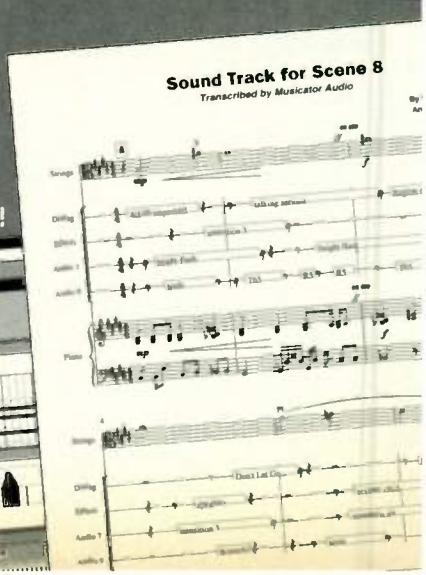

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inputs, but gives you another eight channels of A/D conversion and analog input.

By giving you the ability to configure the outputs as you require, the SoundLink DRS possess tremendous flexibility. You can use an 880 D/A for your current analog tape recorder, and when you have the dough for an ADAT, you simply disconnect the 880 D/A and patch to the ADAT via optical link.

Input selection and routing in the 168 RC can be extremely flexible, so pay attention here: There are 24 input interfaces in the 168 RC; 16 are ADAT optical and 8 are analog. Korg's input routing matrix lets you "patch" (via software) these inputs to any of the 16 channels. Inputs 1 through 12 give you control over fader level, pan, 3-band EQ (semiparametric highs and lows, and fully parametric midrange), aux send 1 and 2 level, effect send 1 and 2 level, mute, solo, and output assign (inputs 13 through 16 do not have EQ). So you can patch any 16 inputs to any of the 16 channels. But the 168 RC does not leave the "extra" eight inputs out in the cold. These can be routed directly to summing amps at 16 various places in the console, such as "main mix bus, left" or "aux return 1." Level control of these signals is at the source, so if it's a keyboard, you'd use MIDI volume control to adjust signal level. If it's a submixer or an effect device, you'd use the output level controls of those devices.

Two auxiliary sends are available at 1/4-inch TS jacks on 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.

When it comes time for mixdown you can record via the 168 RC's (analog) line-level master outputs or you can stay in the digital domain and use the S/PDIF output. Note that if you already have a Trinity with the Hard Disc Recording option, you can digitally mix via S/PDIF to the Trinity's built-in drive; this gives you the ability to edit a mix nondestructively in the digital domain.

Probably the most attractive feature of the 168 RC is its 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 — including the one in the Trinity.

All of this recording muscle would be wasted if you were listening through a substandard monitor system, so as part of the SoundLink DRS, Korg offers the RM 8 reference monitors and the RMA 240 monitor amplifier. Korg teamed up with the engineering and manufacturing folks from Boston Acoustics to develop the RM 8, a compact two-way loudspeaker with a 7-inch, long-throw woofer, and a 1-inch Kortec dome tweeter. To eliminate interference with your computer or video monitor, RM 8's are magnetically shielded.

List pricing for the Korg SoundLink DRS components is as follows: 168 RC: $3200; 1212 I/O including DECK II: $1250; 880 A/D: $1200; 880 D/A: $1000; RM 8 Reference Monitors: $420/pair; RMA 240: $700.

For more information, contact Korg USA, Inc., 316 South Service Road, Melville, NY 11747. Tel: 516-333-9100. Circle EQ free lit. #142.

GENELEC 1029A/ 1091A ACTIVE CLOSEFIELD MONITORING SYSTEM

Genelec debuts an affordable monitoring system

Genelec is a name associated with some of the highest-quality studio monitors available, many of which are priced above the reach of studios of modest means. Certainly not a company to sit still while the audio world goes by, Genelec has developed a monitor system that will appeal to studio owners desiring Genelec quality but not having the deep-dish bank account to back it: the 1029A/1091A Active Closefield Monitoring System.

Genelec's new system is comprised of the 1029A (a compact full-range speaker) and the 1091A (a subwoofer). Powered by two 40-watt amplifiers, the biamped 1029A is anything but your typical nearfield monitor intended for console-top placement. Housed in a 10-inch x 6-inch x 7.125-inch die-cast aluminum enclosure, the 1029A is ruggedly built for safe transport from studio to studio while offering massive heat-dissipation capabilities to keep those amps cool and calm. Frequency response is rated from 68 Hz up to 20 kHz, +2/–5 dB and each cabinet is magnetically shielded to protect nearby video monitors. Genelec's Directivity Control Waveguide technology (the same employed in the well-established 1030-series) is used in conjunction with a 3/4-inch, hard-dome tweeter to ensure uniform dispersion and low distortion over a wide frequency range. Low frequencies are reproduced by a 5-inch driver and rear-panel bass and treble tilt controls help adjust the 1029A's response for your particular room. Volume level is adjusted via front-panel knob.

Supplementing the bottom end of the 1029A's is the 1091A subwoofer, specifically designed for use with the 1029A's. The 1091A features a single 8-inch driver in a dual-vented MDF enclosure, but the really neat thing about the system is that incorporating the 1091A is a no-muss-no-fuss situation. Input level to the 1091A is driven via the gain controls on the 1029A's, so you won't need to go through a long set up procedure to match the level of the sub to that of the 1029A's. A set of DIP switches in the 1091A's 70-watt power amplifier module can be used to adjust the bass rolloff, should your application deem this necessary. Best of all, the 1091A extends the system response down to 40 Hz. Suggested retail for the 1029A/1091A system is under $1800.

For more information, contact Genelec at 508-440-7520 or circle EQ free lit. #153.

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1997 EQ preview

THE L.A. GOLD (RECORD) RUSH

A quarter century of studio excellence from La La Land

BY CHRIS STONE

During the late '60s, the Westward movement of the pop recording studio scene would soon transform the entire audio industry. Prior to that time, the Mecca was New York City, while studios in L.A. and other cities primarily catered to the regional talent. Having launched Record Plant in NYC, 1968 (12 tracks), we saw the writing on the wall and were fortunate to play a part in the L.A. expansion with the opening of Record Plant L.A. in 1969 (16 tracks). As a result of this geographic recentering to L.A., the nexus of *hits! hits!* became, in Stevie Wonder's words, "La La Land."

THE STUDIOS

In the late '60s the main recording studios in L.A. included, among others, Wally Heider, RCA, CBS, United Western (Sinatra and Bing Crosby were investors), Sunset Sound, TTG, DCP (Don Costa Productions with his nephew, young Guy Costa, of later Motown fame), Gold Star, and Radio Recorders (where Record Plant is today), as well as the major film studio scoring stages and the early television "single mic and a 2-inch speaker" audio stages. Scoring for film, big band, and jazz was big in L.A., and had been a magnet for professional studio musicians relocating here from New York City. A handful of studios ruled the Big Apple, with prices escalating in an upward spiral.

In 1969, we opened the West Coast version of The Record Plant, proudly declaring on our party invitation that we were "L.A.'s First Hunchy Punchy Recording Studio." We wanted to shake things up and, well, we rocked the boat. Our well-documented approach was seen as revolutionary, but was actually quite simple: modern acoustics by Tom Hidley, the best equipment available, and studios that looked like living rooms because superstar engineer and partner Gary Kellgren knew it should be that way. This prompted many artists to say, "Hey man, I'd like to live here!" Best of all, it was 20–25 percent less expensive to record in L.A. than in New York City.

What followed was a cry of "Go West, Young Musician" — and they did, providing the artists, producers, and engineers to feed the new studio scene. Buddy Brundo, owner of Conway Recording Studios remembers: "Studio musicians moved here to do film dates because the work was constant and the pay was good. Pop music producers then had a pool of pros to call upon, which attracted them and their artists here."

Village Recorders, MGM, Elektra, ABC, Liberty (which later became Arch Angel, owned by Neil Diamond), Larrabee, Conway, Motown (formerly Poppy), Sound Labs, Hollywood Sound, and Record One, among others, opened their doors and prospered. Hollywood had become the new Mecca for making records, and was soon to be the largest professional audio market in the world, with close to 300 recording studios in the greater L.A. area by the mid '80s.

PRODUCERS & ENGINEERS

Along with the new studios came the new record producers (they had formerly been A&R guys who did mostly administration, but George Martin and the Beatles changed all that). Record producers became more like film directors, and with more creative recording techniques we saw the emergence of the superstar engineers. Engineers had previously been on staff in the large

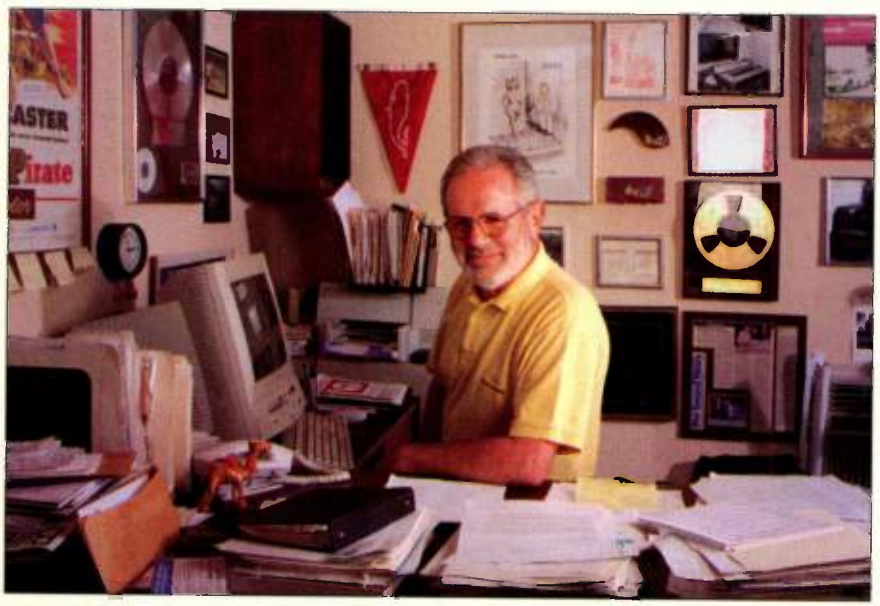

Photo by Ed Freeman

L.A. STORY: Chris Stone, founder of the Record Plant, recounts some of L.A.'s recording history.

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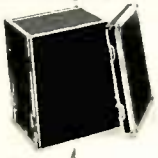

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studios, and were assigned and shared the recording duties of the major music artists. It was expected that CBS artists would only work at CBS studios, and the same went for RCA, Capitol, and the rest of the major labels.

That all changed when the major artist's manager sat in front of the A&R executive assigned to his guy/girl, complaining: "My artist would feel inhibited creatively if he can't work at such-and-such studio with so-and-so, the only audio engineer who understands this music." We saw the birth of the independent engineer who could call the shots, a creative force that, in many cases, evolved into the engineer/producer who made the decisions of where the artist would be most comfortable for the recording. Prominent producers had their favorite engineers, artists had their engineers, and the lawyers decided which superstars would be in control in the recording of the record. The record labels quickly found themselves in the position (only with their highest selling artists) of trying to control the excesses instead of controlling the creative output of the recording process. The carte blanche budgets were a godsend to us who were gambling heavily on the new technology.

FLASHBACK: Stone outside The Record Plant on 3rd St. circa 1973.

Some of the more talented producers in L.A. at that time were: Bill Szymczyk (Clown Prince), Al Kooper (Mr. Cool), John Boylan (Quiet Force), Quincy Jones (Best Vibes), Glyn Johns (Icy Brit), Tom Dowd (Mr. Wonderful), Bones Howe (Mr. Understated), Snuff Garret (The Rascal), Phil Spector (Out of this World), Brian Wilson (Out There at the Center), Tom Allom (Heavy Metal British Dude), Tom Werman (MBA Hard Rockman), Ron Nevison (Cloak and Swagger), Phil Ramone (Lovable Genius), Stewart Levine (Mr. Expense Account), Nick Venet (Room Full of Gold), Malcolm Cecil and partner Bob Margouleff (The Odd Couple), Richard Perry (Studio 55), Bob Ezrin (Cooper and Floyd), Brooks Arthur (Opportunity Knocks), Ed Freeman (American Pieman), Bill Halverson (CS&N), Armin Steiner (Avant Guard), Lee Herschberg (Sweetheart of the Studio), Al Schmitt (Everlasting Hits), George Massenburg (State of the Art), and Paul Rothchild (Elektra Man).

A short list of top engineers (many of whom later became producers) included: Gary Kellgren (my partner in Record Plant), Eddie Kramer (British Invader), Andy Johns (Brit That Roared), Val Garay (Record One), Bill Schnee (Still Cookin'), Bob Gaudio (The Fifth Season), Howie Schwartz (Heider's 1969 tape operator), Guy Costa (Mr. Motown L.A.), Bruce Botnick (The Doorsman),

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ALESIS

Buddy Brundo (Italian Stallion), Roger Nichols (Steely Man), Bruce Swedien (Q's Sidekick), and Allen Sides (Ocean Way).

THE ARTISTS

Artists who quickly picked up on the L.A. scene of the late '60s and stayed to party included: Jimi Hendrix, The Rolling Stones, The Doors, The Doobie Brothers, BS&T, the Motown roster, Simon & Garfunkel, Neil Diamond, Judas Priest, The Eagles, Don McLean, Stevie Wonder, Steely Dan, Linda Rondstadt, Boston, John Denver, Santana, Buddy Miles, and Jackson Browne. Obviously, L.A. was the place to go to make your record — that's where your friends were, and the parties never stopped at our studios.

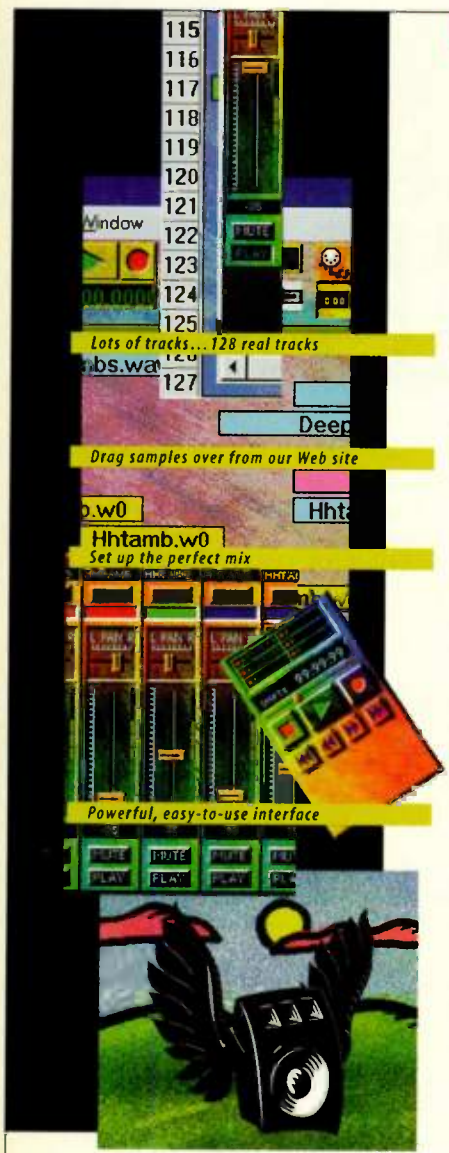
THE TECHNOLOGY

Along with the producers, engineers, and artists came the charging advances in recording technology, fueled by big budgets and artist demand. Bill Putnam was here at United Western with Jerry Barnes and formed UREI to design and manufacture better outboard gear, such as the 1176 (which sold for $650 new and is now worth up to $3000 in mint condition). JBL came on strong, as did 3M and Ampex with their multitrack tape machines.

Producer Bill Szymczyk (Joe Walsh, Eagles, B.B. King) says it well: "It was really those damn Beatles and the whole London scene. Those guys were always ahead, whether it was George Martin doing something different with 4-track, tape doubling techniques, phasing, wrapping masking tape around the capstan motor, whatever. We could not keep up. What really did it for me was hearing stereo drums for the first time on *Sgt. Pepper*. That was the start of needing more tracks to do everything in better stereo. Now, the drums alone may take 12–16 tracks. When MIDI arrived, it just added to the need for more tracks, which allowed us to simply make more flexible, complex music. Technical development was definitely driven by a greater number of tracks on the tape machines."

This development, of course, required the console makers of the day (including Quad 8, API, Spectrasonics, Neve, and, later, SSL) to design larger consoles to accommodate the greater number of tape machine tracks available. The rule of thumb was to have enough channels for the number of tracks on the tape machine, plus at least eight more for effects. As a studio owner, if you bought a new console every three years you had to order a frame with a minimum of 8–16 modules of expansion space or you were obsolete by the time you got it installed. John Stronach sums it up: "The Beach Boys developed the L.A. Sound. Innovative technology gave us the capability (more tracks=more freedom of expression) and flexibility to allow the music to be driven by the artist and expressed by the recording studio audio engineer — if he had the right toys."

The same is true today, but now the sophistication of synchronizers — initiated by Gerry Block's Timeline Lynx modules — allows us to cascade machines for as many tracks as we need for any project, incorporating less expensive tape machines like the TASCAM DA-88 and the Alesis ADAT. More importantly, the synchronization concept allowed the audio and video machines to "talk to each other," providing a quantum leap for the au-



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EQ2 users include: Abbey Road, Townhouse, Dave Gilmour, Andy Jackson (Pink Floyd), Ocean Colour Scene, Mute Records and many more.

Alex Marcou - Abbey Road Studios (House recording engineer) - "The VI-1 makes hard sterising digital sound like cold, sounders analogue - a joy to listen to. The combo that the EQs, Pre Amps & Compressors give is excellent."

Andy Jackson - Pink Floyd (Sound engineer) - "All the lead vocals on the "Division Bell" album was were run through the EQ-1. I certainly prefer the EQ-1 to other Valve Equalisers for vocals. The new EQ-2 is probably the best all-round EQ I've ever used."

Chris Porter (Producer - Take That) - "I bought one of the first EQ-1s and I've enjoyed using it enormously. It gives a unique quality to the vocals in particular - Take That's "Back For Good" is a typical example of the EQ-1 adding depth and presence to a vocal track."

Tom Lord-Alge (Dual Grammy Award Winning Engineer) - "The Indigo 2011 EQ has given me the ability to EQ with clarity, rather than fuzz. Every. It lend it to be very musical. Any problem I have I have come across, I plan in the 2011 and it allows me to add depth and clarity."

Stephen Croes (Producer, Arranger, Engineer - Rheinhardt Hall, Kenny Loggins, Steve Winwood) - "The Indigo 2011 EQ and 6021 Compressor are exceptional - both sound give and flexible. I can stomp on the guitar, hype a sound or just detail. These are real tools for any level of music production."

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1997 EQ preview

dio and visual arts to crossbreed and flourish. Again, L.A. led the scene because it was also the largest film and television production market in the world.

DIGITAL

It all started at the AES show in L.A. in 1978, when Mitsubishi and Sony introduced their first 2-track digital machines. Mitsubishi had 2-track reel-to-reel and Sony had the 1600 (Beta cartridge), which later became the 1610 and then the 1630. In February, 1979, the first 3M 32-track and 4-track digital machines were installed at Record Plant L.A., with Stephen Stills recording for a crowd of naysayers. It blew everybody's mind and the industry never looked back.

The CD was introduced to the press and our industry by SPARS at United Western studios in L.A. in 1982. Guy Costa from Motown, Jerry Barnes from United Western, and others demonstrated to everyone present that the laser beam had provided a worthy replacement for the stylus of the record player. That same year Sony introduced the 3324 multitrack digital tape machine. In 1983, Dr. Tom Stockham (Soundstream) opened a hard-disk digital editing service on the Paramount Pictures lot in Hollywood with a large roomful of massive Honeywell computers. That same year brought us the Mitsubishi 32-track, followed by the Otari. In 1986, Record Plant L.A. once again led the pack with the first Sony 48-track digital recorders, still the standard in the major recording studios of today.

ACOUSTICS

Last, but certainly not least, are L.A. contributions to acoustic technology. Tom Hidley was among the first to explore and develop the new acoustic design, isolation, and monitors capable of acceptably presenting the high sound pressure levels generated by hard rock, which had not been required by acoustic music. At TTG (Two Terrible Guys — Hidley and Ami Hadani) studios in Hollywood in 1966–68, their efforts attracted the Monkees, Eric Burden, and Jimi Hendrix, among others, who were in awe of the power and clarity when they heard their own music at incredible levels. Word spread to New York about the "new L. A. sound." I knew this would be a tremendous marketing tool and hired Hidley away from TTG to design the new Record Plant studios. Today, Tom Hidley has built over 500 studios around the world

continued on page 150

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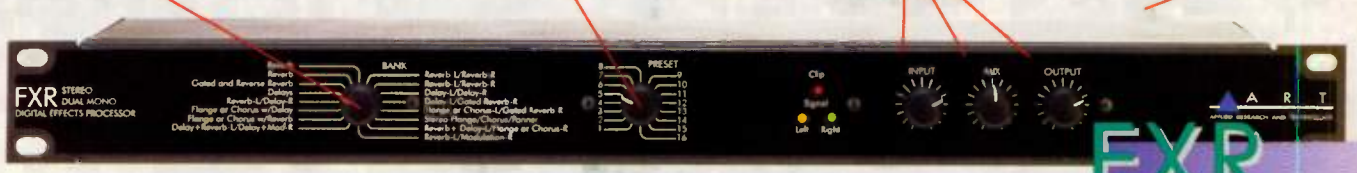

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CIRCLE 06 ON FREE INFO CARD

STEAKING THEIR REPUTATIONS

Steve Lukather and Tom Fletcher use their years of audio industry experience to open The Steakhouse — a musician-friendly studio

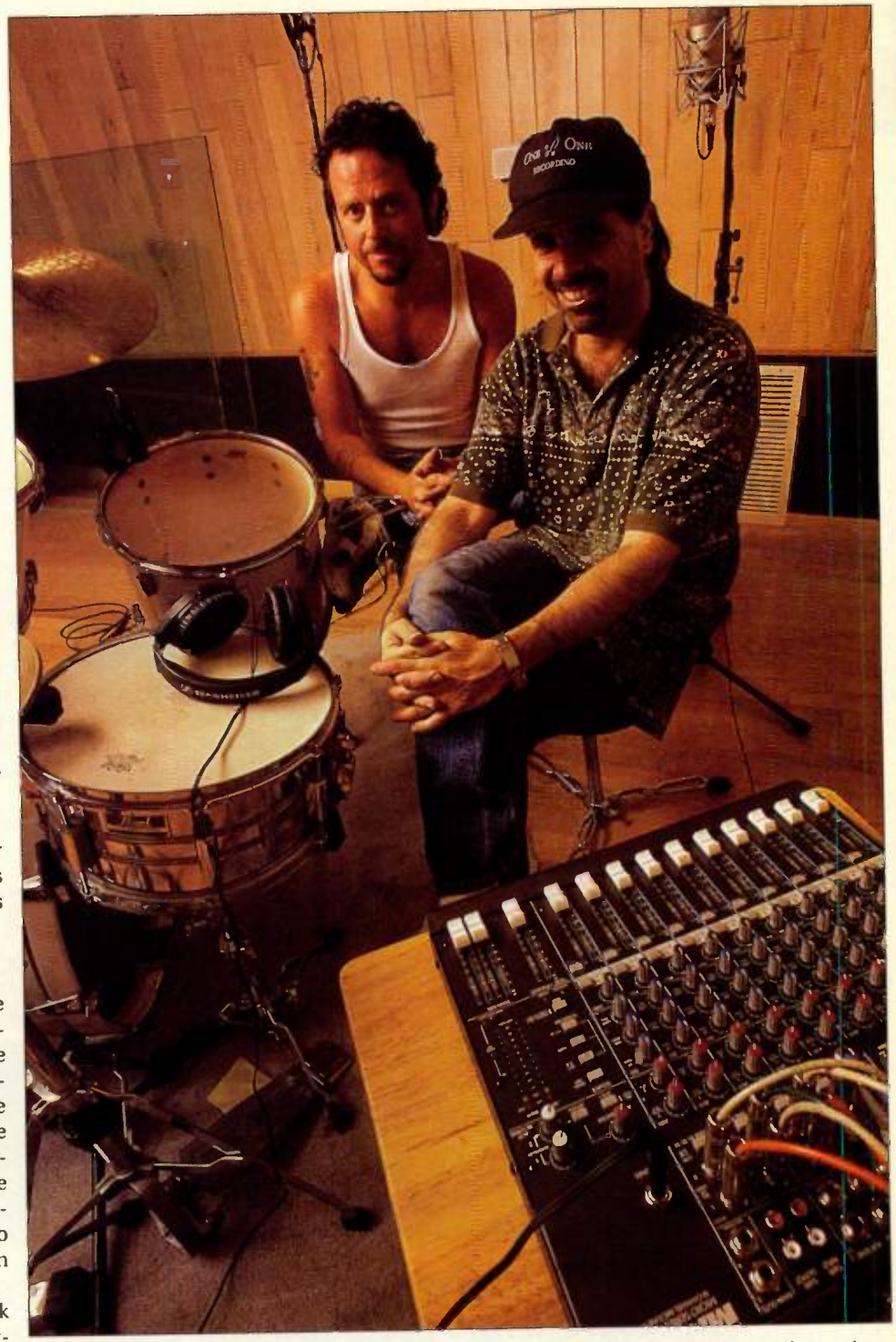
BY STEVE LA CERRA

For a moment, ponder some of the successful partnerships of the 20th Century: Franklin and Eleanor, Lennon and McCartney, Abbott and Costello...Now add in a *very* heavy dosage of Tom and Jerry and you've got something akin to the musical union of Steve Lukather and Tom Fletcher. Lukather may be best known for his outstanding guitar work with the supergroup Toto but he has played on hundreds of records with people such as Eric Clapton, Quincy Jones, Donald Fagen, Mile Davis, and Don Henley — it might actually be easier to name the music superstars he *hasn't* played with. Tom Fletcher has piloted the studio as an engineer and/or producer for projects with Paul Rogers (the Muddy Waters Tribute), Ozzy Osbourne, Scorpions, Dangerous Toys, Shotgun Symphony, Yngwie Malmsteen, Infectious Grooves, Los Lobotomys (a band that also featured Lukather) and, most recently, Yes. Ya' think these guys know how to make records?

So much so that they decided to build a studio and start a production company, offering their vast experience to up-and-coming bands as well as seasoned pros. Lukather (a.k.a. Luke) starts off with, "It's like the concept of Hendrix's studio, Electric Lady. Budget-wise, there's never a time problem, and you know how records are being made now — the days of the half-million-dollar budgets are over. We're in the process of working with a couple of bands and now we have a room to

Photos by Peter Figen

CREATIVE PROCESS: Steve Lukather (left) and Tom Fletcher promote musical creativity in their project studio — which is sure to attract some big-name acts (but we're not telling).



record in. It doesn't cost anybody any money, except for the tape.

"I've been doing this for 20 years and I know how the whole corporate game is played. You sign away your life to make a demo just to get a record deal. F*** that. Both of us are musicians, we know how musicians used to get burned with their publishing and all that, and we refuse to work that way. We want to give everybody a fair shot." Fletcher concurs: "The fun thing for us is to be able to have our own facility so we can have cool new bands come in and guide them without making it hell or scary for them. Hey — if the singer isn't feeling well, it's like, 'OK let's take the day off and we'll come back tomorrow.'"

"They're not looking at their watches going, 'Oh God this is costing two grand a day,' " adds Luke.

NUTS AND BOLTS

The duo's studio is called The Steakhouse, and design was started by Rick and Lee Bench before Tom and Steve actually became involved. Fletcher tells the tale: "The place was lying dormant. Steve and I walked in, saw a shell of a studio, and said, 'Here's what we need to do to finish it.' It was destiny. We were wondering what to do at that point and it just fell in our lap."

In spite of their megabuck studio experience, the gear is surprisingly down to earth. Fletcher feels, "a lot of people think they need big-name gear to cut records. I'm the kind of guy who believes it's all about the signal path. You've got unity gain, you've got good tone — it's source. It's not that you need a Neve desk or an SSL or whatever. I put up an 80-channel Mackie and record everywhere, and when I take it in for mastering it sounds as good, if not better, than all those records made using multimillion dollar gear. Like with the new Yes record; I'd mix it on the Mackie and then try to mix it on a Neve, and to me it just automatically sounds overprocessed. It sounds too slick." Luke summarizes: "It's the pilot. You can give somebody a $50,000 dollar guitar, but it ain't gonna make 'em play any better."

Installed in the control room at The Steakhouse ("Like a T-bone," jokes Luke) is the Mackie console configuration referred to earlier. It's a 32-channel 8•Bus linked to two 24-channel expanders. This Mackie rig is routed to a 24-track Studer 2-inch analog machine that lives side-by-side with three TASCAM DA-88's. In addition to the main playing area, there are also a few iso booths for miking vocals, guitar amps or whatever; definitely designed for bands playing live together.

Although these boys have made some pretty slick records in the past, their new direction is raw and natural. Luke recalls, "We used to make records that were like scary-tracked — you know, 'Let's triple everything!!!' Well, we were young and smoking a lot of weed... what can I say?" Fletcher goes on, "People are growing up with technology. If

WRH

you go back to when I was listening to records like the ones from Humble Pie and Sabbath, it was about raw energy and capturing the vibe. It wasn't all double and triple tracked." Luke begs to differ, "The hell it wasn't!! You were on acid when you were listening to those records!!"

MORE ME PLEASE...

One of the ways Luke and Fletch make life at The Steakhouse comfortable is with the cue system. Apparently they were spoiled from working over at Capitol Studios ("a great room," notes Luke), so they decided on a variation of Capitol's headphone theme. Every musician gets a Mackie 1402 to do their own headphone mix. Signals are sent from the control room to the 1402; each 1402 gets a feed for kick, snare and stereo drums, bass, vocal, guitar, keys and other instruments, as well as an effects unit.

"A lot of times you only have a couple of cue mixes and if you want to use a click for the drummer — if the drummer needs a little help and you want to cut tracks like that — you don't want to have the click slamming everybody's head off. You can turn everybody else down really low and listen to yourself really *loud*!!! Which means you'll have to redo your part because you're not playing in the pocket with the rest of the band!," quips Steve.

> *"I looked under your kitchen cabinet the other day and saw a PCM 70 hiding there."*

"It makes the sessions much more fun for everybody involved," Fletcher continues, "without having to worry about making a mix for each musician. If the drummer wants his own reverb, you give him a Lexicon PCM 70 or a Yamaha SPX90 and off he goes. We call it the 'More Me Package.' "

Fletcher describes the outboard gear situation: "Along with the Mackie console, we're using the new tube stuff from Aphex — mic preamps, EQs and compressors — and combining those with the Studer Valve preamps and tape machine and Neumann, Sennheiser, and Audio-Technica mics. And there's a few Shure '57's in there, too. It doesn't matter what you're using, it's just got to sound good." Lukather agrees: "If an amp sounds like crap, the guitar is going to sound that way no matter what mic you put in front of it. I have been collecting gear for years and have all these great old amps — it's like a dinosaur burial ground for old gear.

"We're not heavy on the reverb scene. I just finished with Echo Anony-

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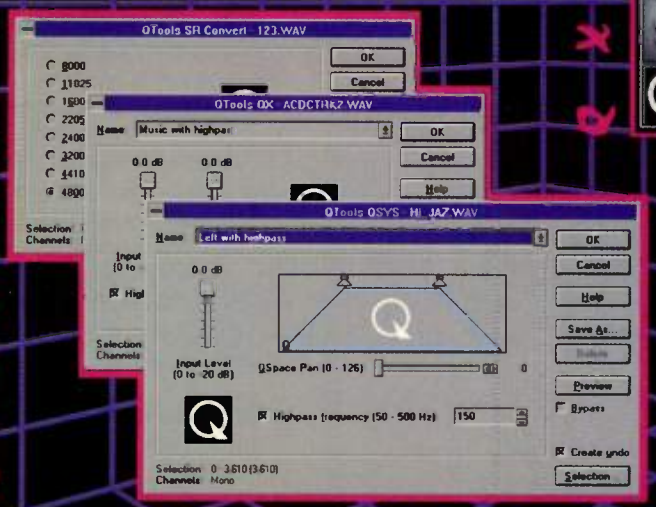

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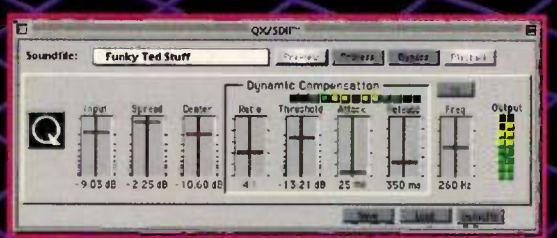

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CIRCLE 92 ON FREE INFO CARD

mous and I'm proud to say that I've gone six months without reverb. I grit it, but every once in a while I have to go to a support meeting." Fletch retorts, "By the way I looked under your kitchen cabinet the other day and saw a PCM 70 hiding there..."

"Hey, hey that's not mine, it's somebody else's!!!," Steve protests.

Tom explains that as Lukather's guitar sound was evolving, it developed into a stereo rig with two amps. When they were working on the Los Lobotomys' *Candyman* record, Fletcher coaxed Luke into using a third, dry cabinet. "In all fairness, we did scam the idea off my good buddy Eddie Van Halen." Luke slowly weaned his way off the effects, moving towards the dry, in-your-face sound he currently uses.

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SOCIABLE DISTORTION

"Remember *Revolution* and those types of sounds that Geoff Emerick used to get on Beatles records? I like doing that," says Tom. "Check out how cool the Mackie preamp distorts when you crank it up. I wind it up all the way, even if I am miking a guitar amp — as loud as it goes. Sometimes I'll go back through another channel and do it again. But then I'll cut the top end and add to the lower-mid EQ areas. I learned this from Al Schmitt. I noticed that for vocals on certain projects he would leave in a bit of harmonic distortion. I actually had the audacity to ask him if he heard it. He said, 'Yeah yeah, but check it out when you hear it in the music.' And it disappears, but changes the response. It adds a bit of compression to the sound, ties the harmonics together, and it's a beautiful thing.

"It works for bass, too. Leave a bit of crunch in there and as soon as the band comes in you'll hear this beautiful bass sound with nice harmonic values. The new Dangerous Toys CD, *The Artist Formerly Known As Dangerous Toys*, has a lot of that. I do it with any gear I can get my hands on — tube mic pres, Mackie mic pres. Try it and if it doesn't sound good, back it off. But a lot of times it sounds pretty cool. If the thing says '11' on it, paint '12' on it and turn it up!" Luke finishes the thought, "If we can't break it, we buy it!"

BACK TO THE FUTURE

In addition to developing new bands, The Steakhouse will also host some more established artists. According to Lukather, there are "some really big things coming in that I can't talk about even though I want to. People have strong feelings about it being bad luck to talk about a project before it's done. We'd be bumming out the artists — it might not work out, and then I'd look like an ass! But I'm doing a solo record here in the next few months and we have someone coming in who let's just say is one of the greatest guitar players that ever graced the face of this earth."

Perhaps the duo's philosophy can be summed up by Tom Fletcher: "With all of the knowledge that we have acquired in the last 20 years between the two of us, we can create a vibe that is comfortable for musicians to work in. It's going to be great to bring that to new artists, and we'll learn from them as well. You have a producing engineer and a producing musician working together to help each other and the artist." EQ

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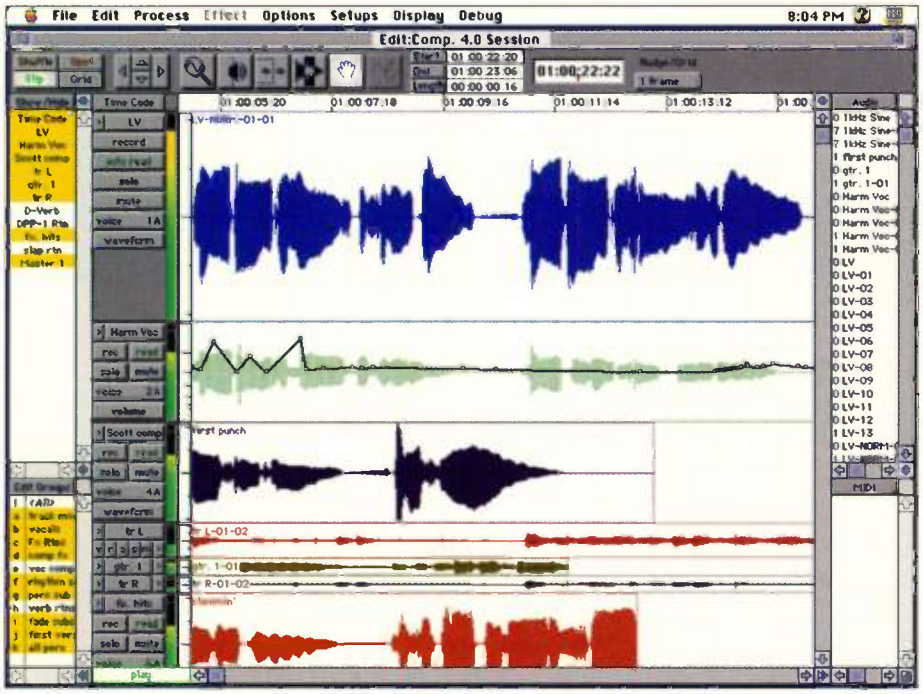
Digidesign Pro Tools III v.4.0

An EQ Exclusive: *The long-awaited new version of the mega-popular digital audio workstation gets taken to task*

BY ROGER NICHOLS



EDIT WINDOW

I have griped about Digidesign many times in the past, but I also yell at my kids because I know they can always do better. Well, Digidesign has done better. The PCI version of Pro Tools has been shipping for months now, and Pro Tools 4.0 is probably shipping as you read this.

The migration to PCI marks the fourth generation of Digidesign audio hardware. Stepping up in the past sometimes meant leaving your favorite features behind. Case in point: 20-bit and 24-bit recording and playback capability. Although Pro Tools III allowed 24-bit internal mixing and TDM support, soundfiles could only be 16-bit and the NuBus cards only supported 16 bits. This was like trying to run the 440 yard dash while wearing a leather zipper mask.

PCI to the rescue. The new hardware now fully supports the mixing of 20- and 24-bit samples. The 888 I/O and 882 I/O always supported these higher sample resolutions, but the data never made it through the computer interface card. Plugging the 888 I/O into a PCI card is like removing the carburetor restrictor plate from your favorite NASCAR entry. Because of improved hardware architecture and faster DSP chips, the PCI version of Pro Tools III boasts a whopping 50 percent increase in DSP power.

PRO TOOLS 4.0

You've heard it was coming, and it is everything you heard it was, and then some. The new version of Pro Tools software is a masterpiece.

To top off the list, Pro Tools 4.0 is Power Macintosh native, so that it will run at lightning speeds on Power Mac computers. No longer will you have to wait what seemed like weeks for waveforms to redraw or TDM modules to activate. Now you can do what you are thinking about without having to stop and think about what you're doing (think about that!).

MUTE POINT

Mixing capabilities have taken a giant leap in 4.0. Mute and solo responses are now instant. Soloed tracks can now be muted. There are now Solo Safe and Record Safe modes as well, which would have saved me much embarrassment a few months ago.

SNAPSHOTS OF THE KIDS

New automation features are starting to rival those of big, expensive stand-alone digital consoles. Every parameter can now be automated, including TDM plug-in parameters. You can store snapshot or dynamic real-time changes to everything. There are separate Touch and Write automation modes, making automation updates a breeze. There is also a separate mute track for visually editing track mutes and send mutes.

GROUPERS: MORE THAN JUST UGLY FISH

Let's talk about grouping for a minute. Fader grouping is now truly relative. All

MIX WINDOW

faders maintain true relative balance throughout group movements. There are now two kinds of groups: fader groups and edit groups. A fader can be in a group with another fader for level control, but can be left out of the group when in edit mode. At first glance you may be wondering about the advantage of this configuration, but after you have used it once, you will wonder how you ever got along without it. Don't let me forget to tell you that all of these groups can be nested, providing even more flexibility. A very sophisticated Hide/Show Tracks list allows you to focus your attention on just the tracks being manipulated. You can now assign track I/O and plug-ins globally to all tracks or any group of tracks, which greatly improves the speed of getting things done.

SD II FUNCTIONS

I often wished that some of the file-editing functions of Sound Designer were included in Pro Tools. What a pain to have to switch between applications to edit out a click. Not any more, pencil-tool breath. Pro Tools 4.0 now incorporates what they call AudioSuite, a new plug-in architecture that allows Sound Designer-style file-based processing.

AudioSuite uses the host CPU and a Digidesign audio card (if present) to perform these operations. The way it works is by selecting a range of audio in the edit window and performing the function. Let's say you wanted to pitch shift one beat on seven different tracks. Select the area, call up the pitch shift plug-in, and process. All of the regions will be processed and plugged back in right where they came from. Regions can also be processed right from the region list.

You can even use a TDM module for processing a region. Remove a vocal pop, or add reverb to a giant tom fill, or de-ess a vocal line, the possibilities are virtually endless. (All this processing can be done all at once, because Pro Tools now supports edit during play. Therefore, you can perform virtually any edit function while looping a playback selection.)

EDIT PLAY LISTS

Check this out. Suppose you just spent the better part of your life editing a guitar solo from a gazillion performances. It is brilliant! Now the guitar player comes over and wants to do it his way. You would have had to copy the regions onto another track and tried his edits. The drummer thinks he has the best idea for the guitar solo edits. Copy again, and do it his way. The desktop is starting to get unruly. Now, each track can have multiple edit playlists, so the guitar can stay on the guitar track. Just start another edit playlist. If you want to hear the first part of the drummer's edits and the second part of the guitar player's edits, then just switch playlists during playback. This feature lets you cut way down on the need for virtual tracks.

STRAWBERRY SHORTCUT

Also included in Pro Tools 4.0 are keyboard shortcuts for all tools and edit modes, making it much quicker to get from point "A" to point "B" than in previous versions. I think that the next thing you should be thinking about is the shortcut over to your friendly neighborhood Digidesign dealer.

FADING FAST

Crossfades have long been the dividing line between good sounding edits and unusable junk. Pro Tools 4.0 adds variable custom shapes and S-shaped (my favorite) curves as options when selecting crossfades. I saw the new crossfade editor screens, and it is amazing how much easier it is to select the right crossfade when you can see a good graphical representation of the resultant audio waveform as you change the crossfade parameters.

MIDI CONTROLLERS

Pro Tools 4.0 supports "personality files" that allow any MIDI controller to interface to Pro Tools faders, pans, plug-ins, transport controls, or whatever you could dream up. You could even connect multiple controllers from different companies if you wanted to.

FADERS IN ACTION

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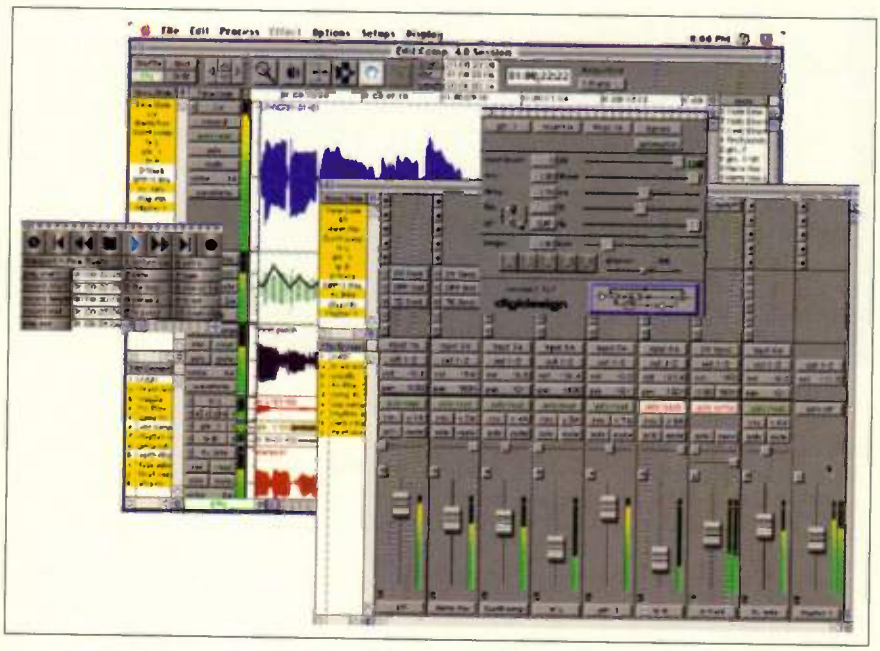
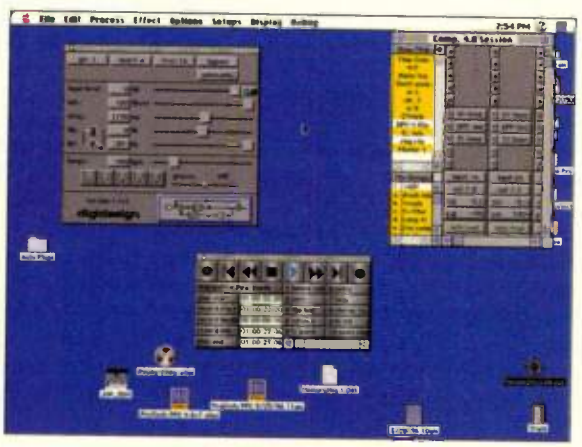


4.0 COMPOSITION

Tools, the stampede has been unstoppable. There have been DSP plug-ins from TC Electronic, Focusrite, Waves, Apogee, Antares, Arboretum, Crystal River, Lexicon, Intelligent Devices, QSound, and Steinberg, with more joining every day. Rumor has it that there will even be some GML (George Massenburg Labs) entries soon.

On the "future hardware" front, watch for a dedicated control surface called ProControl, that will rival the look and feel of hardware consoles. Pro Tools 4.1 will offer 24-bit support for the already 24-bit PCI hardware. You will also be able to network multiple Pro Tools systems for file and session sharing.



TRANSPORT and PLUG-INS

THE FUTURE

For you video-post guys, Pro Tools 4.0 includes QuickTime support at no additional cost, which will add nonlinear frame-accurate video playback with a qualified video capture card. Machine control is available as an option. A PCI version of SampleCell II with TDM support will be available in the Fall of this year to round out Digidesign's hardware offerings.

FINI

I don't think that there really is an ending to this review. By the time you read this, there will be new developments at Digidesign that will need to be told. I have been a supporter of Digidesign since I bought my first Sound Tools system in 1989 (DAT I/O serial # 210). I plan on being the first guy lined up at the front door when Pro Tools 4.0 ships.

Oh, I almost forgot. I was thinking about building a few plug-ins myself. The first one would put a random amount of delay, in weeks, on your whole project.

***PRICE:** Pro Tools III Core System: NuBus, $6995; PCI, $7995; 888 I/O, $2995; 882 I/O, $995. For more information, contact Digidesign, 3401-A Hillview Ave., Palo Alto, CA 94304. Tel: 415-842-7900. Circle EQ free lit. #143.*

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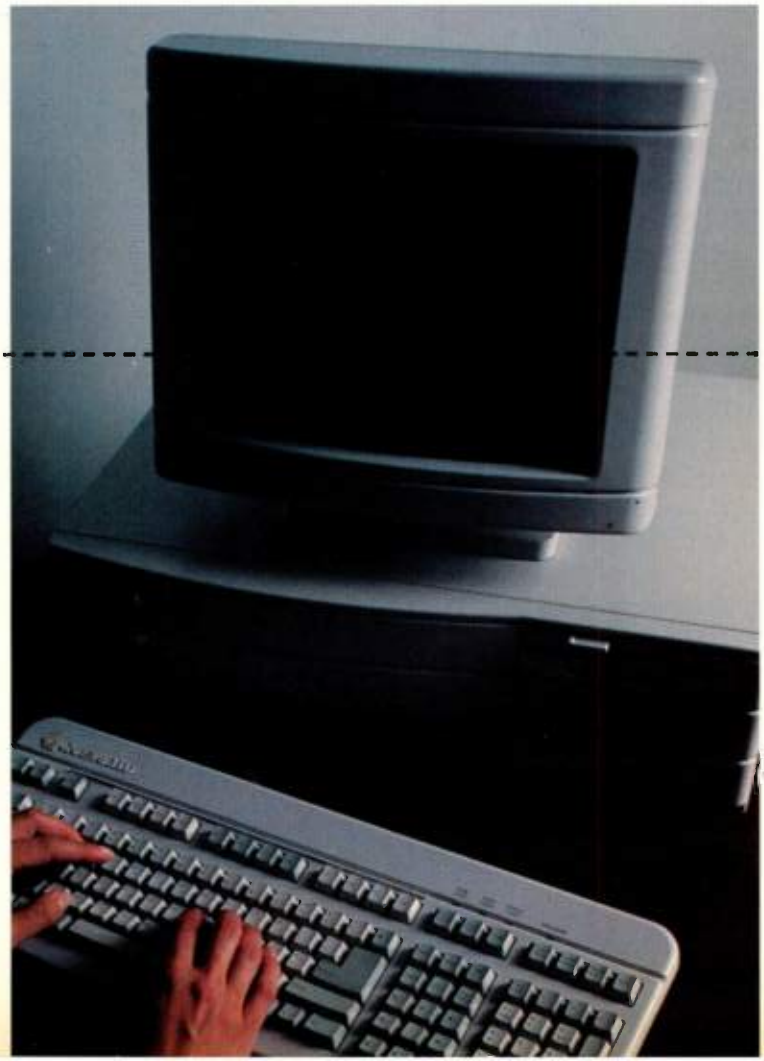
PC Reco Quarter



rding ly #3

It's time once again for our quarterly spotlight on hard-disk recording presented by David Miles Huber. In this third installment, David reveals how to easily (!) configure your computer and takes a close look at the Hewlett-Packard 4020i SureStore CD writer as well as Neato's CD labelling system.

Easy, Foolproof PC Configuration

Well, maybe not exactly — but close enough

BY J. C. CASIANO AND DAVID MILES HUBER

Since its inception, the design of the modern PC-compatible (also known as the clone, the x86 PC, and "that piece-o-s***") has been hampered by limitations imposed by the original design of the IBM PC, PC XT, and PC AT. In an effort to remain backwards compatible, many of the PC's internal systems have retained their original design and, thus, their original limitations. As a result, even newer generations of PCs fully loaded with Microsoft's Windows 95 and the Plug-n-Play specification can still plague their owners with hard-to-resolve hardware and software conflicts.

It's important, though, to remember that when the going gets rough, there are very few PC configuration problems or conflicts that can't be resolved with a bit of knowledge, a generous dose of common sense, and a ton of patience. Whether you're the type that's always loading new software or hardware toys into your PC, or if you just pop your PCs top on the odd occasion, it's unfortunately all too common to wind up in set-up-configuration hell. PC warriors, this article was written just for you.

TECHNO-TERMS

Before delving into the depths of the PC underworld, there are a few terms that the unsuspecting victim (ahem... *user*) should be aware of when installing new hardware into a system.

Driver: A driver acts as a communications interface between the main CPU (Central Processing Unit, i.e., 386, 486, 586, or Pentium chip) and a new or nonstandard piece of hardware. In essence, it serves to translate the control or program data that is being processed by the hardware into a form that can be understood by the CPU (and vice-versa).

DMA: Refers to Direct Memory Access channels. This method of data communication was designed to allow hardware cards to access the main system's memory without having to make use of the CPU. In prac-

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❑ The RP220 Dual Tube Mic Preamp is the most popular tube mic preamp in the world. It's warm pristine charactaristics make vocals pop to the front of a mix, thicken up acoustic guitars, and more. All for only $500 retail.

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❑ The MP110 DIRECT DRIVE is a little single channel tube mic preamp. It has a high quality input transformer, variable gain and output level controls, +48 volt phantom power, 20 dB input pad, and phase reverse. It also has a little price - $230 retail.

❑ For impedance matching, recording direct, running an instrument direct to a mixing board, or for warming up a digital mix, we recommend the ADB3 Stereo Active Direct Box. It has two channels, each with a ground lift, +/-20 dB of gain, a 20 dB pad, and transformer coupled XLR outputs. Only $200 retail.

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tice, this means that the card can read from or write data directly to disk or RAM while the CPU is processing other instructions (as long as they both don't try to access the same memory areas at the same time.) There are 8 DMA channels, but only 5 are available: 1, 3, 5, 6, 7. It's important to note that 1 and 3 are 8-bit channels, while 5, 6, and 7 are 16-bit channels. For speed consideration, most high-end sound cards and hardware cards require the use of 16-bit channels, so you can rule channels 1 and 3 out.

THE EXAMPLE SIDEBAR

Hardware Card	DMA	IRQ	I/O
D.A.L. CardD (playback)	6	7	1c8
D.A.L. CardD (playback)	7	"	"
TB Multisound	N/A	12	290
MQ MIDI interface	N/A	2/9	330

IRQ: Usually refers to Hardware Interrupt Request (often known simply as an Interrupt). An IRQ can be thought of as a digital doorbell. It is assigned to a particular piece of hardware (and, in certain situations, to a software application) for the purpose of letting the CPU know that it's in need of its processing services. There are 16 IRQ's in a PC system. However, of these 16, only a handful will be available to any hardware additions.

For most PCs, you are limited to the following: 2/9, 5, 10, 11, and 15, with IRQ 12 being available if a PS/2 style mouse isn't in use. Through careful reconfiguration of your CMOS (semi-permanent system memory that is devoted to initial boot and setup instructions), IRQs 3, 4, and 7 can also be made available, but usually at the respective expense of COM2, COM1, and/or the printer port. Notice that IRQ's 2/9 are tied together electrically, and are treated as the same interrupt.

I/O Port: Input/Output ports are actually assigned blocks of memory within the system's RAM into which data can be temporarily placed by the CPU for direct processing by the hardware card. Data in these locations can also be used by the CPU to determine the card's operational state, or to pass instructions to the special purpose processor(s) on the card, telling them what to do next and/or what data to use. These ports are usually listed as hexadecimal numbers, and most hardware cards are limited to a handful of port addresses.

OK, LETS GET BUSY

If you have only one hardware card to install, and assuming you don't have any other special-purpose cards in your system, the installation process should be simple. Just follow the instructions in the manual, which are usually accurate and complete.

If you are installing a number of cards or already have your PC filled to the hilt, choosing the correct settings can be a daunting process. At this point, even hardcore technicians must rely on a simple, non-computer related way of dealing with such a system: namely, a piece of paper and a pencil (and I emphasize the word "pencil"). The goal here is to find out your overall hardware settings by making a chart that includes columns for hardware card names,

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DMA channels, IRQ's, and I/O ports (see the example sidebar).

If any of the expansion slots are occupied, your first job will be to determine what the current card settings are and then write them down in the chart. If these cards include your video, hard disk, and/or a multi-I/O adapters, you don't need to list them, as long as the hardware cards stick to the known usable IRQ and DMA settings that appear in the terms section above. If specialized cards exist in the system, you may need to remove them, so as to determine their settings. (At this point, you may

THE INTERNET: A CYBER TOOLBOX

Beyond being a resource for communication and general info-surfing, the Internet is quickly establishing itself as a valuable research tool for those wanting information relating to industries of all types–including those belonging to the audio, video, sound-reinforcement and multimedia cults. Gaining access to information on a specific product, shopping around for the right toy to add onto your system, or plugging into information or software that'll make your new toy work is all possible over the 'net. Here's how it's done.

Setting Your Sites

The first place to start when techno-surfing on the web is to log onto a "search engine." A search engine is basically a parameter-specific search site that will automatically look through the Internet to search out all sites that include information relating to the requested topic. These sites might be programmed directly into your Internet browser (such as Netscape's Netsearch) or you might want to log onto other sites (such as Yahoo at www.yahoo.com; Magellan; Excite; or AltaVista). As an example, entering the search parameter "loudspeaker" into Infoseek's browser yielded a total of 739 sites that relate to the topic, while yahoo came up with 36. This should clue you into the fact that not all sites will yield similar search results, so you might want to log onto several different ones during your search.

Resource City!

For those who have surfed the web, it quickly becomes obvious that you can have instant (OK, sometimes it's sluggish) access to information that in earlier times had to be received over the phone or via U.S. (snail) mail. The following list represents only a fraction of the information that can be accessed over the net:

- Snatch up the latest drivers (Mac, Win 3.1 and Win 95) and software applications for your existing hardware.
- Get a grip on recent software updates.
- Just the FAQs (Frequently Asked Questions) can help to search out helpful hints on installation or pick up tips on general hardware and software operation.
- Demos, demos, demos! Download software cyberstuff to your heart's content.
- Helpful hints. Ask questions or leave comments directly with a manufacturer.
- Shop till ya drop! Check out the competition for features, prices, and new products before laying out the cash.

Search & Rescue

If you know a company has a web site, but are unsure of its address, try http://www.company.com. Obviously, it's in the company's best interest to make the site as easy to find as possible (e.g., should you need a Windows 95 driver for your Hewlett-Packard printer, simply log at http://www.hp.com). This won't always work, but it's worth a shot.

Q & A

Generally, towards the end of the site, companies will provide you with an active "send comments to the company" line. Clicking on this will let you ask either general or tech questions. You might even want to let the company know what you think of their latest gadget. 'Nuf said. Happy browsing! —*David Miles Huber*

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"Studiomaster has definitely come into the fray with a hard-hitting piece of equipment." - *Tim Oliver*
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"A superbly thought out mixer- amp. Highly recommended."
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PC Recording

need to pull out a few manuals to assist you in determining these settings.) Be very careful when removing cards! *Shut your machine completely off.*

If there are cables attached to the cards, record their positions and their orientation before pulling them out. Also, ground yourself each time you're ready to touch a circuit board or component by touching the power supply's outside case.

At this point, you can begin to list all of the installed card names and their respective settings in the chart. Following this, you should re-install all of your cards (if you haven't removed and installed them one-at-a-time) and power up your PC to see if everything still works properly.

Now that you have a chart of your current card settings, you can break out the manual for your new card(s) (see, you didn't even have to take the card out of its anti-static bag yet), and carefully read the manual to find out what the default settings are for that card (this may be listed on a single page, or scattered through the entire pamphlet). Now carefully compare these settings with your chart. Are there any duplicate settings that will be in conflict? If so, choose a setting that's not in use and write it into the chart (aren't you glad you're using a pencil?). Once you have compared and written down all the settings, you can then go about the business of installing your new card(s).

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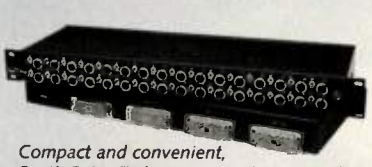

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A FEW WORDS OF WISDOM

1. If you get a conflict between an installed card and a new card, it's generally advisable to change the settings for the new card.

2. Make your life simple when dealing with multiple cards. Uninstall and/or install them one at a time, and make sure that everything is working before you move on to the next card. You may have to spend some serious time with your machine, so don't try to cram the installation into a set schedule.

3. Temporarily disable any applications (like your word processor or toolbars) that may start automatically loading when Windows boots. We suggest removing these items only because you may have to restart the system many times.

4. If you are using Windows 3.1, 3.11, or Windows for Workgroups and are going to have to remove one or more hardware cards, you should first remove/uninstall the driver(s) for the old card before installing the new one.

Once you've removed any unwanted hardware, reboot the PC and make sure that it starts cleanly without any error messages. If you get any error messages, copy them down and try to determine what's causing them. If you've never had error messages before, it may be the result of your removing the old card. You can test this theory by re-installing the card. If the absence of the adapter is causing the problem, you didn't successfully remove its software. Check the manual again or contact technical support.

PARTING WORDS

Hardware installations are often simpler than they appear to be. Although, installations can get complex, manufacturers often work hard to make things as easy as possible; they really do want you to feel comfortable about buying their products. Take your time and proceed one step at a time. Remember, if the going gets a bit too rough to handle, take a break. If that doesn't help, it's no shame to quit while your PC's still in one piece. Simply contact your local PC fix-it shop and yell *Help!* EQ

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Hewlett-Packard
4020i SureStore CD-Writer

I've known about the SureStore CD-Writer's impending release for some time now. The folks at HP were absolutely beaming (confidentially, of course) at having designed a CD burner that would fit into a standard PC and sell on the streets for less than a thousand bucks. Well, after spending some time with this little puppy, the only thing that I have to say to HP is, "Beam on!"

The HP SureStore CD-Writer 4020i CD reader/recorder system includes everything needed for installation and custom CD recording:

- A 4X CD reader and 2X CD recorder drive that installs in a PC's half-height 5.25-inch bay.
- A SCSI-2 Bus Mastering interface card, plus cables and manuals.
- Bundled install (3.5-inch) and CD recording software (CD-ROM)
- Two blank HP SureStore CD-R discs

The bundled software suite includes the following:

Easy-CD: This program application is used to copy data-related files onto the CD. It is incorporated into and acts as an extension of the Windows file manager. All that's needed to burn files to CD is to select (highlight) the files that you wish to copy from within File Manager, call up the Easy-CD menu, and select "Write File List to CD." A few dialog boxes will appear, allowing you to burn the disc at single or double speed, along with a few other simple options and you simply click "Write." Essentially, that's all there is to it.

Easy-CD Audio: As you'd expect, this program is used to create CD-Audio discs, and it's really "easy" to setup and operate. The first stage in the process is to record the soundfiles to disk. The files need to be recorded using the standard WAV form at 44.1 kHz, 16-bit. It's comforting to note that the program will translate files at other sample rates into the native 44.1, should one sneak in. It'll take a bit of processing time to do the sample-rate translation, but it won't stop the show.

Once that's done, open up Easy-CD Audio and then call-up its internal File Manager. From then on, all that's needed is to select and drag the individual soundfiles into the program's main playlist, insert the blank CD, instruct it to "compile" the disc, and go out for a cup of cappuccino.

Alchemy Personal: Lets users create and search custom databases (includes a run-time search engine for use on any PC with a CD-ROM drive). This program can be used to build document, image, and spreadsheet databases that can be easily searched and retrieved by the user from any PC with a CD-ROM drive.

EQ LAB REPORT

MANUFACTURER: Hewlett-Packard Co., 800 South Taft Avenue, Loveland, CO 80537. Tel: 800-826-4111 (dealer and info referral); 800-368-9673 (faxback service, request document #4007). Web: www.hp.com.

APPLICATION: A CD recorder (running under Windows or Windows 95) that lets you encode the following formats onto CD: CD-Audio (Red Book), CD-ROM (Yellow Book & Orange Book), CD-Interactive (Green Book), Video CD (White Book), and Logical File Formats (ISO 9660).

SUMMARY: A PC-based CD reader/recorder system that includes an easy-to-configure drive plus a variety of software applications to support CD recording.

BY DAVID MILES HUBER

STRENGTHS: At a street price of less than a thousand bucks, I'd say price is a big plus; the included software is intuitive and easy-to-use; it works extremely well.

WEAKNESSES: I know I'm dreaming, but it would've been nice if the drive's SCSI-2 interface had provisions for connecting external SCSI devices onto the PC.

MINIMUM SYSTEM REQUIREMENTS: IBM or compatible with 486/25 processor; 4 MB RAM; 13 MB free disk space; disk access time, 20 ms; transfer rate, 800 kB/s; MS DOS 6.0 with Windows 3.1, Windows for Workgroups 3.11, or Windows 95; open 5.25-inch half-height mass storage bay; open 16-bit ISA interface slot.

PRICE: $1249
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What Makes the 160S the Next Industry Standard?

Check out the processing racks in any large studio, broadcast facility, or concert rig and chances are you'll find one or more dbx 160's (amongst a bevy of other great signal processors). Names like Abbey Road, A&M Studios, Westlake Audio, and Skywalker Sound still count on their 160's to deliver silky smooth vocals, tight bass and crisp, punchy drums... all dbx hallmarks.

While designing the successor to our early classics, we talked to countless musicians, engineers, and producers about the way they like to work and what's important to them in a dynamics processor. Over and over again you told us what you wanted, classic dbx sound in a great package, with all the right controls. The result is the new 160S Stereo Compressor. Twenty-five years of experience, visionary technology, and impeccable craftsmanship combine to produce this masterpiece, a device destined to take its place in pro rigs around the world for years to come.

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The heart of any dynamics processor is its VCA. The dbx 160S features dual proprietary V8™ VCA modules. This state-of the art implementation of dbx's original Blackmer decilinear VCA boasts an unheard-of 127dB dynamic range and ultra-low distortion. Encased in a specially designed aluminum-zinc housing for shielding and thermal characteristics, the V8™ maintains its superior performance in harsh environments.

Premium Signal Path

High-voltage 24V supply rails and wide dynamic range active components in the signal path allow the 160S to cleanly process audio while providing a huge 26dB of headroom. Patented high current transformer isolated outputs feature >100dB common-mode rejection and distortion so low it's immeasurable. Designed for extreme conditions these outputs will drive 1000 feet of Belden™ 8541 cable at +30dBm.

Over-designed Power Supply

The 160S power supply features a massive toroidal transformer chosen for its low stray flux characteristics and mounted in a mu-metal can designed to attenuate stray field by 30dB. The can is then isolated, along with the AC power circuitry, inside a shielded power supply cover providing even more noise attenuation. Only clean DC power exits the isolated supply.

Discriminating Component Selection

The new 160S takes full advantage of the most technologically superior components available today. Premium active electronics, precision 0.1% and 1% metal film resistors, great sounding temperature stable polypropylene capacitors, high-reliability board-to-board connectors with gold-palladium-nickel contacts, Jensen® transformers, gold plated Neutrik® XLRs, rare earth magnet relays with gold contacts in a hermetically sealed nitrogen environment, military grade glass epoxy circuit boards, to mention a few, contribute to the most technologically advanced compressor in the world.

Distinctive Craftsmanship

The craftsmanship of the 160S is as stunning as the engineering is innovative. A striking blue front panel machined from 1/4" aircraft aluminum, hand-crafted solid aluminum knobs, LEDs mounted individually in machined stainless steel housings, custom VU meters with peak indicators, and heavy gauge chassis solidify the 160S as the benchmark compressor for decades to come.

Ultimate Flexibility

The 160S combines the best features of all the great dbx compressors, past and present. In addition to having the auto attack and release as well as the hard knee threshold characteristics of the classic dbx 160, the 160S is also switchable to OverEasy® mode, made standard by the classic dbx 165A. And speaking of the 165A, all of its features, including variable attack and release controls, as well as dbx's latest limiting algorithm PeakStopPlus™, are included in the 160S. Not to mention new features such as hardwire relay bypass and external sidechain input, switchable from the front panel.

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See, feel, and hear one for yourself.

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In today's recording environment the need for a high quality, great sounding microphone preamp is growing rapidly. Designed to unparalleled standards, the dbx Blue Series Mic Pre makes a great companion to the 160S Stereo Compressor. The dbx Blue Series Mic Pre is designed to provide the audio professional with two channels of deadly-accurate mic pre-amplification, revealing the true character of any microphone. A world class pre-amp for world class recordings.

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PC Recording

Magic Lantern: Can be used to view photo CDs one picture at a time or create a prompted slide show of the images in any order for presentations or personal viewing.

The CD writer's drive and software is multisession compatible — at least when you're cutting file-related data to CD. This feature lets you record additional data onto the unused portions of a previously recorded disc. However, from what I can tell, the bundled software won't let you create enhanced CD's (allowing CD-Audio and computer data to exist on the same disc). Corel's CD Creator 2 software ($249), on the other hand, can be used with this drive to cut enhanced discs.

TAKING IT FOR A SPIN

Installing the drive into the PC (under Win 95) was fairly straightforward. Once the typical interrupt setting problems were out of the way, the automated software install process had us up and running in about a half hour. As you can tell from the above explanations, the included software isn't overly sophisticated, but I love the fact that it's incredibly simple. You just follow through the steps and before you know it, the system's off-n'-burnin'.

During the burn, Easy-CD Audio constantly keeps you informed as to what's going on by highlighting the soundfile that's currently being cut within the playlist. A percentage bar tells you both how much of the song has been cut and how much of the overall project is finished. Once the disc is finished, the program will automatically start playing back, so that you can check out the fruits of your labor.

A FEW AUDIO TIPS

Let's get down to some brass tack tips for cutting sound onto disc. First, for those of you who have this luxury, it's always best to record audio soundfiles to hard disk in the digital domain. Some recorders (including the SureStore) have provisions for copying data from a source CD to a CD-R. In such a case you won't need to pass through a sound card's digital converters. However, keep in mind that, when recording original material through your sound card's analog inputs, the CD will only sound as good as your card. Get the best that you can (Digital Audio Labs makes a "digital only" card that sells for $495.)

Unfortunately, Easy-CD audio doesn't have a way to insert silence into the CD. At first, I thought that it'd be a good idea to insert a small silence file between each song, but quickly found out that that wasn't such a good idea as the software treated each silence file as a track and advanced the index number. This really screwed up the song indexing! I found it to be easier and less confusing to simply allow for x-seconds of silence at the end of each song. (Placing the silence at the end ensures that the next song will begin right on the index marker.)

When transferring sustained data, such as audio, to disc, it's important to keep in mind that any system slowdowns or access problems beyond 20 ms (one CD sector) can often cause the system to halt the writing process. For this reason, it's often good to begin with a formatted, separate, or partitioned drive for the purpose of containing audio- or computer-related data. If important data exists on the drive or you've already recorded the files and run into trouble, your best recourse is to defragment the drive. Other potential system bottlenecks (such as screen savers, TSRs, modems, etc.) should be turned off before any CDs are burned. In fact, when dealing with digital audio on a professional level, it's usually *not* a good idea to use screen savers at all, as they will commonly interrupt system access.

DISC-AT-ONCE

Before signing off, I'd like to bring an important feature to your attention: Disc-at-Once. This feature is important for those in the music business who would like to cut a master CD for the purpose of creating a master plate that can be used to mass duplicate a CD.

Technically speaking, a CD-R that is only equipped to cut CDs in the "Track-at-Once" mode will power-down its lasers in-between the lead-in/out of a song. During the duplication process, this power-down will often generate a large number of disc errors and the "land" on the disc where the laser was powered down will be read purely as errors. In order to eliminate this problem, the lasers used to cut a disc using the Disc-at-Once feature will remain on throughout the duration of the burn.

Although the HP SureStore CD writer will support both the Track- and Disc-at-Once modes, the bundled software will only support Track-at-Once. However, should you wish to cut in the Disc-at-Once mode, Adaptec's Easy-CD Pro ($349) or Corel's CD Creator 2 software ($249) will neatly do the trick. EQ

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UTILITY M08 MIXER

Neato CD Labeler Kit

EQ LAB REPORT

MANUFACTURER: MicroPatent, 250 Dodge Avenue, East Haven, CT 06512-3358. Tel: 800-984-9800. E-mail: neato@micropat.com; Web www.neato.com.

APPLICATION: A CD labeling kit for designing, printing, and applying labels onto any CD-R disc.

STRENGTHS: An easy, reliable product that is a simple solution to a common computer-related dilemma.

WEAKNESSES: None worth mentioning.

MANUAL: Simple and to-the-point.

SYSTEM REQUIREMENTS: PC: 386, Windows 3.x, 95, NT; Mac: At least one of the applications for which the Neato kit supplies templates.

PRICE: $79.95
EQ FREE LIT. #: 145

BY DAVID MILES HUBER

If you're anything like me, you've been busy burning your own CDs and getting quite the collection of "one-off" CD-ROMs and CD-Audio discs. Recently, labeling these discs has become a minor problem.

Just in the nick o'time, the folks at MicroPatent have come up with a solution: Neato! That's right, I've just been handed a CD labeling kit that goes by the name of "Neato." And, you know, the damned thing works! Shortly after breaking the kit out of the box, I was making personalized CD labels that look really good, and what's more, after weeks of use, I've yet to misapply or have a disc screw up on me.

The Neato CD labeling kit includes: a Neato CD applicator, design software and templates on CD-ROM and 100 CD labels. After marveling at the bucks that they spent on glitzy packaging, I went about loading the software into the PC (a simple process that went smoothly) and jumped right into making labels.

SO HOW DOES IT WORK?

The first step in the process involves the Windows-based software, which lets you design and save your own CD layouts that can be printed using any standard printer. Basically, the software is intuitive, as it's essentially a scaled-down version of a desktop publishing program that has been designed for a single purpose. Upon opening the program, you'll be faced with an all-purpose layout template for creating your first label. At the bottom of the screen are three selection boxes that let you choose between the three label colors (so you can see an example of the final printout), five pre-programmed layout templates that help you to get started, and four color background accents that act as a backdrop to your design layout. (See fig. 1.)

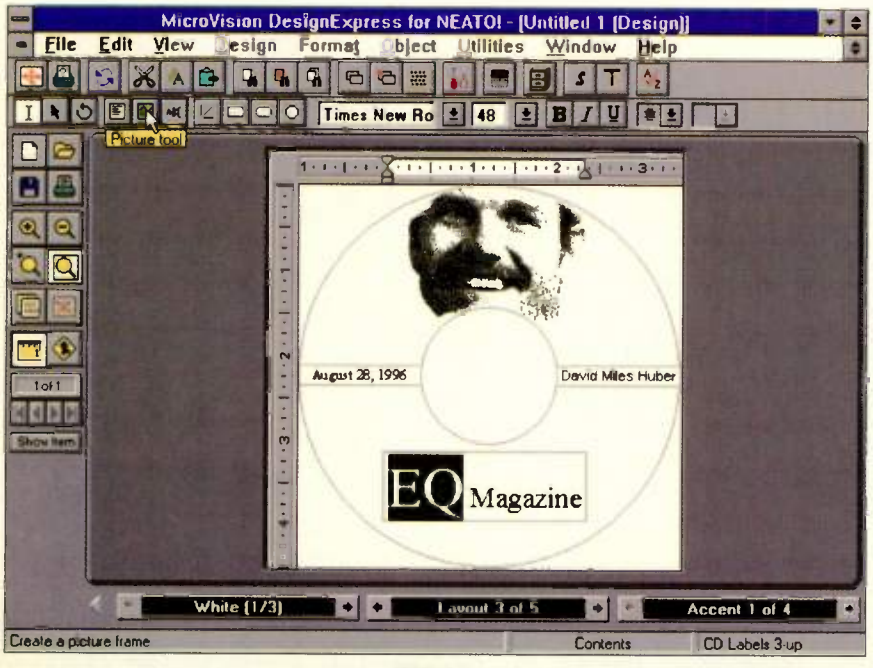

FIGURE 1

Importing graphics onto the label template is easy. A graphic design can be either imported using any number of popular file formats, or it can be pasted from clipboard memory. Once placed onto the template, the graphic can easily be resized by grabbing onto a frame boundary. The moving of graphics or True-Type fonts is as simple as clicking within the highlighted boundary and moving it to another position.

Once you've saved your latest masterpiece, the next step is to print it out. Included with the label sheets is a single test sheet that outlines the CD label locations for seeing how your creation will look without wasting an actual label. Since there's only one test sheet, the company recommends that you make a series of copies and save the master for future reference. Actually, I found a better way...

Within the Print routine, you'll find a "Print Calibration Sheet" option that lets you print out a similar test sheet for the purpose of calibrating the program to your specific printer. As it turns out, my printer calibration is right-on-the-money, so whenever I need a test print sheet, I just print out a Calibration Sheet and print on that. Once you've made a successful test print, you're ready to print an actual label.

The set of label sheets that come

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PC Recording

with the kit includes 12 gold, 12 white, and 10 silver peel-off application sheets, each having three CD and several assorted labels on each sheet. Once the print function has been invoked, the software will let you choose which of the three CD labels are to be printed on the sheet. (See fig. 2.)

Once the label is printed, the final step is to apply it onto the CD. That's where the Neato applicator comes in. The four steps for applying a label onto a disc are: (1) On a flat surface, peel the label backing away from the label (this keeps the label from curling); (2) Place the label on the base (sticky side up); (3) Insert the CD into the positioning cone (data face up); press the cone/CD down onto the base and... *TA DA!*, it's labeled. (See fig. 3.)

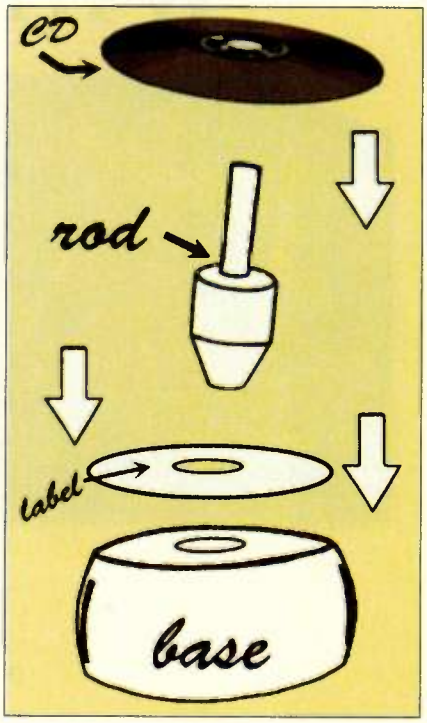

FIGURE 2

MY 2 CENTS

Neato deserves a compliment on its packaging. The Neato kit comes in a glossy black box that includes how-to graphics, gold-embossed logos, and a cut-out window for showing off the CD-ROM's exterior packaging. It's definitely worth showing off.

As mentioned earlier, the labels come in white, silver, and gold. The white labels seem to offer the crispest print, while the silver and gold's resulting printout looks washed-out by comparison. The company says, "Additional labels are available at leading computer retailers everywhere."

Neato should, in future upgrades, incorporate a layout template for creating and printing front and back jewel case inserts into the design software. (The company completely agrees and is currently working on a software upgrade that includes this feature.) Furthermore what about cassette labels and their boxes, and while you're at it, why not throw a directory onto the disc that includes a "best-of" series of pre-designed layouts for us novices? Oh, and hold the mayo.

[*Note: The templates for creating and printing front and back jewel case inserts can be obtained by simply registering the DesignExpress software. The Register.Exe program on the Neato CD-ROM was unfortunately corrupt when the CD was pressed, and therefore can not be used. Users can, however, download the file from Micro Vision's home page (www.mvd.com), which will then allow you to install additional label templates into the DesignExpress for Labels program. By registering, you will receive a code to unlock this feature.*]

FIGURE 3

Vestax

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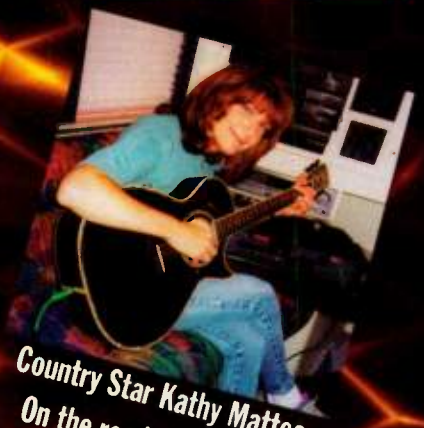
The New Vestax HDR-V8



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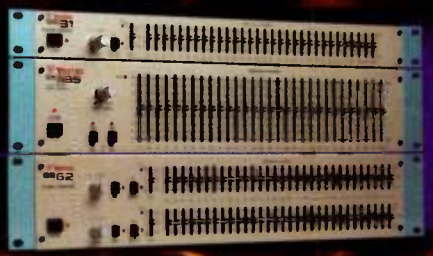
- Optional SMPTE interface.
- Optional remote control (MX-I)
- Optional removable drives for data storage
- Lock together as many machines as you like.
- Suggested Retail: $2495.00

The road can be a hard place to try and work. But travel with the new Vestax HDR-V8 Pro Series Digital Recording System, and life gets easier. That's because the HDR-V8 is a complete studio solution in a two rack space unit. With a new main processor 3 times faster than previous versions, and the eight separate inputs and outputs, the HDR-V8 is capable of *simultaneous recording* on all eight tracks with absolutely no data compression.

Additional features like balanced TRS inputs and outputs, 3 auxiliaries per channel, a built in digital mixer with 3 band EQ with parametric midrange, and a front panel XLR mic input with built in preamp make the new HDR-V8 a serious virtual studio for the road. New easy to use menus make completely non-destructive (real time) editing a breeze.

For full compatibility, the HDR-V8 can be interfaced with DA88 and ADAT recorders. For unlimited mass storage, optional removable drives can be installed. Other options like remote control, SMPTE interface and multiple machine lock make the Pro Series Hard Disk Recorders king of the road. And if the standard one gigabyte drive isn't enough, the HDR-V8 is expandable to 4 gigs without sending it to the factory!

Of course, living on the road has its price, but at least with the highly affordable new HDR-V8 Pro Series, you'll have change left over.



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EQ LIVE

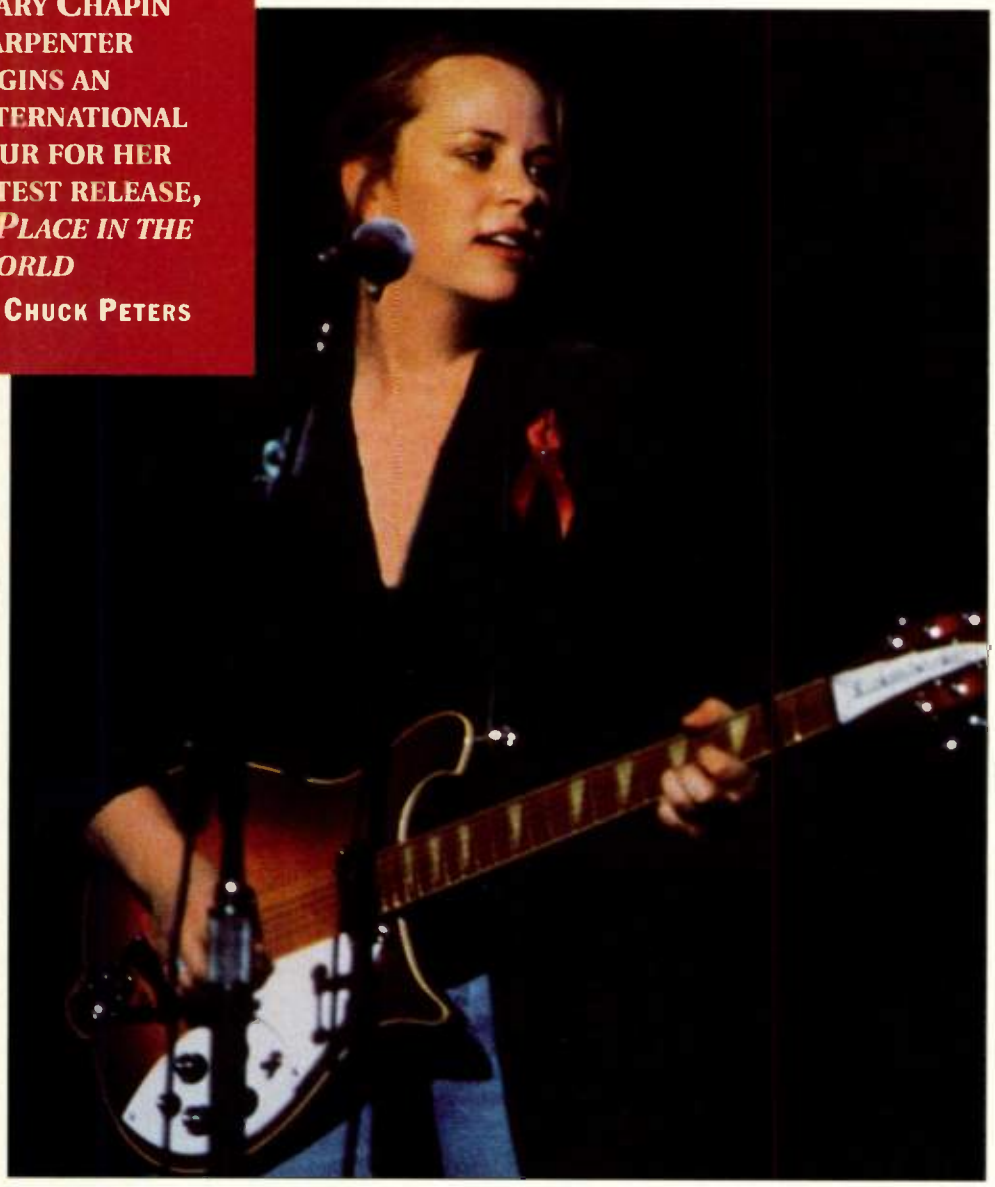
DAVE MATTHEWS LIVE
PAGE 124

MARY CHAPIN CARPENTER ON TOUR

"A PLACE" ON THE ROAD

MARY CHAPIN CARPENTER BEGINS AN INTERNATIONAL TOUR FOR HER LATEST RELEASE, *A PLACE IN THE WORLD*

BY CHUCK PETERS



In addition to doing sound for every United States President since Jimmy Carter, engineer Chuck Peters has also manned faders for Danny Gatton, worked at several east coast regional sound companies, and has been mixing Mary Chapin Carpenter's live shows for the past six years. Country music's favorite songstress is ready to tour in support of a new release and Chuck took some time to tell EQ what's happening on Carpenter's stage.

MARY CHAPIN Carpenter's new record *A Place in the World* has recently been released, and as you would expect, we'll be touring to support it. We've just finished about six weeks of summer tour dates (for PA we were carrying Sound Image's boxes and front-of-house gear) and after a few weeks off we will start up again in Switzerland, do a run of about two weeks in Europe, and then finish up in Dublin.

To get ready for the tour we held rehearsals with pretty much full-blown production so that we could program the consoles and effects and get the monitor engineer comfortable with the band. Mary Chapin's older songs are different every time we go out, and can change quite a bit from show to show. For instance, take the song "The Hard Way" — we have four different versions of that song, so I need to have the console ready for any one of them. On this last run I used a Yamaha PM3500 because it has scene memory and I can have a preset scene for each version (hopefully the right one is on my set list!). Every once in a while the band will throw me a curve and it'll be like "stump the light and sound guys," which is OK. It keeps me on my toes (and you cannot fudge on anything with Mary Chapin). Over in the UK I'll be using a Yamaha PM4000, which is going to be real interesting — I have grown to depend on the scenes in the '3500, and the '4K doesn't have scene memory.

KEEPING THE FAITH

The band consists of John Jennings (lead guitar), Jon Carroll (piano and organ), Duke Levine (guitar), J.T. Brown (bass), Robbie Magruder (drums), and Mary Chapin on lead vocal, acoustic, and electric guitars. Jon Carroll plays a Yamaha MIDI Grand piano that we have been miking with a couple of Shure SM91's placed under the lid (which stays closed). For the upcoming tour we are not even going to be carrying Jon's piano module because miking the Yamaha MIDI Grand has been working out so well for us.

Jon also plays a Hammond XB-2 organ with a Leslie simulator. It's a spinning high-end speaker, like the top part of a Leslie. We mic it in stereo with two Shure Beta 56's and then it has a direct sub-out for the low end. This is located on stage next to Jon where he can really hear it well. We used to run an electronic Leslie simulator, but that put a lot of demand on the monitor engineer to create Jon's sound. This gives the control over to Jon and I think that the whole band likes it better as well.

These days Robbie is playing a real small DW

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A LITTLE BIT COUNTRY: Mary Chapin Carpenter and lead guitarist John Jennings

(Drum Workshop) set with a snare, one rack tom, one floor tom, and a little 20-inch bass drum. We use Shure mics for the entire kit: Beta 56's on the snare and toms, a Beta 52 on the kick, and SM81's on the overheads and hihat. I also have an SM98A underneath the bell of his ride cymbal, and this is a key to the whole drum set sound. There's a mount for the '98A that we clip onto the floor tom and it has a goose neck for moving the mic around. And we use the hypercardioid adapter so the mic has a real tight pattern. In fact, there's almost no floor tom in there at all, but, of course, all I am looking for from this mic is high-end information anyway.

For the guitar amps we're using Shure Beta 52's (which sound wonderful) across the line for Mary Chapin, John and Duke. We've been placing the mics off to the edge of the cone because the center of the speaker is a little "beamey." I like the sound at the edge of the paper and I don't seem to get any frequency spikes that way. Mary Chapin also plays four acoustic guitars (three main, one backup), which are all on Shure UHF wireless systems. Two of the acoustic guitars were made by John Greven with pickups built-in. In her Greven #1 is an old pickup made by Andy Adams from a piezo-electric torpedo trigger. It has a very low output that in the past has been a problem for us. I have always had to put some sort of gain-stage in at my console to make it work right. But using it with the new Shure wireless system I have no gain problem at all, and it sounds so natural you'd think she was on a wire.

I was all set to use some vacuum-tube mic pres and go through this elaborate deal just to make it right, but fortunately I didn't have to. The signal from the wireless goes straight to the splitter, so myself and the monitor engineer each get the signal right off the guitar. Our guitar tech J.P. Reali is amazing and he is totally on top of the wireless situation, which is really important. We change guitars on just about every song, so there's a lot of muting and unplugging of beltpacks while he changes or tunes the guitars.

Mary Chapin's guitars don't get a lot of processing, except for Greven #1 — the one with the weird pickup. In the past I had some gain problems with that pickup, so out of sheer habit I put a BSS compressor on it, in case I need to make up some gain or keep the consistency in the level. The other guitars go flat through the console, and nine times out of ten I am not even putting any EQ on them. With the Sound Image PA we are carrying, once we analyze and EQ it in the daytime, we don't have to use much EQ on the channels.

VOICE FOR THE PEOPLE

Mary Chapin sings most of the show through a regular SM58 — the newest and nicest one I can find. We found that there is not much that beats a brand-new '58 for her. She does a couple of songs where she goes to the downstage edge and works the crowd, so I have another channel with a Beta 87 wireless mic. There's a Lexicon PCM 80 dedicated to her voice alone that is set for a standard plate program and I just run the decay times up and down for certain songs. Very simple. With her type of music, if you hear the reverb working you are probably using too much. You just want to warm it up and smooth it out a bit.

The signal patch for her mic is a bit more complicated. On her channel I have a Peavey Tube Mic preamp and I run the output of that into a BSS DPR-901 keyable compressor. The DPR-901 runs into an 661 Aphex Expressor (tube compressor). The Peavey warms up her voice a little bit coming in. Then the keyable compressor eliminates any frequency problems I might run into because I can choose the frequencies that are giving me a hard time and squeeze them (I use it in a cut-only mode). Then on the back end of it, if I am running into any gain problems, I use the 661 for a peak limiter. All these devices are at the house mix position and monitorland gets their split directly off the microphone.

Background vocals are handled by J.T., John Jennings, and Jon Carroll (he does a lot of the high parts), all of who are singing through Beta 58's. Jon Carroll's voice gets another Aphex 661 and the other guys get BSS units for compression. For reverb on the background vocals I'll use a separate unit, usually either a Yamaha SPX990 or another PCM 80.

SOUNDCHECK TIME

This band is a lot easier to soundcheck than others I have worked with because they are strictly business. Every once in a while they'll jam a little bit and maybe do a Crowded House song or something, but usually I'll do a line check with the stage crew before the band even gets there (and I can't think of a day when things haven't worked from the get-go). When the band gets in before Mary Chapin, they go through an electric song and an acoustic song, and we'll check the acoustic and electric pianos. Then she comes out and does a few songs until she is comfortable, including sending some band members away while she is doing an acoustic piano number. It's real low-key, and sometimes we go as little as a half-hour.

My toughest challenges have been with bands that had stage volume problems. But with this act we are all sticklers for having natural hues in the sound — it's really a tribute to their professionalism and I know how lucky I have it. The whole PA is built around Mary Chapin's voice because people want to hear her lyrics. I try to make her voice sound like she is standing next to you talking to you, and the guitar sound like it is in your lap. On stage the SPL is 95 dB at the downstage edge and we have worked very hard to keep it there. I also keep it at 95 dB at the mix position and it's wonderful. It helps me a great deal. I'm not a kid — I've been mixing for 22 years — and I wouldn't be able to do this every night if we didn't play at this level.

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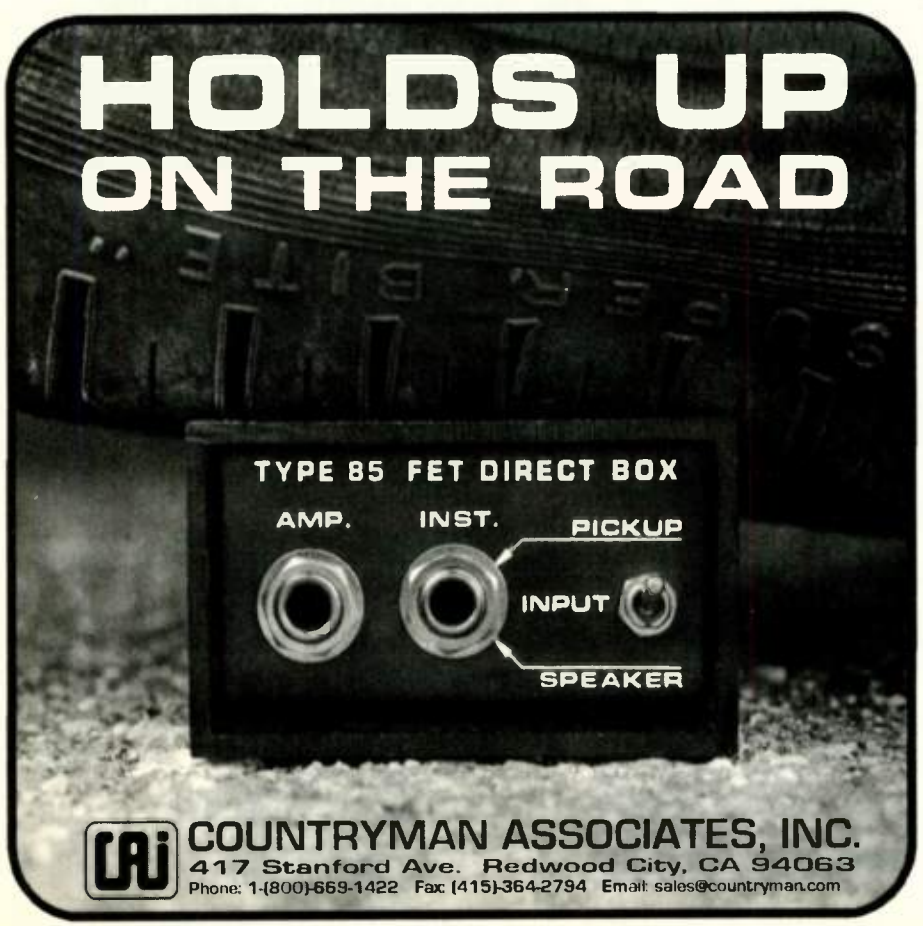

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CIRCLE 25 ON FREE INFO CARD

EQ LIVE

I use nearfield speakers (JBL Control 8's) up on the doghouse of the console on a delay to align them with the mains. If I find I can't hear well where they have stuck me for that particular night, I throw the mix into the nearfields. It has really changed the way I do things. Now if I am in a good spot in the room, I find I don't use them much. But I do use them for cueing — much like you might use headphones (once you put 'phones on, it really isolates you from the rest of the world).

Using the monitors, I find that I don't have to make the two or three moves involved with putting headphones on and I'm really a stickler for keeping my moves down to a minimum. That includes mixing from the VCAs. In fact, I very rarely go to the channels to mix. We're running about 30 inputs from the stage and I'd rather group those channels. There's one VCA group for the drums and bass, one for all of the vocals, and then the individual guitar players have their own VCA. The keys are on a VCA, the effects are on another, and the entire band (minus vocals) is on another VCA. So if I find a point where I want to do accents or I need to kick the band up a bit, I can do it using that band VCA without disturbing the balance. If the band starts to load the vocals down I can turn them down. It keeps me right in the little pocket near the master section. And with the combination of that and the mute section on the '3500, there's no reason to go anyplace else. I don't have to move around the board chasing channels. It keeps my focus on the band and the music, and doesn't take my attention away from what is important. It keeps my focus on the whole mix instead of the channels and gear, and let's me have a fun time out there. EQ

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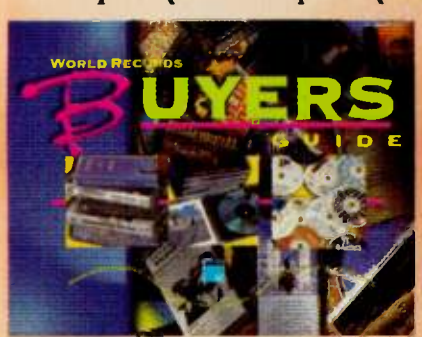

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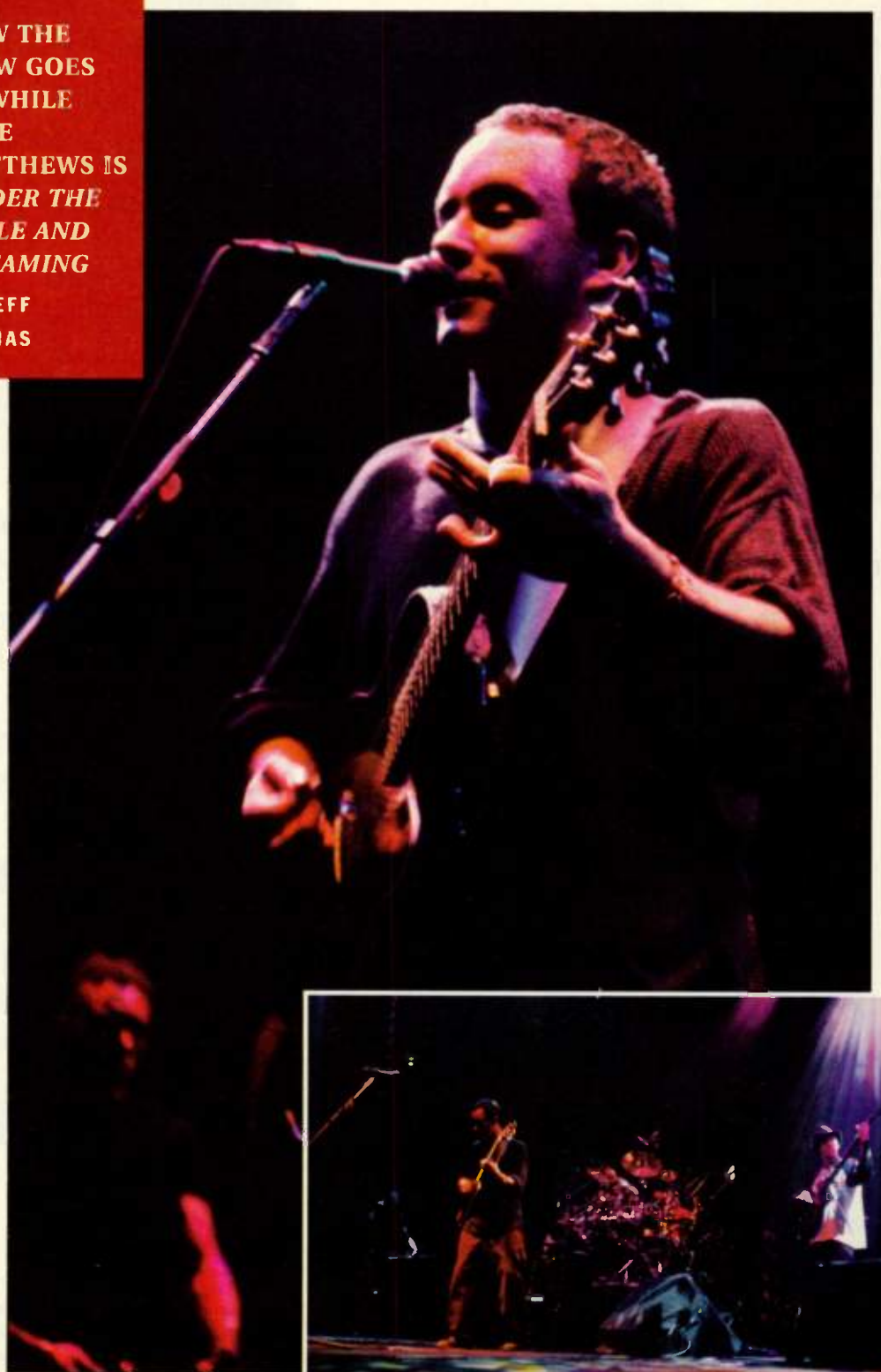
CIRCLE 180 ON FREE INFO CARD

On the Road with the Dave Matthews Band

How the show goes on while Dave Matthews is *Under the Table and Dreaming*

By Jeff Thomas

Jeff Thomas had no idea five years ago when he first started working with the then unknown Dave Matthews Band that he'd one day stand at the center of tens of thousands of screaming fans. The band's sound has developed over time and Jeff Thomas has been with them all the way since his high school graduation five years ago. This is and has been his main gig. Here he let's us in on the tour's secrets.



Photos by Julian Jaime

WE ARE A crew that is constantly trying new and different things in an effort to improve our sound, and I think this makes us rather unconventional.

EQ COPYING

Most recently, we have been using a SIM analyzer to help us EQ our speakers at every venue. For the uninitiated, SIM stands for Source Independent Measurement. Meyer Sound Labs out of Berkley, CA invented this powerful software/hardware package for the purpose of measuring rooms, equipment, and just about anything else related to audio. On the DMB tour, the SIM machine is used by the audio crew primarily to tune the PA system to the paticular venue, as well as measruing frequency response, phase response, and dynamic range of the monitors, band equipment, and microphonse.

During the day, the test microphones are placed around the room, then measurments are made to determine sound pressure levels and frequency response.

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D/A	20 bit 8X	16 bit	20 bit 64X	16 bit
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Freq Response	20-20kHz	2-18kHz	10-20kHz	2-16kHz
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CIRCLE 22 ON FREE INFO CARD

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Our entire system is transformerless . This allows us to pass DC current through everything aside from the amps, giving us great high- and low-frequency response. The Ultrasound system we're using is noise free and free from ground problems because each component is so carefully designed. We're very pleased using their sound system.

SING A SONG

For Dave's vocals we're using a B&K 4011, which is a first-order cardioid mic with very little off-axis rejection. While it's accurate and smooth, it also interacts a lot with the monitors on stage and any instruments on stage that are loud. That's the trade-off for using this mic. When the mic does interact with the monitors and instruments on stage, I'm prepared. I have an analyzer up front on the cue bus of my board, so whenever I cue something up to listen, it comes up visually on a display as well. I can watch Dave's voice for a while and detect where the anomalies occur. So when I see an interaction between his vocal mic and, say, the bass or a monitor, I can act accordingly.

I've got a nice selection of processors that I use on Dave's vocals. I use two Aphex Expressors, a TC Electronic M5000 for reverb and two 2290 delays, and an Eventide H3000 for some harmonizing pitch shifts. I combine the delays of the two 2290's to create their own unique effect. One is set for a very short delay and the other is long. Both are set for an auto-panning delay and the resulting effect resembles that of a reverb.

Dave is playing a Gibson Chet Atkins, which isn't a real hollow-body acoustic guitar. The signal flow of Dave's guitar rig starts with an API 512b preamp and a Meyer CP-10 equalizer for each of his four guitars. Each channel then passes through a Korg DT-1 tuner. The guitars are then selected by a Whirlwind multi-selector. From there the signal goes into an Eventide GTR 4000 Ultra Harmonizer, which allows him to apply any effects he would need. Next comes a Morley ABY box (A=Fender Deluxe tube amplifier; B=main guitar rig; and Y=combination of tube amp and main rig). The rest of his main rig is equalized by a White 5024 digital processor EQ and uses a Meyers S-1 processor. For monitoring, Dave uses two Meyers USM-1 stealth monitors, which are powered by a Crest 7001 power amplifier.

PUT THE PEDAL TO THE METAL

How we mute channels for this show is also a bit off the beaten path. While most engineers do the traditional practice of pushing mute buttons, our FOH console has been modified to accept a different switch to replace the conventional pushbutton muting method. This switch comes in the form of a footpedal, which is wired into a snake that comes into our patchbay where it is patched to the board's muting circuitry. The frontman musicians are each using one of these footpedals: Dave; LeRoi Moore (saxophonist); and Boyd Tinsley (violinist).

How it works is that they have to stand on this footpedal to turn on their microphones. It's a pressure pad

BLOW HARD: Winds player LeRoi Moore is just one of the aspects of The Dave Matthews Band's unusual rock 'n' roll live setup.

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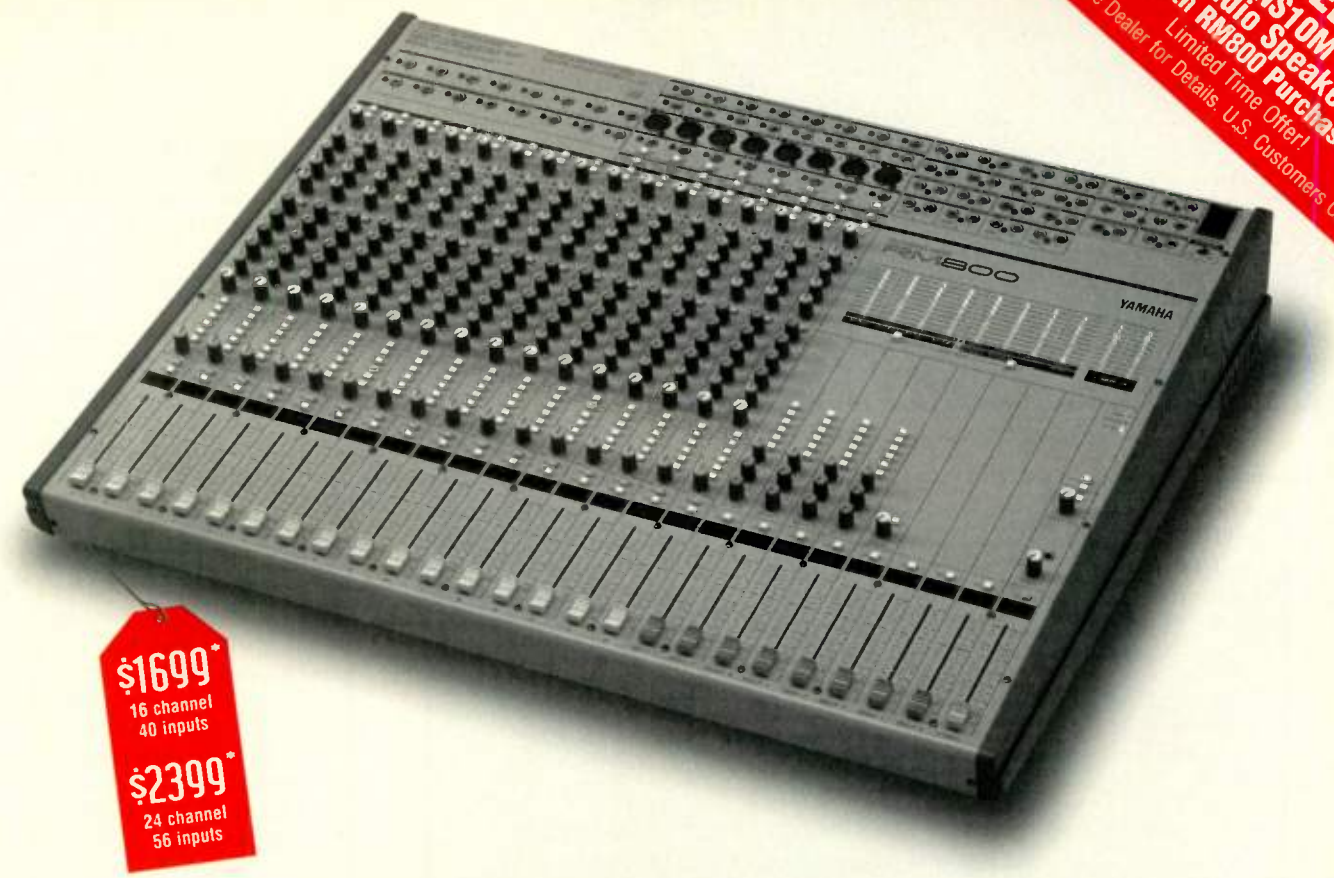

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SIM-PLE ANALYSIS: Engineer Jeff Thomas relies on Meyer's system.

that when stepped on unmutes the mic. So instead of me manually pushing a button for the mute group, the footpedal determines when channels are on and off. And the way that the footpedals are wired into the system allows the musicians to control any mute group that I assign to it.

The reason why we did this is so that when the band moves away from the microphones, the mics are not picking up the bass and drums and so on. This gives my mind a break in that I don't have to be constantly wondering if and when leakage is going to occur when these guys step back from their mics. The innovators behind the footpedals are Ultrasound's Dan Healey and Don Pearson.

FEELING SAXY

LeRoi's stage rig consists of three API mic pres and an M5000 for reverb. For miking he's got two B&K 4011's and a Neumann KM184. One of the two B&K's is on a boom-like stand that is positioned to pick up the bell of his baritone and tenor. Then there is a bottom B&K on a stand positioned to pick up the keypads of his baritone and the bell of his soprano. The Neumann KM184 clips on to his alto. The mics are so transparent that I don't need to do anything other than adjust the levels according to the horn he's playing. Each one of LeRoi's mics goes into its own API preamp that goes into its own channel on the M5000, and, like Dave, he has total control over his sound.

ZING WENT THE STRINGS

Boyd is playing a customized Zeta wireless violin. There is a Nady wireless unit built into it so all he has to do is pick it up, turn it on, and play. He's also started playing a MIDI violin that has a MIDI pickup built into it that triggers a sound module offstage. So he can play piano, French horns, and other sounds from his violin.

So there you have it, *most* of my mixing secrets. I've been very fortunate to have grown along with the band for the past five years. Every day reveals something new to me and I welcome it with open arms (and ears). EQ

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DIGITECH GSP-2101

THE DIGITECH GSP-2101 is no simple guitar processor; it combines an analog "front end" (compressor, dual-12AX7-tube distortion, solid-state distortion, and graphic EQ) with digital postprocessing based on DigiTech's "S-Disc" technology, as first used in their TSR-24. Unlike some multieffects where it seems like reverb is an afterthought, this is one box where the digital effects are well-implemented and clean.

The GSP-2101 Artist has two main differences compared to the original GSP-2101: 52 presets by a bunch o' famous guitarists, and improved pitch-shifting algorithms (intelligent harmony, smoother pitch change, smoother whammy, etc.). The celebrity presets are very well done — although I initially assumed this was a gimmick, the presets are usable and creative. (An upgrade kit for the original GSP-2101, consisting of two EPROMs and a new manual, is available for $99.95.)

The 2-rack-space box has paralleled front- and rear-panel input jacks, with a respectable 470k input impedance. Also on the rear panel: balanced/unbalanced 1/4-inch jacks for stereo output, post-analog section mono FX send, and stereo FX returns (for instruments other than guitar, you can patch into the effects returns to bypass the analog front end). There are also stereo XLR balanced outs, headphone jack, MIDI in/out/thru, and footswitch controller jack (which works only with the Control One).

A speaker emulator circuit affects the headphone jack permanently, and is switchable in and out for the XLR outs (but, curiously, the emulator is not available for the 1/4-inch outs). I've read a few comments online about the GSP-2101's "thin sound" in the studio, which leads me to believe they were using the 1/4-inch outs. I got great results by enabling the speaker emulator and using an adapter cable to patch the XLRs into my mixer's 1/4-inch inputs. If you insist on sending the 1/4-inch outs into something other than a guitar amp, expect to do some EQ'ing.

The front panel has a large data wheel, output control, 31 pushbuttons, LED program readout, clip LEDs that monitor multiple points in the algorithm (bravo!), and 4-line-by-20-character LCD.

The analog section is fixed; you can't change the order (e.g., place EQ between compression and distortion). Still, what's there works well. The six distortion types (three tube, three solid-state) sound very good when properly EQ'ed, the compressor has a natural sound, and the graphic EQ shapes tonality fairly well (although, unfortunately, it doesn't go above 5 kHz).

For the digital section, we're talking real power. You can make your own algorithms by combining dozens of effects — 10 digital EQs, 7 reverbs, 6 delays, 5 choruses, 4 flangers, 15 pitch shifters/arpeggiators, 2 noise gates, 2 noise reducers, 2 samplers, and 15 "miscellaneous" types (tremolo, autopan, phaser, wa, phase inverter, tuning reference, ducker, etc.) — along with a variety of mixers to create just about any signal flow imaginable. Mono mixer modules range from 2x1 to 10x1, stereo from 2x2 to 16x2, and three-output versions from 2x3 to 7x3. Programming an algorithm is tedious, but worth it.

As one example, I threw together a "through zero" flanger by sending the signal into two delay lines, one set for a very short delay and the other sweeping over a range that went "through" the other's minimum delay time. A 2x1 mixer combined the outputs back into mono.

The companion Control One remote (which works only with the GSP-2101 series, Valve FX, and Legend II) has 12 footswitches (10 digits, bypass, and select), a very readable fluorescent display, and control pedal; there's also a jack for the output from a second control pedal. The switches are pretty general purpose, as they can be assigned to programs,

continued on page 176

ROAD TEST

MANUFACTURER: DigiTech, 8760 S. Sandy Parkway, Sandy, UT 84070. Tel: 801-566-8800.

APPLICATION: Process guitar, with extensive DSP capabilities, live or in the studio.

SUMMARY: The analog section is a little under-developed, but the S-Disc DSP gives some sophisticated and unique effects.

STRENGTHS: Excellent time-based effects; user-programmable algorithms; matching foot controller option; solid MIDI implementation; smooth, sweet tone when properly programmed.

WEAKNESSES: Analog section is fixed; can be tedious to program; speaker emulator doesn't work with 1/4-inch outs, only XLRs.

PRICE: GSP-2101 Artist, $1099.95; Control One, $299.95.

EQ FREE LIT. #: 146

BY CRAIG ANDERTON

Rodeo Roundup Review

Reviews of the Studio Technologies analog router, Aardvark digital converter, and Z-Systems digital router

BY EDDIE CILETTI

ARE YOU LOOKING for an easier way to:

1. Monitor a wide variety of stereo sources — such as workstations, DAT decks, CD players, VCRs, analog 2-tracks, cassette decks, and mixers — without patching?
2. Switch between amplifier/speaker systems?
3. Talk (back) to the people on the other side of the glass?
4. Duplicate and have the ability to monitor multiple machines?
5. Easily patch an assortment of digital gear?
6. Improve or guarantee the quality of digital audio conversions?

Thanks to a thriving group of third-party entrepreneurs, a crop of clever accessories is ready for harvest. This rodeo-style review features the Studio Technologies analog router; Aardvark digital audio converter (DAC); and Z-Systems digital router. Product choice was based upon my own personal need to integrate a workstation and mixer. Maybe you're in the same boat?

At my project studio, Chez Dog, there is no recording console. At 26-inches wide, a "vintage" Roland M-240 *mixer* fits on a sliding shelf under a computer keyboard. Its 24 line inputs are ready to monitor any combination of digital 8-track decks or MIDI gear that might drop by. Intended as a keyboard mixer, there are no mic preamps, equalizers, or convenience features such as talkback, solo, or mute. All serious mixing gets done on a Soundscape SSHDR1 hard-disk recorder/editor.

In order to fully integrate my present and future components into a user-friendly system, I was on the lookout for third-party products that could make life easier. The first product I chose was the Studio Technologies Studio Comm, a very clever stereo source selector. It has become one of my essential accessories, along with the Z-Systems Detangler, which is an electronic patchbay for digital audio signals. Together, these two units helped me test the 16-bit Aardvark Aardverter. In one compact package, the Aardverter does the A-to-D and the D-to-A dance at three sample rates (32, 44.1, and 48 kHz). It also features input level knobs, input and output level trims, XLRs for all I/Os, and the ability to sync to an external source.

The combined list price of this trio is slightly over $4500. Some digital audio converter sets can do similar damage to your wallet and not be as functional.

Just as I was wrapping up this Rodeo Review, the Spectral Translator Plus showed up. It speaks all tongues: TASCAM's TDIF-1, Alesis Optical, Yamaha's Y2, standard AES, and Sony's PCM-800 8-channel (on a DB-25 connector) AES. The Translator Plus allows digital transfers between the ADAT and DTRS (DA-38/88, PCM-800) formats from AES to either format and back. This means I can finally transfer digital multitrack tapes into my Soundscape without detouring to the analog domain.

THE RODEO LAB TEST

I wanted to compare the D-to-A converters of a Panasonic SV-3800 and the Soundscape SSHDR1 with that of the Aardvark. Before doing so, all of their outputs had to be made equal. By pressing Aardvark's Mode button, the A-to-D outputs a test tone at digital zero (or no tone=digital silence). This signal was routed via Z-System's Detangler to the SV-3800 and the SSHDR1. (The Aardvark D-to-A automatically takes its cue from the A-to-D when in Test mode.) Monitoring in the analog domain was via Studio Comm. Its dub output was connected to a Fluke 8060A RMS voltmeter for level confirmation.

Note: Aardvark's digital meter, unfortunately, indicates only the A-to-D level. It does not — at this time — also have the ability to indicate the incoming signal to the D-to-A.

Aside from –10/+4 level selection, Studio Comm does not provide individual level trims. Soundscape's output was adjusted via its internal mixer. The front-panel software of the SV-3800 permits its output to be trimmed in 1 dB steps while the Aardvark has mechanical analog level trims. All three devices were made to agree within 1/10th of a dB. An external analog oscillator, set to 30 Hz, was then fed to the Aardvark A-to-D and faded until it just about disappeared into the noise floor. Each D-to-A was remarkably well behaved; none exhibited any "birdies," grain, harmonic oddities, or difference in noise spectrum.

THE RODEO FREESTYLE TEST

I then recorded acoustic guitar in a wonderfully ambient 12- x 40-foot space

with a reverb time that complemented the tempo of the music. A pair of AKG SE300B mics were used (with cardioid capsules) into an Aphex Tubessence mic preamp. The Detangler simultaneously routed the Aardvark A-to-D to the Panasonic DAT, the Aardvark D-to-A, and the Soundscape SSHDR1. All three were monitored in the analog domain through the Studio Comm. Yet another surprise. Even with complex source material (transients from the guitar and decay from the room), all three D-to-A converters delivered the same image and spectral balance.

Knowing that the D-to-A converters all exhibited similar behavior, it was now time for the more difficult task; feeding the same analog signal to all three A-to-D inputs. I made a "triple Y" cable and routed my oscillator to its three destinations and again listened to several tones fading each into the noise floor. Again, all three boxes were surprisingly well behaved.

Note: That I was not able to detect obvious sonic differences among the three units under test could have been the result of one or more of the following:

- The subtleties of detail could have been be masked by the monitoring system — the amp and/or speakers.
- The three units tested all happened to have respectable performance.
- The tests were not sufficient to reveal limitations.
- I didn't turn it up loud enough (i.e., loud enough to hurt myself).

I had hoped that, with the aid of the Studio Comm, DAC idiosyncrasies would be more obvious. The above test does yield audible harmonic artifacts generated by the A-to-D of the Sony PCM 1000/2500.

BACK TO THE STUDIO

Whether simply selecting various sources or investigating potential sonic discrepancies, the Studio Comm does so with an ease that is not taken for granted. There is a slight switching ramp that smoothes transitions so there are no clicks or crackles, just a momentary level dip. Since most digital sources are internally clocked, using the Detangler as source selector in conjunction with a D-to-A converter is not as seamless. There will always be a click when switching between sources. The solution would be to clock all devices from a common reference. This is not possible with some gear, but it is a feature on the Aardverter.

Another group test enlisted the acoustics of my building lobby as a live chamber. Soundscape has four outputs, two of which were used as a reverb send for vocals and acoustic guitar, plus gated kick and snare. Via Studio Comm's Studio Output, this signal was sent to an amplifier and speaker. Without disturbing the send to the chamber, I was able to independently monitor its return (via the same mic, preamp, and A-to-D combo), as well as the mix of the dry and wet.

THE WRAP

Up until this review, I have avoided making sound quality comparisons among devices because there was no way to make repeatable A-B tests. Combining the Z-Systems Detangler with Studio Technologies Studio Comm permits a multitude of monitoring options — enough to catch an audio criminal in the act — or at least make one's life easier. That I didn't have to crawl behind any racks was also much appreciated.
Here are the three reviews:

Studio Technologies Studio Comm

Part of its Studio Comm series, the Studio Technologies' Model 50 packs seven balanced stereo inputs and five stereo outputs into a single rack space. Each input has programmable input sensitivity (–10 dBV/+4 dBu) so that the various output levels (produced by a D-to-A converter, CD player, mixer, DAT, open reel, or cassette deck) can be in the same ballpark. (Wow! That's six already!) The Studio Comm has outputs for main control room A/B monitors, studio monitors, a stereo headphone system, and dub (for tape copies).

The Model 50 comes alive with the Model 51, a compact remote controller that communicates via MIDI. About the size of a low-profile cigar box, the remote features a big knob for Control Room Level that is augmented by switches for Mono, Talkback/Slate, Dim, and the A/B amplifier selection. In parallel with the seven source-select switches are three columns of LEDs to indicate that signals have been independently routed to Control/Studio, Studio/Headphone, and Dub outputs. The smaller knob is for Studio Level, and it has its own Mute switch.

Programming is accessed via the Configure switch at the top left corner of the Model 51. To reconfigure, it is necessary to hold this switch for two seconds, a length of time that minimizes MBA (modifications by accident). There is also a separate headphone box — with its own level control — that mounts on a mic or music stand. The dub output has sufficient power to drive several devices, but for guaranteed isolation, Studio Technologies also makes a distribution amplifier (the Model 85). Together, these two products are well suited as the front-end to a small, real-time cassette duping station.

EQ LAB REPORT

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

APPLICATION: Permits facilities normally associated with recording consoles to be made available for workstations and budget mixers.

SUMMARY: A one-of-a-kind box that is a lifesaver.

STRENGTHS: The packaging is quite robust; the manual is most generous and thorough; all features are easily front-panel programmable; a spare stereo input and dub output are provided on the front of the rack panel.

WEAKNESSES: It would be nice to be able to trim the level of each input.

PRICE: $1799

EQ FREE LIT. #: 147

EQ LAB REPORT

MANUFACTURER: Aardvark, 202 East Washington, Suite 306, Ann Arbor, MI 48104. Tel. 313-665-8899.

APPLICATION: Analog-to-digital-to-analog converter set.

SUMMARY: An affordable dedicated converter that can be locked to an external reference.

STRENGTHS: Well-designed package with input and output level trims. (Input trim can be either via knobs or recessed pots.)

WEAKNESSES: LED meter displays the converted digital output only.

PRICE: $1695 **EQ FREE LIT. #:** 148

Aardvark Aardverter A-D/ D-A Converter

Question: Why are dedicated digital audio converters (DACs) so expensive? Answer: Because the A-to-D, power supply and D-to-A are in separate enclosures to ensure that nothing interferes with or contaminates the signal in either the analog or digital domain.

For those who are either not satisfied with — or not sure of — the sonic performance of the converters in your DAT or digital signal processor, the answer is a dedicated converter set. Problem is, DAC prices typically live in the neighborhood of $5000. Aardvark, of Ann Arbor Michigan, has managed to bring the price down to earth. Its 16-bit Aardverter is an all-in-one DAC package for $1695. What you are not paying for is the separate packaging and power-supply hardware.

Aardvark managed to squeeze all of that performance into one package by meticulous design of its four-layer circuit board. (They tell me it took a few tries before getting it right.) As you may know, printed circuit boards (PCBs) replaced interconnecting wiring that was once common with vintage vacuum-tube equipment. But at the PCB level, what replaces shielded wiring for sensitive signals? The answer is to carefully route sensitive signals away from potential "noise" sources such as digital clock signals. In addition, PCB traces can serve as shields and be sandwiched between layers to minimize "cross-town traffic." Aardvark also ties all XLR pin-one grounds to an all-metal chassis. This and RF filtering keep unwanted noises from undermining good circuit design.

Aardvark provides these jumpers for user configuration of:

- Analog input level control: knobs or recessed trim pots
- Digital-channel status: professional or consumer
- Input sensitivity: +4 dBu/–10 dBV
- Input coupling: AC/DC
- These jumpers are printed under-the-hood in case you lose the manual.

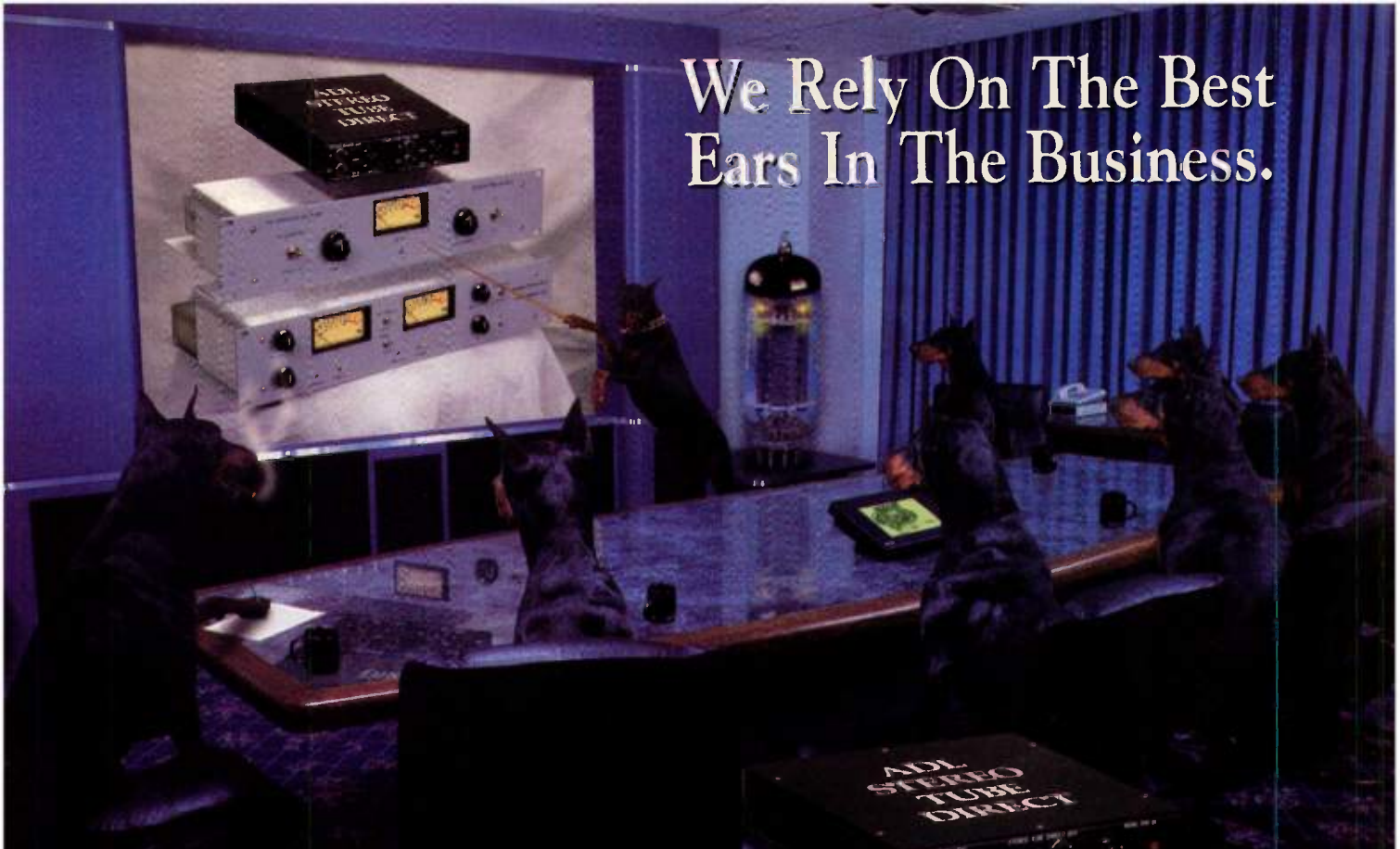
If the fact that the Aardverter is only 16-bit bugs you, keep in mind that:

- All affordable digital audio is currently, and will likely remain, 16-bit.
- Gear with built-in 18-bit converters may not always deliver 16 good bits due to compromises in PCB layout and grounding.
- Consumer audio will remain at 16 bits regardless of what happens at the professional, DVD, or high-end levels.
- The 16-bit Aardvark performed as well as the 18-bit converters in Panasonic's SV-3800. Panasonic used the extra bits to guarantee 16 good bits. Aardvark got 16 good bits from its converters.

Z-Systems Detangler

The z-8.8 digital patchbay eliminates the inevitable tangles that result from direct connections between various pieces of digital gear. Your wiring may have started out clean, but after a few sessions, things have a way of getting out of control. The z-8.8 to the rescue! Not only can it in-

Z-Systems Detangler



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EQ LAB REPORT

MANUFACTURER: Z-Systems Audio Engineering, 4641 NW 6th Street, Gainsville, FL 32609. Tel. 352-371-0990.

APPLICATION: Electronic patchbay for digital audio signals.

SUMMARY: Eight inputs and eight outputs (8 x 8); four AES, two S/PDIF, and two optical.

STRENGTHS: Seventy-nine user presets for every possible configuration.

WEAKNESSES: Front-panel silk screening could be more user friendly.

PRICE: The "4-2-2" reviewed here, $1080 (AES-only, $980). Remote version w/MAC/PC software, $1100. **EQ FREE LIT. #:** 149

terconnect all of your gear, it has user presets for 79 user permutations.

The front panel has a pair of rotary controls to select a destination from a source. Above them is an alphanumeric LED display for the sources with silk-screening below for destinations. Four switches (Cancel, Load, Save, and Route) do the business. I never used the operators manual — the unit is that friendly — though I do think the front-panel silk-screening could be more informative. For example, the TO knob selects which I/O channel to be modified, while the FROM knob increments or decrements the LED display. When loading or saving presets, however, the TO knob now increments and decrements. This threw me at first. Please understand that, before the Detangler, all artistic experiments required some pain. *Aprés* Detangler, *je suis trés content!*

The Detangler comes in several flavors. The z-8.8 featured here is also referred to as the "4-2-2" because of its four AES ports, two S/PDIF ports, and two optical ports. There is also an AES-only version, a Have-It-Your-Way version, and the z-8.8r, which features remote control via Mac or PC.

Like the Studio Technologies Studio Comm, the Detangler is in a robust metal package. It not only facilitated the review and interconnection of several products, it also allowed me to have more fun.

Eddie Ciletti's e-mail addresses are: eddieaudio@aol.com and edaudio@interport.net. Coming soon: http://www.users.interport.net/~edaudio/

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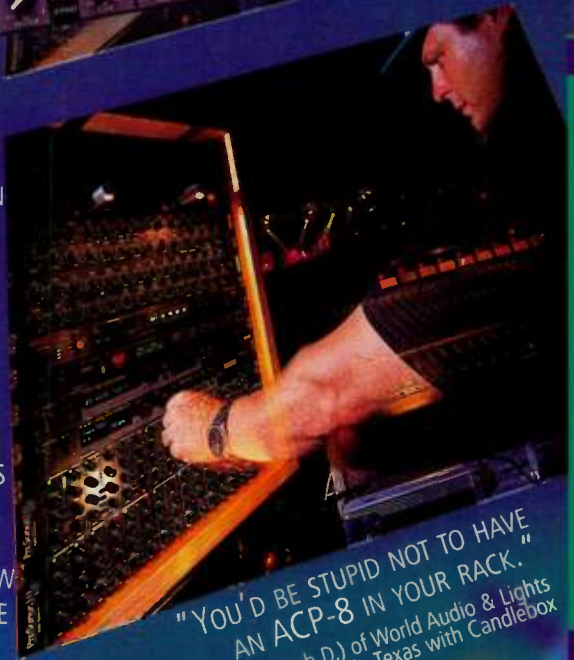
Rob Shrock,
Electronic Musician



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WRH

Yamaha PROR3 Digital Reverberator

EQ LAB REPORT

MANUFACTURER: Yamaha, 6600 Orangethorpe Rd., Buena Park, CA 90620. Tel: 714-522-9011.

APPLICATION: Provide artificial reverberation effects for individual instruments or program material.

SUMMARY: Excellent sound for the bucks.

STRENGTHS Sound quality and detail; quiet; useful "secondary" effects (compression, gate, pre-effect EQ, etc.); pro or project studio audio interfacing; decent operating system; cost-effective.

WEAKNESSES: No digital I/O; only two MIDI controllers; does not respond to MIDI pressure data; no global wet/dry control, only per-program.

PRICE: $1599 **EQ FREE LIT. #:** 150

BY CRAIG ANDERTON

EVEN THOUGH I use digital reverb, I've always been very aware of the quality difference between it and true acoustic reverb. But, lately, that gap has been narrowing. Ever-improving algorithms and processing efficiency are improving the state of the reverb art with two results: really inexpensive units that still sound surprisingly good, and moderate-cost reverbs that sound as good, if not better, than top-of-the-line gear of not too long ago.

Yamaha's ProR3 falls into the latter category. It's not a multieffects (although there are lots of ways to shape the sound); this is straight-ahead reverb. But it has a sweet, deep sound that sounds more expensive than it is.

FIRST IMPRESSIONS

The ProR3 looks like your basic late-20th century, microprocessor-controlled box — 2 rack spaces, 24-character-by-2-line LCD display, LED VU meters, buttons for various functions, input level control, and numeric keypad. One departure is three pairs of knobs for the pre-effect EQ section (there are frequency and gain controls for low, mid, and high sections).

The rear panel has balanced, true stereo inputs and outputs (1/4-inch jacks or XLR, with pin 2 hot); the input and output sections are individually switchable between –10 and +4 levels. The remaining jacks are MIDI In, Out, and Thru. The ProR3 can respond to controllers, notes, and program changes, as well as do sys ex dumps and loads.

JOY OF FX

You can choose one of 10 "primary effects": reverb, early reflections, and room simulation, along with reverb plus one of seven other effects (echo, chorus, early reflections, flanging, pitch shifting, panning, and "symphonic").

There's also a string of five series effects between the primary effect and the output, which includes dynamic filter (frequency response reflects input signal level), compressor, low/mid/high 3-stage parametric EQ, and gate (for creating gated reverb effects). There's also a mixer for setting the effects balance or overall level.

An input mode control chooses between true stereo or summing the left and right signals and processing the sum (although the output field is still stereo). The latter gives slightly higher quality than true stereo mode.

THE GOOD BITS

There are 90 preset and 90 user programs. As you fly through the various programs, you're immediately struck by the smoothness of the reverb sounds. Any reverb can sound reasonable for the first few hundred milliseconds, but the ProR3's reverb tails are smooth all the way to the fadeout. The DSP uses 32-bit processing, which probably accounts for much of the accuracy. The quoted dynamic range is 110 dB typical (104 worst case), which exceeds the theoretical maximum for 16-bit performance by a comfortable margin. A/D and D/A converters are 20-bit, which helps.

Regarding tweakability, each "module" has lots of available parameters. Even the "plain vanilla" reverb has 25 separate adjustable main parameters, including the usual (number of

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reflections, diffusion, levels, filtering, reverb time) but also some more unusual parameters such as "liveness" (decay characteristics of early reflections) and modulation, which adds animation to the basic reverb sound. The secondary effects are equally well-endowed; for example, the compressor offers threshold, ratio, soft/medium/hard knee, attack time, release time, output level, and a bargraph gain-reduction display. The output equalizers are true parametric types (although the input EQs are not).

It's easy to set up standard reverb sounds, but you can also bend the sound pretty substantially. MIDI-wise, you can assign any two parameters to two different MIDI controller numbers. Surprisingly, these changes are smooth as well (except for initial delay) — you can use MIDI to really kick up the reverb decay then back down again, all without a glitch. However, there is a fairly lengthy mute when changing programs.

WRAPPING UP

To my ears, reverbs fall into two main schools: thick (e.g., DigiTech, ART) and airy (e.g., Lexicon, Alesis). There are good and not-so-good implementations of each type, and both have their devotees — it's akin to Les Paul vs. Strat. The ProR3 falls more into the thick category, with a very rich sound; but lowering the density and reducing the high-frequency decay time a bit relative to the overall decay crosses over into a more airy ambience. The point here is that you make the choice for a thick reverb sound or a thinner, more ethereal one. Either way, the sound is clean, quiet, and (have I used this adjective enough?) smooth.

As luck would have it, I was working on a project that needed an exceptionally good vocal reverb at the time of this review, so the ProR3 got quite a workout on vocals, drums, and overall program material. The sound and flexibility was much more than I expected at this price. This is an impressive, professional box; if you're looking for straight-ahead reverb, the ProR3 is an extremely cost-effective, and good-sounding, choice. EQ

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TL Audio Indigo Series

EQ LAB REPORT

MANUFACTURER: TL Audio (Tony Larking Audio), distributed in Canada and USA by Sascom Marketing Group, 34 Nelson Street, Oakville, ON L6L 3H6 Canada. Tel. 905-469-8080. Web: WWW.SASCOM.COM

APPLICATION: Project and commercial studios, post, live sound.

SUMMARY: Tube-based rackmount processor range including two equalizers, a compressor, and a 4-channel mic preamp.

STRENGTHS: Outstanding value for money; EQ2012 is best EQ in TL Audio range; all products offer very similar performance to the Classic series.

WEAKNESSES: Reduced functionality over the TL Audio Classic range; no built-in mic preamps on Indigo processors; they run extremely hot.

PRICE: EQ2011, $1295; EQ2012, $1395; PA2001, $1295; C2021, $1395.

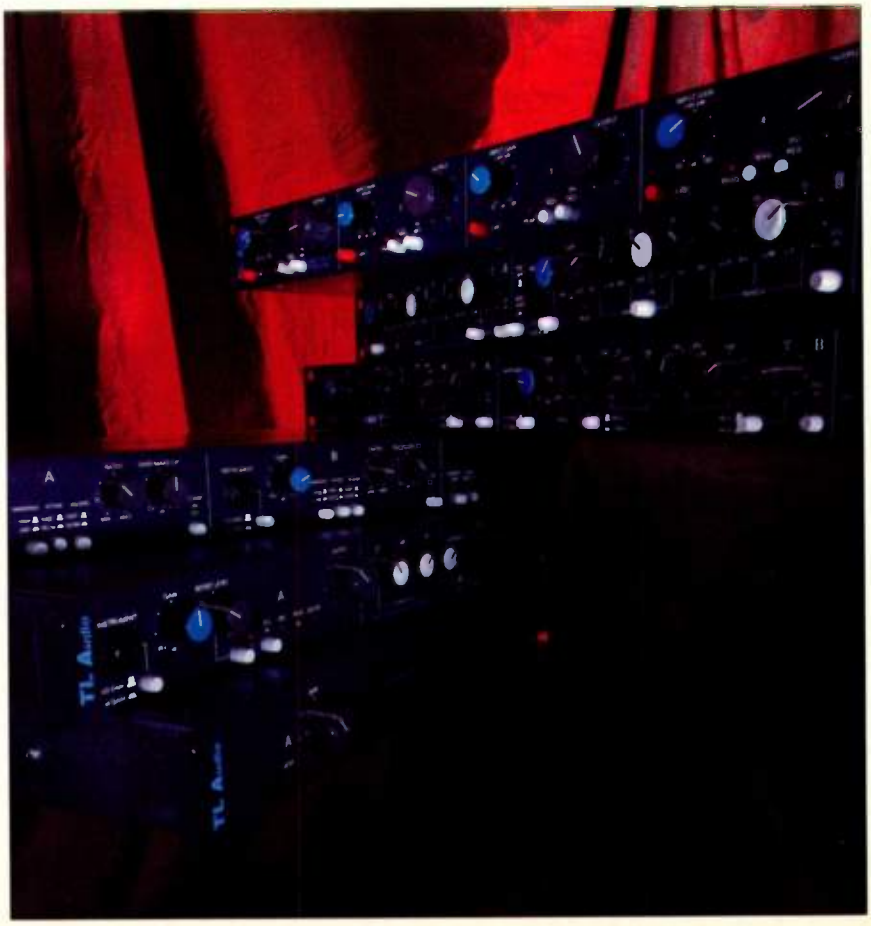
EQ FREE LIT. #: 151

BY ZENON SCHOEPE

THE RECENT EXPANSION of the TL Audio range of outboard processors with the addition of the Indigo and the Crimson series makes a lot of sense once you understand how they all slot together. The original Classic 2U tube processors are underpinned by the Indigo range, which are extremely similar but have stripped down facilities. Forthcoming units include a 2-channel valve overdrive unit with 3-band fixed EQ and a single-channel voice processor that combines a mic preamp, EQ, and compressor. All Indigos are 1U and dark blue.

The lower-cost Crimson range are solid-state versions of the Indigo units with the exclusion of the overdrive box and, surprise, surprise, they're red. Indigos are less expensive than the Classics because they lack some features and the mic preamps — which is why the Indigo PA2001 4-channel mic preamp is such a good idea. Indigo processors have rear-panel balanced XLR and unbalanced jack connectors plus front-panel instrument level inputs to each channel with a high- and low-level gain switch.

The construction quality of all units is good and they're respectably quiet — just like all other TL Audio gear.



PA2001 MIC PREAMP

Each of the four channels of this mic preamp runs a tube in its second stage linked to the position of the gain pot, which ranges from 10–60 dB. Phantom power is switched, as is phase and a 12 dB/octave 90 Hz high-pass filter. There's also a peak LED and an output pot that make it ideal for direct-to-tape recording or as a mic front-end to other Indigo units. Inputs are on XLRs and outputs emerge on paralleled balanced XLRs and unbalanced jacks.

It's as solid and wide as most would want, with the distinction of being able to run the tube a little harder to get that thickness. The preamps will do justice to any mic you have.

EQ2011 EQUALIZER

Those acquainted with the original TL

Audio EQ1 dual-valve equalizer or the M1/M2 8:2 console will find the EQ2011 familiar. It's a dual-channel 4-band equalizer with switched frequencies throughout and 12 dB of cut and boost on two peaking mids and shelves on the HF and LF. Frequencies are 80/120 Hz on the LF, 8/12 kHz on the HF while mids switch between 250 Hz, 500 Hz, 1 kHz, 2.2 kHz, and 1.5, 2.2, 3.6, 5 kHz. Input gain with an LED is variable ±20 dB.

EQ2012 PARAMETRIC

Although it shares some commonality with the dual-channel, 4-band parametric EQ2, the EQ2012 parametric EQ is a different beast and substantially different from anything else the company makes.

Each channel has a gain pot, peak LED, bypass, and two fully parametric bands. Qs are fully variable from 0.5 to 5 and there's ±15 dB on tap, but the frequencies are different. Channel 1 gets coverage from 30 Hz–1.2 kHz in one band and, via a Divide-by-10 switch, to 1–18 kHz and 100 Hz–1.8 kHz. Similar principles apply in Channel 2, but with a Multiply-by-10 switch, yielding 30 Hz–1.2 kHz and 300 Hz–12 kHz in the first band and 1–18 kHz in the second. What's neat is that you can switch to 4-band mono operation and tons of scope. There's a lot of overlap and some of the frequency ranges are pretty wide, but you can divide the frequency spectrum into fairly defined chunks.

C2021 COMPRESSOR

The Indigo differs most notably from the Classic C1 compressor in replacing fully variable attack and release pots with two 2-position switches. The C2021 offers 0.5 or 20 ms and 40 ms or 2 s of attack and release times, respectively, and is backed up by an input gain pot, +20 to –20 dBu threshold pot range, 20 dB of gain make up, and channel bypass. Compression ratio can be varied from 1:1.5 to 1:30 and is soft-knee in character with the resulting gain reduction displayed on twin bargraph meters that can be switched to monitor the output level. Each channel has sidechain access and the two can be linked for stereo on a switch — in which case control of all but input gain and gain makeup is passed to Channel A.

IN USE

The two EQs are brilliant for completely different reasons. The parametric is powerful, incisive, and flexible in 4-band mode. Two bands per side in dual mode is adequate, and channels can be set to give identical wide-frequency spans, but it's not really enough to get clever with. If you keep it broad you can't go wrong. It sounds good.

The fact that the EQ2011 is not as variable as the EQ2012 is its best asset. Like its predecessors, the bands are broad (Q is 0.5), smooth, and fuss-free — you flick around the few frequencies and then get on with it. Tube EQ bands can be driven in a manner you won't replicate on a non-tube EQ. For bottom end richness they're tough to beat.

Like most preset attack and release time compressors, the C2021 works well because its values are well chosen. You can set-and-forget for the majority of programs, but you might want changes on vocals and solo acoustic instruments, and then you'll have to balance input gain, threshold, and ratio.

The C2021 is a good all-around dynamics box that will deliver stacks of thick and splashy tube compression. On full throttle it sounds quite unlike anything else around for the money. The instrument level inputs on the compressor and EQs are a real bonus for project studios.

The C2021 compressor stands up well to similarly priced non-tube equivalents, unless you want ultimate control. Of the EQs, the EQ2011 is the safer bet if you want tubes, four bands, and stereo as it employs an established and successful formula that is ideal for tracking and sweetening. If you want to get fancy, then the EQ2012 is the best EQ that TL Audio makes. While it lacks the mic preamps and the high- and low-pass filters, two EQ2012's run in mono mode amount to more power and fun than the top-of-the-range Classic EQ2 parametric.

The biggest criticism of these Indigo units is that they run extremely hot — too hot to touch the sides and very warm on the front panels. It's a consideration if you don't want to slow-cook your other gear. Give these units adequate room and ventilation in your racks.

If the original Classic processors were great value for money then the Indigos are obscene. Start here for your tube gear. EQ

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QSound Labs QSys and QX/TDM Plug-Ins

EQ LAB REPORT

MANUFACTURER: QSound Labs, Inc., 2748 37th Avenue NE, Calgary, Alberta T1Y 5L3 Canada. Tel. 403-291-2492.

PRICE: QSys, $995 (automation is due November '96); QX-TDM, $295 EQ FREE LIT. #: 152

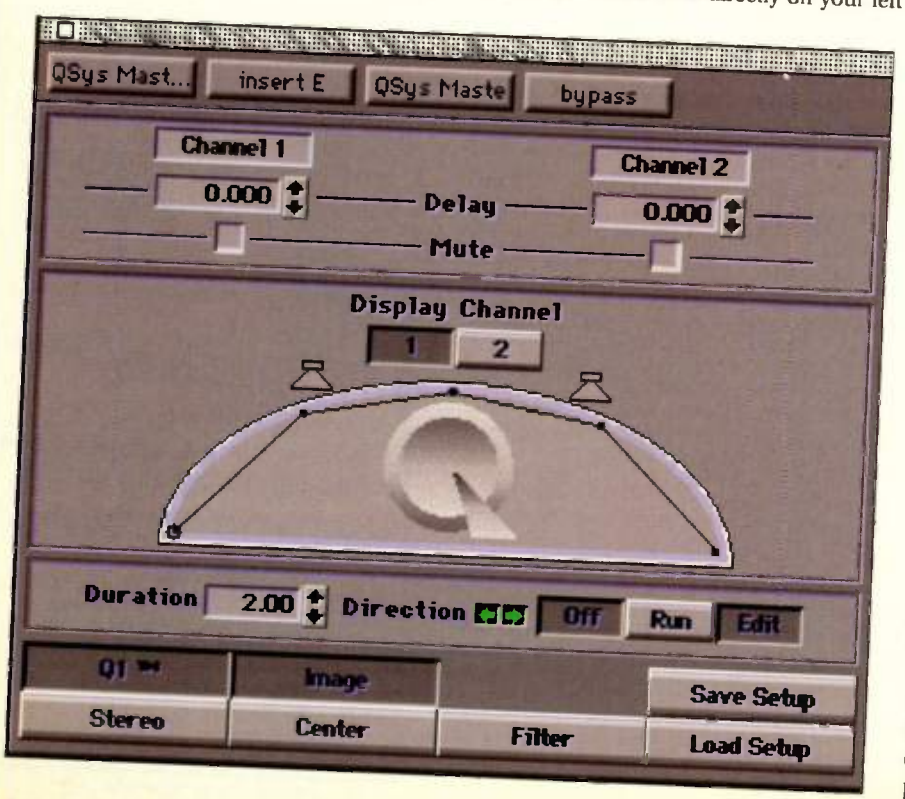
BY ROGER NICHOLS

DO ANY OF YOU remember when QSound first came out? About 6 years ago, [engineer/producer] Shelly Yakus at A&M studios in Hollywood, invited some people over to hear this new sonic process that would allow you to pan instruments beyond the normal left and right limits of the stereo field. There were guitars that seemed like they were sneaking up behind you. It was surround sound, but without surround speakers. There was just the normal two stereo speakers in front of the listener.

They system was very expensive and took tons of DSP horsepower, but it did what no other system could do. The QSound system was beyond the reach of mortal man, until now.

LOCALIZATION

This has nothing to do with local anesthetics or trade unions, it has to do with where in the stereo field a sound is placed. QSound best describes the process as a super panpot. When you feed a signal into the QSound panpot, the left and right limits are not the left and right speakers, they cover the complete 180-degree field from directly off your left shoulder to directly off your right shoulder.



APPLYING THE PROCESS

For best results, you shouldn't try to use the dry signal with the QSys signal while getting your feet wet with QSound. The QSys-only signal will allow you to experience the full range of the process without being watered down by the original signal. After getting used to what QSys does, then you may want to add some of the original signal to the mix. I liked some stereo instruments when I panned one side of the dry signal to the right (inside the speaker field, of course) and then panned the other side of the stereo signal through the QSys to the left, beyond the left speaker boundary. Pretty nice.

Another great effect was to mix all of the instruments through the regular stereo pan pots, and then send the reverb returns through QSys. The reverb came out into the room instead of staying back behind the speakers.

I remember when stereo first came out, about 1959. Everybody's first stereo album contained plenty of ping-pong effects to show off the new stereo spread. Remember Enoch Light & The Light Brigade? No? Well, anyway, there is a tendency to play with the newfound stereo field by panning things around during the mix. I played a joke on the artist when he came in to listen back to a completed mix. The fiddle player was panned to the left for most of the song. In the

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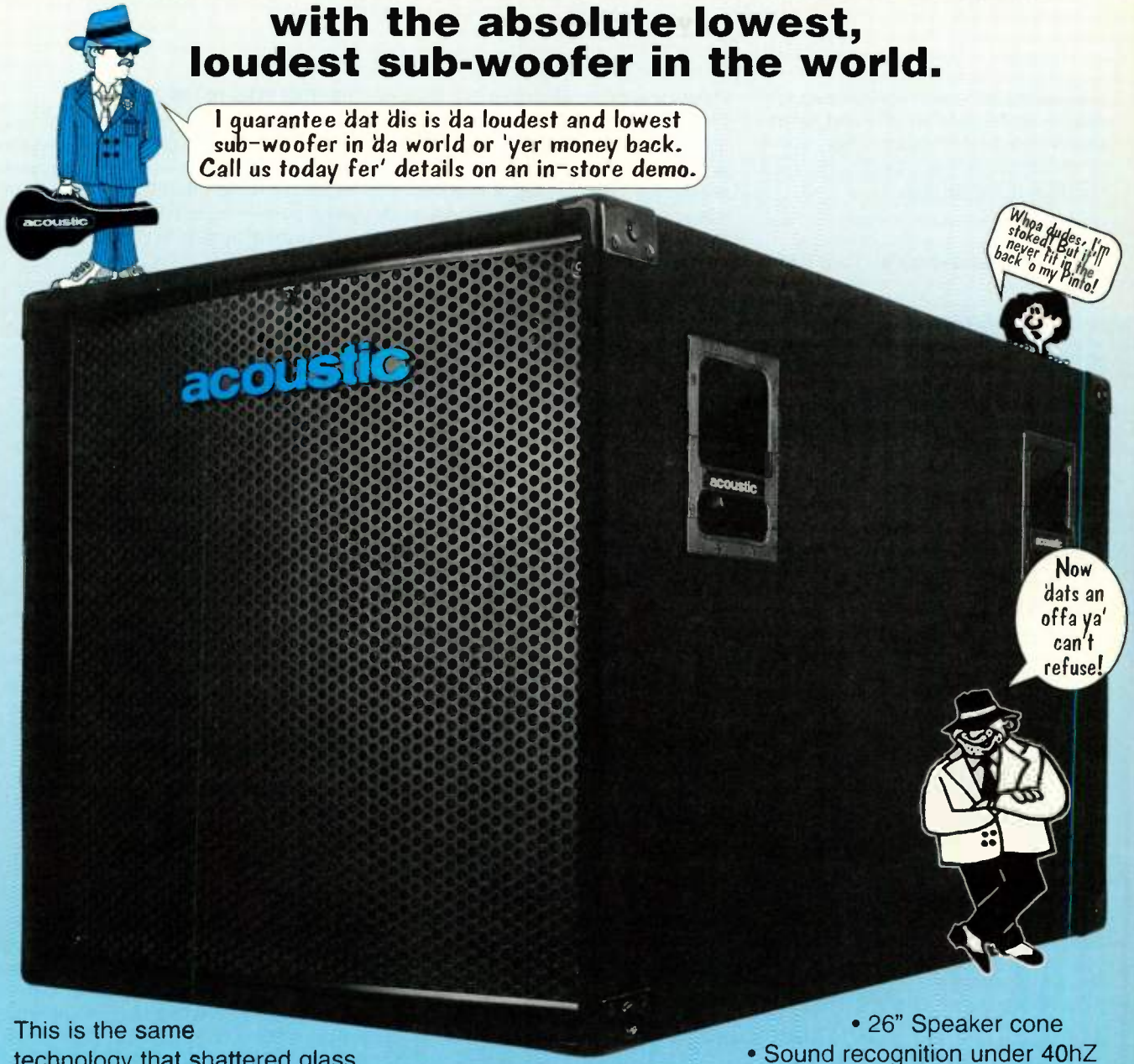

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fade, the fiddle started moving toward the right, past the right speaker and out the door. I added a door slam for effect. It took us about an hour to stop laughing and pick ourselves up off the floor.

SWEET SPOT

(Don't even think about it.) I am talking about the good spot between the speakers that everyone fights over during playbacks. QSys is sensitive to listener position. If you get out of the good center location, you are not going to hear the effect as much as you would in the sweet spot. The good thing is that a QSys mix does sound a little fuller than a straight mix when you listen off-axis.

QX/TDM PLUG-IN FOR PRO TOOLS

So, your album is already mixed and you think it is too late to use QSound? Not by a long shot. QX/TDM is a stereo soundfield expander. It takes the elements that have been panned to the left and right and moves them outside of the stereo speaker image.

Many stereo enhancement processes that I have run across in the past have done damage to the mono portion of the stereo image — the things that are in the middle, like the vocal, the kick drum, and the bass. Sometimes mono instruments that are panned off to one side of the center don't hold up well after enhancement. QX/TDM does an excellent job of maintaining the integrity of the mono sources in the mix.

There are three control sliders for QX/TDM: Center Drop, Spread, and High-Pass Filter.

- **Center Drop:** Not a football play, but the control of the mono center information in the mix. With the control set at Zero, the center elements pass through without processing. As the Center Drop control is increased, the center information is processed more, resulting in, a softer or "thinner" center.
- **Spread Control:** At the highest setting (0 dB) full stereo processing is applied to provide the maximum amount of stereo enhancement. At the lowest setting (–20 dB) the stereo width is brought back to the normal stereo field. You will find that this control has more effect on program material that already has a good stereo spread than on a mix where most things are panned close to the middle.
- **High-Pass Filter:** The high-pass filter acts like a crossover that determines how much of the low-frequency information is processed. High settings will allow more low frequencies to bypass the processing. This may be necessary for a mix that you want to maintain maximum mono compatibility. But, hey, that's your problem. All of my mixes come back as a pure 1 kHz test tone if anybody even attempts to play them back in mono.

EASY AS PIE

Basically, you play around with your mix, twiddle the three knobs until you hear something you like, and then you are done. I have't found a mix yet that I couldn't improve the sound of at least a little with QX/TDM. I bet you have the same results. EQ

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Sample CD Reviews

More reviews of currently available sample CDs

BY CRAIG ANDERTON

[Note: The companies listed are distributors of the CDs, not necessarily the creators. The following are audio CDs. CD-ROM versions for various samplers are often available; contact the distributors regarding availability.]

PROPELLOR ISLAND'S COMPLETE GAMELAN CD

Musical Style: Balinese gamelan samples. **Format:** Individual gamelan sounds, with a few ambience tracks. **Best Features:** The fact that it exists, because gamelans sound really cool, but setting up a gamelan orchestra in your studio is a pain. **Limitations:** No loopable phrases or multiple velocity samples. **Bottom line:** If you want to play gamelan sounds from your keyboard, here's the answer. Distributed by Ilio (Tel: 800-747-4546). 403 MB. $99.

ABRACATABLA

Musical Style: Indian, tabla-based ethnic percussion. **Format:** Lengthy ensemble grooves (most with variations), solo instrument grooves, a few atmospherics (e.g., arrhythmic shaking), and lots of individual hits. **Best Features:** Performances really swing, excellent use of stereo, tons of looping options within long phrases. **Limitations:** Individual hits not sampled at different velocities. **Bottom Line:** Very melodic and danceable grooves, superb for ethnic pop and dance, but would also work in other contexts (it's easy to imagine Miles Davis playing solos over the loops). East-West (Tel: 800-833-8339). 615 MB. $99.95.

WILL LEE ULTRA FREAKIN' BASS

Musical Style: Rock, pop. **Format:** Disc 1, riffs and loops; Disc 2, samples from 5 types of bass, intended for use with sampling keyboards. **Best Features:** Stellar recording quality, excellent selection of basses and choice of samples for each bass (notes, slides, mutes, harmonics, etc.), good documentation, very "live" feel, many Disc 1 samples can really humanize a part. **Limitations:** Disc 1 lacks traditional, longer loops. Documentation doesn't correlate Disc 1 riffs with Disc 2 samples. **Bottom Line:** Sets an extremely high standard for the playing, recording, and authenticity of bass samples. Highly recommended. Sampleheads (Tel: 212-866-1533; distributed by East-West, 800-833-8339). 910 MB. $99.95.

SAMPLE MATERIAL

Musical Style: World beat, ambient, jazz. **Format:** Drum, guitar, and bass loops; variety of licks (clav, organ, synth, etc.); various FX; drum hits; ambience atmospheres. **Best Features:** Huge variety of esoteric and useful sounds from Bill Laswell, excellent organization, stuff you won't find elsewhere, great recording. **Limitations:** No significant limitations. **Bottom Line:** If you like Laswell's work, you'll love having access to these sounds. You can build complete sound sculptures from the material on this disc, or use individual samples as spice for existing productions. Inventive and recommended for world music fans. East-West (Tel: 800-833-8339). 626 MB. $99.95.

VINYLISTICS #2

Musical Style: Hip hop. **Format:** 12 bar loops, made up of 2-bar sections (usable as their own loops) followed by drum hits used in the loop. **Best Features:** Good use of the format, some are very "vinyl" sounding (and I don't mean surface noise). **Limitations:** Basically mono. **Bottom Line:** Big, fat, buttery drum loops whose sound quality will make audio purists flee but please hip-hop purists. Big Fish Audio (Tel: 800-717-3474). 634 MB. $99.95.

TRAN TRACKS SMF DISKS

These Standard MIDI Files (PC or Mac disk) contain covers of pop tunes in General MIDI format. While intended primarily to provide backing tracks for solo artists and groups, they're also good for learning parts and even karaoke. Seventeen songs were submitted for review, covering a variety of styles, including country, reggae, ballads, and Europop. Generally, the programming is tasteful and true to the song being covered, although in some cases the drums could have benefited from a bit more dynamics tweaking. Most of the tracks are tightly quantized, which normally would bother me, except that we're dealing with rhythm tracks here; the solo, which you provide, is supposed to be the highlight.

SMFs sure beat fake books — if someone ever puts in a request for the *Mission: Impossible* theme, load up the file and go. Tran Tracks has obviously put some hard work into creating convincing arrangements; some might argue that the files lack feel, but others would see them as neutral and therefore suitable for personalization — your call. And, of course, there are the limitations of MIDI itself: ever heard a decent GM distorted guitar part? Nonetheless, Tran Tracks makes a valiant attempt to overcome these limitations, and generally succeeds — especially with music that's MIDI-based or highly rhythmic in the first place, like dance, Eurobeat, Latin, etc.

Overall, if you're singing to an unruly crowd at the local Holidome and they're going to pelt you with beer bottles unless you play "Baby I Love Your Way," these files could save your butt — or at least make you look like you know every song in the world. And, of course, because they're MIDI, they're easy to modify to suit your particular needs (key, tempo, or even instrumentation). Price: $10/song; quantity discounts available when ordering more than 12 songs. —*CA*

Contact: Tran Tracks, 350 5th Ave., #3304, New York, NY 10118. Tel: 800-473-0797.

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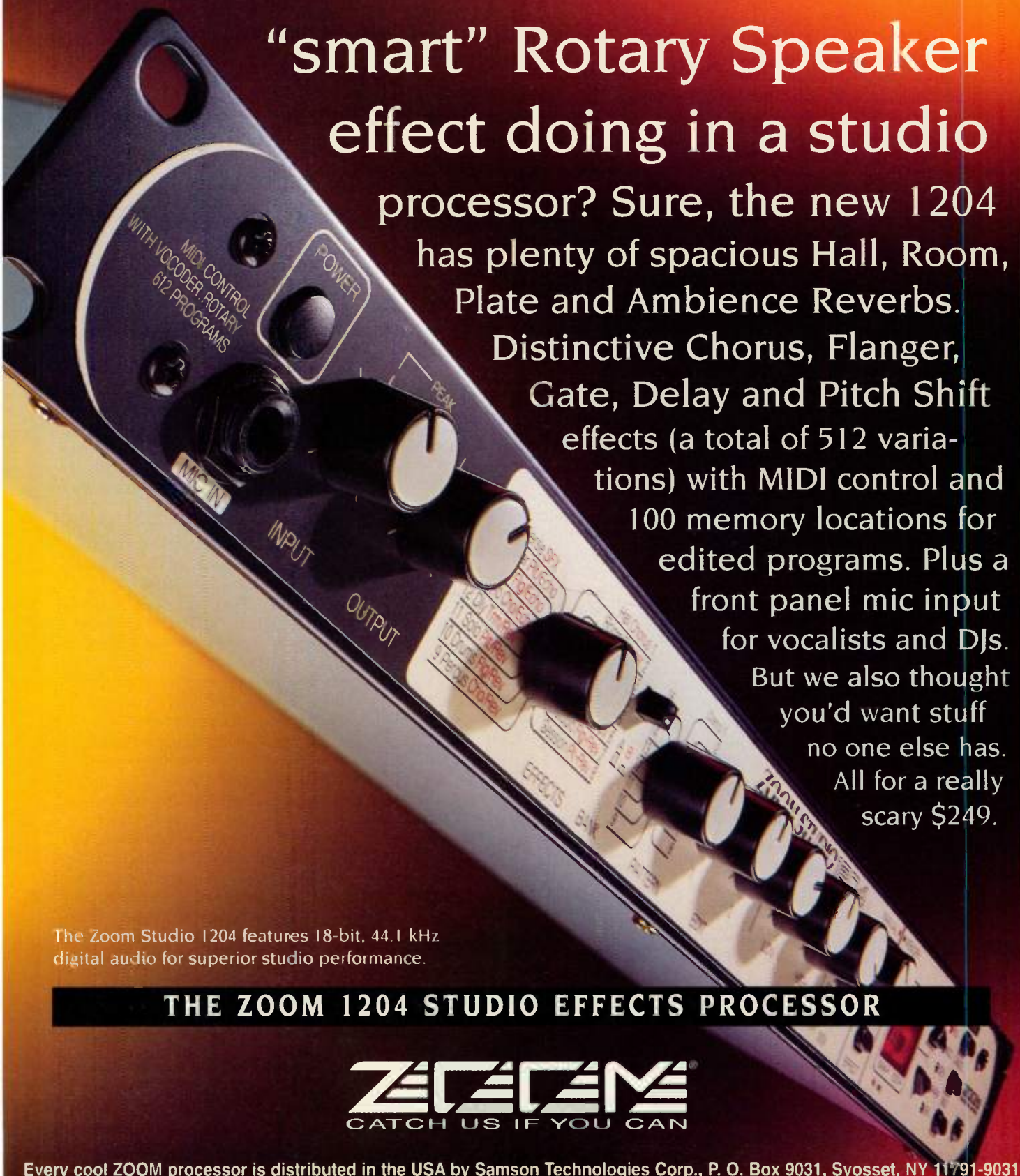

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SLOW BUSINESS

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workshop (your studio, a rehearsal room, someone's garage). Next, limit enrollment. Figure out how many people you can accommodate and then collect deposits. You may want to list a cutoff date (no more registrations after such-and-such date), but if there's a ton of interest, think about offering additional dates.

Doing a workshop may seem overwhelming at first, but it's not if you keep things in bite-sized pieces. Take a second to think about what you do when you record a band. It's a conglomeration of events that you break down into little chunks — load in, set up, level setting, headphone mixes, control room mix, record, listen, keep/redo, overdub, etc.

Doing a workshop also involves a step-by-step process: folks arrive, you do some introductions, give a brief overview, ask for questions, and then begin with your first "chunk" of information and practice. At the conclusion, ask the people what additional workshops they'd be interested in.

SMALL BUDGETS BIG IDEAS

I hope this article benefits other studio owners who encounter periods of small budgets, but who have big ideas. With a little planning you'd be surprised at how you can turn your slow times into busy situations. If anyone has additional tips, experiences, or ideas about what they do when their room ain't a rockin', I'd love to hear from you. You can e-mail me at ESideFlash@aol.com and perhaps I'll compile them into another article. EQ

L.A. HISTORY

continued from page 86

and is currently working on a $100 million Infrasonic facility in Marrakech, Morocco.

THE PROJECT STUDIO

Incredible advances in recording and L.A. studio notoriety led to an overabundance in the early '90s of musicians and groups who wanted to record on this marvelous equipment but could not afford to pay the high prices the leading studios had to charge. This led companies such as Alesis with its 8-track ADAT machine and other companies with major facilities in the L.A. area, such as Roland and Yamaha, to develop more inexpensive studio gear, allowing the project studio to compete and thrive.

It had to happen, but this new revolution caught the big guys by surprise. L.A.'s major studios called the alarm with HARP (Hollywood Association of Recording Professionals) and rallied against these "illegal home studios." Once tempers had quieted, the "mothership" big studio guys found that they could work with the "satellite" project guys to everyone's benefit and a reasonable level of harmony was attained through compromise.

Today, the galloping progress of technology, both for newly developed cutting-edge gear that only the motherships can afford, and lower-priced versions without the bells and whistles designed for the project studios, has provided a standard of quality recording at a low price no one could have predicted. Once again, L.A. played a major role in the transformation of the modern recording industry through its innovative musicians, producers, audio engineers, studios, and the manufacturers who serve them. After all these years, it's still great to work in La La Land, where the music never stops!

Chris Stone is co-founder of Record Plant, founder of the World Studio Group, past president of SPARS, and considered by many to be a patriarch of the modern recording industry.

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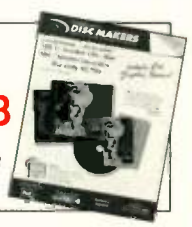

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CIRCLE 43 ON FREE INFO CARD

Nothing but 'Net

It all starts here — your monthly guide to audio on the Internet

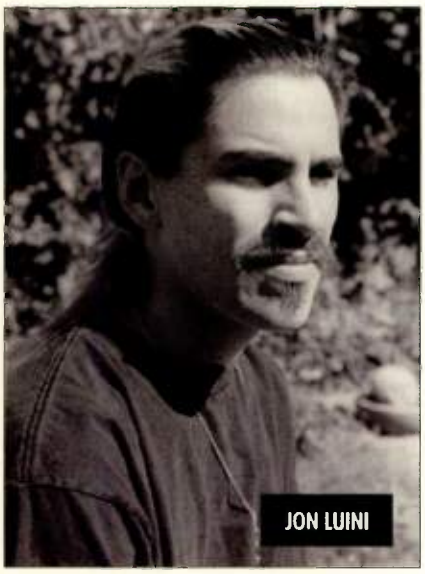


Photo by Michael Thornburgh

BY JON LUINI AND ALLEN WHITMAN

In the old days — a phrase that those familiar with Internet audio use when referring to anything that happened more then six months ago — we used to settle for basic sonic legibility. Right this second, when the gap between hot Web audio news and complete obsolescence is thinner than the frequency response of your first cassette demo, a spirited handful of Internet audio tools are available to both casual and professional musicians alike. Yes, now there are several ways to make that sick phone message your old bandmate left (you know, the one that proves once and for all that he's nuts) accessible on your homepage for the entire planet to hear. *Clearly.*

Though it's cool beyond counting, why would you want to bother with the ridiculously slow learning curve, the often-shoddy sound quality, and the choosing of an appropriate application that then runs away from you as fast as you can say "Liquid Audio"?

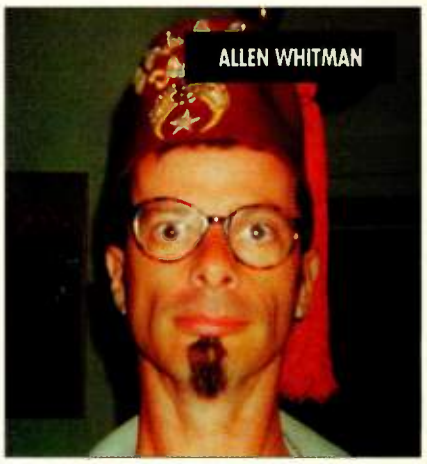
Because we say so. And you have to listen to us because we're right here, in the cathode-lined trenches of a new monthly column about audio on the Internet. We'll cover every node on the World Wide Web's sonic spectrum: including production, encoding, digitizing, listening, playback, decoding, and more. We'll tell you what's new, what's useful, and what's usable for the recording environment you use now, not for some filtered-air, oxygen-free, gold-cabled orbiting facility carefully licked out of Unobtainium by dwarves.

Raise your hand if you've patiently downloaded an audio file and opened it only to find that it's become an incomprehensible text document seemingly lifted from the pages of *Advice to the Lovelorn UNIX Jockey*. We'll have no more of that. The World Wide Web of the Internet is a stunning resource for the independent musician. It's time to take advantage of it.

Here's a quick chronology from the dawn of time to now. And now. And now again...

• In 1991, Sun-AU(Ulaw) audio reigned supreme. It was 8-bit, mono, rather large, and sounded like a telephone call from a bus depot in southern Chile, but all types of computers could make and play it. At this point the majority of those lucky enough to have modems at home are at 2400 baud.

• 1993 saw AIFF and WAV picking up a bit in popularity, but the files were still too large (read: took too long to download). The average home dialup rate is now up to 14.4k baud as the Web starts really kicking in visibility and use.



• By 1994, MPEG audio picked up, thanks in part to the well-documented explosion of the Web in mainstream media. Internet Underground Music Archive (IUMA) puts up lots of worthwhile content for people to listen to. People and corporations make players and encoders and generally raise the public's awareness about sound quality. MPEG offered high compression (meaning smaller files and quicker download times) and very good sound quality (scaleable from FM mono to near-CD quality), but the music business hadn't quite gotten the message yet and industry support was low. There were AU, AIFF, and WAV audio formats supported by many standard programs for Windows, Mac, and UNIX machines. CU-SeeMe and MBONE included audio, but still sounded like a telephone.

• Now we arrive at the "new school" of audio on the net. In 1995, RealAudio and Xing Streamworks make a big mark by opening up "streaming" audio (though, again, at rather poor quality) to users without having to wait for the entire soundfile to download first. By 1996, RealAudio and Xing have come out with new versions of their software with better quality and features, and Macromedia's Shockwave Audio is released.

TAKING IN THE SITES

Related Technology Sites

RealAudio.....www.realaudio.com
Shockwave Audio.....www.macromedia.com
Liquid Audio.....www.liquidaudio.com
Xing Streamworks.....www.xingtech.com
MPEG Audio.....www.powerweb.de/mpeg/

Related Content Sites

Addicted To Noise.....www.addict.com
The Mermen.....www.mermen.com
MediaCast.....www.mediacast.com
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ELECTRONIC MUSICIAN - MAY 1996

" There are so many enhancements in the K2500 that it would be impossible to describe them all in a single review. The K2500 is even deeper and more powerful than it's predecessor the K2000. The K2500 has one of the most powerful sequencers in any keyboard workstation today. I found it very easy to get around thanks to a logical layout. The editing functions are remarkably complete, and provide a variety of useful record and playback parameters, including quantization on input, auto punch-in and punch-out, looping, synchronization, count-off, and click options. Of special note is the powerful arpeggiator that can be used in Setup Mode. The ribbons are great fun to use. They let you play incredibly expressive vibrato and pitch bends. You can audition samples directly from disk without loading, which is very convenient. I applaud the breath controller input; it is far too rare in the synth world. The setups inspire creativity when you play them. It sounds fantastic, it's packed with useful and well-implemented features, it's lineage is impeccable, and it will continue to expand and improve. The K2500 is truly an awesome instrument. All that remains is for you to write a check! " - *Scott Wilkinson*

KEYBOARD - MAY 1996

"As a synthesizer, the K2500, like it's predecessor, is easily the deepest instrument you can buy. We couldn't wait to get our hands on one. The piano daughterboard (optional) provides a stunning stereo grand piano... you'd be hard-pressed to find a more playable instrument. It's warm, full, and responsive, and sounds equally realistic from one end of the keyboard to the other. The ribbon (controller) surface feels just right. The control over key velocity is superb. Basically, this is a serious piece of gear. The built-in sequencer has enough power to keep you jamming for a good long time. The sequencer has a much higher clock resolution than any other built-in sequencer that we know of. The K2500 is unabashedly aimed at the professional... it's a class act all the way. When it comes to overall musical muscle, this instrument really has no competition... this is the Steinway of electronic music." - *Jim Aikin*

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CIRCLE 65 ON FREE INFO CARD

Come back to the present: Liquid Audio arrives in November, 1996, aimed as more of a distribution system and includes superior quality audio (updated Dolby AC3 algorithms). The hype about audio on the Internet is hitting a peak, major corporations are throwing huge sums of money into securing their market share, and the times they are ever a-changin'.

There are some interesting MIDI-based solutions available as well, but they are not necessarily useful for traditionally recorded analog material.

So here's what else you have to look forward to in this column, presented in an entertaining and easily-digestible format:

We'll give a succinct rundown of "the Web," "the Internet," "the browser," what it means to "publish on the Internet," and what things like "external applications" and "browser plugins" are.

We'll provide explanations of the various technologies and their usefulness. We'll show you how to implement them. We'll run down the levels of complexity used to create playback and why.

We'll explain RealAudio version 3.0 and talk about its proprietary codecs and new licensing deal with Dolby Labs. [*See Daivd Miles Huber's article on RealAudio in the August '96 issue.*] We'll talk about Xing; how its creation tools vary and how it's good low-level support for the encoding of files. You'll discover the hidden truth: that it requires a server to play streams back. We'll discuss Shockwave Audio. Until just the other week it could only create from the Mac, but now Windows users can leap into the breach. We'll talk about the hardware requirements to run the Shockwave plug-in for Netscape or MSIE. We'll even tell you what MSIE is. We'll look at Liquid Audio, which is unlaunched at this time and remains to be heard.

There will be many examples of situations where you may want to use music on the net and practical applications to perform those functions. From getting your music heard and promoting your band independently to sending music live on the Internet via netcasts, webcasts, and cybercasts, we will provide information on how to do it quick and clean.

How much will it cost? How long will it take to become conversant with it? Is there any technical support? Where can I get it and how? And, of course, the one question often overlooked in the blinding hurricane of hype: How does it sound?

We want you to get involved in the creation of the Web. It's not a fad and it's not going to go away. See you next month!

Jon Luini is a working technophile and a musician (bass player/singer) with a full-blown facility and extensive experience on the Web and has no free time. He was a co-founder of IUMA and currently is a partner/founder of MediaCast and executive vice president of Addicted To Noise. Contact him at jon@luini.com.

Allen Whitman is a working musician (bass player/singer) with rudimentary technical knowledge and a keen, real-world interest in the practical use of the Web. He currently plays in the San Francisco-based band The Mermen. Contact him at mermen@mermen.com. They welcome your comments.

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d. Free Distribution by Mail	1,982	1,500
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In the future. There will be four more puzzles at $2.00 each and one tie-breaker at $1.00 which will be sent to you by mail. You will have 3 weeks to solve each puzzle. We don't know how many will play but typically 55% will have the highest score possible score to Phase I, 43% to Phase II, 36% to Phase III, and 32% to Phase IV. The tie-breaker determines the winner. If players are still tied they will split the value of the grand prize they are playing for.

Mystery Word Grid

	H				
		E			
P	I	N	C	H	W
	R				
S					

MYSTERY WORD

WORD LIST and LETTER CODE chart

PINCH .....W	PRESS .....K	BLAST .....A	WRECK .....D
BREAK .....Z	PUNCH .....S	SPRAY C	TURBO V
STOMP .....T	STAND .....R	PRESS .....E	DREAM .....O
CRUSH I	SCORE .....H	SLANT L	CHASE .....P

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CIRCLE 88 ON FREE INFO CARD

It's Time For AES 101

Here are some of the things that I hope to find on the floor of the 1996 AES Convention

BY EDDIE CILETTI

Every year, the Audio Engineering Society rotates its American convention among sites at San Francisco, New York, and, this year, Los Angeles. The AES convention is primarily a showcase for new products, as well as gear that's just around the corner. Papers and workshops, though, are also given for both the technically inclined and those looking for more down-to-earth clues.

I'll be traveling to L.A.'s AES with my *EQ* compatriots. Although by the time you read this the show will either be just going on or just over, I'm still planning my trip. Here's what I'll be looking for:

COMPUTER PLATFORMS

There was a time when digital audio workstations (DAWs) were few and too expensive — a combination that made the choice painful but very clear. Now, especially for the PC/Wintel platform, there are enough options to make one's head spin. In the recent Mac past, early PCI flights experienced major turbulence, while potential Pro Tools users were forced to delay computer purchases until the dust settled. (Craig Anderton once referred to this type of technology surfing as "purposely missing a wave.") You can be sure that Apple- and Mac-clones will be making up for lost time.

The system of my dreams would be a standalone hard-disk recorder with 8-channel I/O (digital and analog), SMPTE/MIDI sync, 9-pin Machine control, and word and video sync, plus a built-in 8x2 monitor mixer. (Twenty-four-bit, 88/96 kHz sampling rates would be nice too!) A PC/Mac-compatible computer interface would turn the unit into a full-featured workstation. The logic behind this dream is that dedicated hardware is optimized for audio processing with additional features enhanced via software.

For example, in my shop there are three networked PCs — each running a different Microsoft OS (Bill Gates, you owe me!) and each configured for a specific group of tasks: music/audio, video/graphics, and office/Internet. Since all computers suffer from a finite number of resources — I/O ports, memory, disk space, and processing speed — when the newest, fastest, most well-endowed, wide-screened screamer arrives, it's time to put last year's model on the network and make it your office manager and print server.

For both the PC and Mac contingents, the changes experienced with operating systems (from Windows 3.11 to Win95 and/or Win NT) and hardware (NuBus to PCI) had us all temporarily back in diapers. At this year's show, more programs will have migrated from Windows 3.11 to Win95. Programs that merely run on Windows 95 are not as desirable as those with the Win95 logo, a "good-housekeeping" indication that the code has been rewritten to take advantage of 32-bit operating systems.

Windows NT is an extremely robust, non-DOS, 32-bit operating system that runs most DOS/Windows and all "logo-ed" Win95 applications. My OS of choice, NT supports multiple processors including Intel, DEC Alpha, and RISC. It is well-suited to the processor-intensive applications of video, so audio is a piece of cake. (Version 3.51 used the Windows 3.11 GUI. Version 4 is finally out of beta and looks like Windows 95 with some subtle changes.) Mac users take note: NT speaks AppleTalk as well as TCP/IP for the UNIX of the world.

TAPE MACHINES

Analog tape is not dead. So while there may not be any new models shown, there will certainly be brand new machines at the show. On the service side, three familiar companies will be on the floor: Athan Corporation, ATR Service, and JRF Magnetic Sciences. Therefore, mechanical parts, rollers, motor rebuilds, heads, and restoration services will all be well represented.

From the project perspective, the two digital 8-track formats will be showing off their software refinements, while more mixers will have direct digital interface options. (*See the Spectral Translator review in an upcoming issue.*) I will be on the floor in search of industrial-strength, compatible versions. There will also be a Digital Recording Workshop, chaired by Craig Anderton, on Saturday, November 9th at (*eek!*) 9 AM.

THE RETRO PHENOMENON

To counter-balance a steady diet of bits and bytes, audio enthusiasts are having a love affair with vintage mics, preamps, EQs, and signal processors. Many of these coveted "electric crayons" can provide a signature stamp of sonic color. How ironic when you consider that the trend in the '70s was the wholesale removal of transformers as an attempt to remove coloration....

So how do users make the choice when both vintage and new/retro gear are competing for your wallet? I won't argue that good analog is better than good digital. However, not all analog is warm and fuzzy like a '50s Technicolor movie, and most of what we do record will be digitized somewhere along the line. The seed I would like to plant is for all of us to become better listeners and to re-evaluate not only monitor systems (headphones, speak-

ers, amps, *and* cables), but also the environment (placement, noise pollution, and acoustics).

On some pop recordings it is customary to overdrive analog tape and electronic circuitry to enhance harmonic content and apparent loudness. However, the distance between clean, linear operation and hard clipping varies with circuitry; distortion being a single facet of the sonic fingerprint. For the record, simple Class A designs (tube or transistor) are most likely to have the widest "sweet zone," a region where asymmetrical distortion creates the musically sweet, even-order (octave) harmonics of phatness.

Is it best to accurately reproduce tube gear using only that technology? Can one tube, inserted into the signal path, make a positive contribution? Should hybrid gear be discounted if the best technology is used for each stage of amplification? The answers to these questions will be "heatedly" debated at the AES Vacuum Tube Technology Workshop (chaired by yours truly) at 2 PM on Friday, November 8th.

DSP AND THE UNIVERSAL PLUG-IN

While it's important that tape machines reliably pull tape and workstations operate without crashing, the most significant advancements this year will be in the area of DSP. The art of mixing in the digital domain is totally reliant upon the power of DSP hardware and software — whether you are using a workstation or a dedicated mixer. Writing software is not an easy task, especially when you want it to sound good and be bug free.

Porting good software from platform to platform should not be a case of re-inventing the wheel. I would like to see more universal plug-ins; common DSP software that is independent of platform, capable of evaluating available hardware and informing the user of what is needed for full operation. Peavey has a sound system [MediaMatrix] that does exactly this and allows users to create customized, virtual, EQ, and dynamics modules. It is time for standardized card cages, à la API, that accept DSP cards as needed (and afforded).

DVD: BRINGING IT ALL HOME

I recently attended a 96 kHz/24-bit audio demonstration. Using a Sonic Solutions workstation, the recording was made at Mark Levinson's "home studio" with digital converters by dCS (Data Conversion Systems). Even I heard the difference — no veil, no grain, just open air. (Of course, the playback system was Cello front to back!)

Audiophiles and digi-phobes are hoping that the DVD will also transport truly high-fidelity digital audio into their homes. Computer geeks want DVD to bring real video to CD-ROM. But so far, DVD gets the "Life of Brian" award. It was supposed to be ready for a summer '96 release. Bottom line? Manufacturers know that DVD must appeal to the common denominator — a.k.a. mainstream consumers — and if those consumers don't get off their butts and dig into their wallets, DVD won't find a path to us in an affordable way (just like DAT)!

My guess is that DVD failed at its primary purpose — replacing the laserdisc and/or video tape. The problem, in a nutshell, is space. At a 44.1 kHz sample rate, 16-bit digital audio requires a data rate of 10 MB per minute. An audio CD is capable of storing 73 minutes or 730 MB. Pretty simple, right? Well, the composite video equivalent of digital audio is called D-2; it requires 1/2 MB per frame or — at 30 frames per second — 15 MB/sec. A 60-second commercial would exceed the capacity of a current CD-ROM by 200 MB! At that rate (900 MB/min), a two-hour movie would require 108 GB! I don't think DVD has quite that much space.

Even with its increased capacity, compression is the only way to make DVD work. This means it will be a compromise when compared to the current analog laserdiscs. We all know that 16-bit, 44-kHz audio is barely enough for professional applications. For multimedia, DVD will look much better than CD-ROM and require less compression. But take a close look on a big monitor. A full-length movie, squeezed onto one disc, will have "the blockies," those funny frozen pixels that are saving space until important action comes along.

Contact Eddie via e-mail: edieaudio@aol.com, edaudio@interport.net or visit the young web site: http://www.users.interport.net/~edaudio/

EQ

COMING UP IN DECEMBER

MICROPHONE AUDITION SPECIAL.
You know those great microphones we've been featuring in our Microphile section over the past year? In December's issue, EQ offers a special section with some of those mics being tested in real-world situations. Find out which ones belong in your audio arsenal.

KING ON THE ROAD.
Go backstage with legendary bluesman B.B. King as he takes the stage. Plus: JBL's SMAART measurement system is put to the test by Wade McGregor.

COLUMN KINGS.
EQ's columnists — old and new — are back with a vengeance. Find out what's on the minds of Craig Anderton, Al Kooper, Eddie Ciletti, Martin Polon, Jon Luini, Allen Whitman, and Roger Nichols.

To be a part of this jam-packed issue, contact: Kathleen A. Mackay; Associate Publisher (ext.460) Matt Charles (ext. 458), Andrea Berrie (ext. 471), Christine Cali (ext. 454), Pete Seidel (ext. 457); Advertising Sales

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Is Analog Tape **Dead?**

With the main makers selling off, will audio tape survive?

BY MARTIN POLON

The recent and relatively recent changes in the audio tape manufacturing business have caught many audio commercial and personal/project studio operators "up close and in their faces" concerning the future of studio audio tape. The initial changes to be digested were, first, the abandonment of almost all of its former magnetic tape products by Ampex, although with a friendly transition to the Ampex tape division's former management under the new corporate identity of Quantegy (including outside financing).

Second, and nearly simultaneous to the Ampex separation, the management of 3M (Minnesota Mining and Manufacturing) decided to "shed" all of their magnetic tape product lines that serviced the audio and video universe and some magnetic tape products for the computer marketplace. In 3M's case, the initial plan was to literally abandon some of the various tape product lines if necessary — unless some third party came along to acquire them. Other magnetic products could be spun off much as Ampex had done.

At Ampex, the decision to step away from the tape business (that had been a part of the company almost from the beginning in the late 1940s with "Ampex" and "Irish" brands), involved a change in Ampex's direction to a broadcast and computer hardware company. 3M, despite having pioneered audio recording tape with Ampex recorders, had clearly decided nearly 50 years later it was time to leave the magnetic recording tape business. That decision was made on the highest management levels at 3M, and communicated to Wall Street analysts and the world, that its corporate future would be brighter without the magnetic tape operations.

Both companies had profited from the technologically superior magnetic recording technology brought back to the U.S. from conquered Germany after World War II and pioneered with Bing Crosby. Crosby desperately wanted to pre-record his radio show, to allow him to concentrate the rest of his work week on his golf game! So, despite the reluctance by the then radio-only networks to try the new "tape recorders," Crosby saved the day!

The third tape "event" occurred recently when Quantegy bought the magnetic tape products unit from 3M, thus concentrating the U.S. domestic magnetic tape manufacturing arena in one set of hands and perhaps strengthening Quantegy's position by achieving "critical mass."

The fourth and last straw for many in the recording studio business following the future of magnetic tape has been the on-again/off-again decision of European chemical and blank media giant BASF to sell its multibillion dollar magnetic tape unit to Turkish mediamaker RAKS. This was no surprise to many observers of the pan-European tape marketplace, mainly due to the previous joint ventures between the two companies and the desire of BASF to return to its core chemical business. It nevertheless pointedly demonstrated the withdrawal of yet another giant operator from the blank professional and consumer audio tape business.

So, the question is: "Will audio tape survive?" The answer is yes, maybe, and probably. Here's why:

1. Consider the maker of your tape machines. If you are using a tape machine for which its maker has always provided appropriate tape for sale, then it is likely that the maker of your multitrack tape machine will continue to make tape for it and others like it.

2. Consider the standard used by your tape machine. If it is part of a significant installed base of similar machines operating on a similar format and/or the maker of the machine and other associated companies have a business justification for that format, then it is likely that a source of tape will continue to exist. DAT is one example of a format that tape will most likely continue to be made for.

3. Consider if there is a video use, either consumer or professional, for your audio tape format. Certainly the 8- to 14-track digital audio machines so popular in project studios that use video tape cartridge formats to record on will have a supply of tape practically guaranteed into the future. With the huge installed base of home users and professional users whose video machines demand a ready supply of tape, there will not be a problem for audio studio users short or long term!

4. Consider the pressure by album producers and the artists for the tape sound — along with the "analog" sound and the "tube" sound. How many facilities are there where total digital recordings on hard drives are conditioned by a brief hop from the record head to the playback head on a multitrack audio tape machine

5. Consider the desirability of recording with Dolby SR and analog tape. Many audio industry experts still estimate that about half of all recordings made in studios still use analog means in some way or another.

The bottom line here is that in the broadest sense, there are companies that want to be in the tape business and there are those that do not. Clearly, the Japanese electronic companies have yet to abandon tape and may to some extent be part of the reason that others have. However, to some extent the handwriting is on the wall as to the profitability of making relatively small quantities of tape requiring expensive tape production lines — especially where connected products do not mandate continued tape production. We shall just have to see how that impacts the multitrack tape business down the line. EQ

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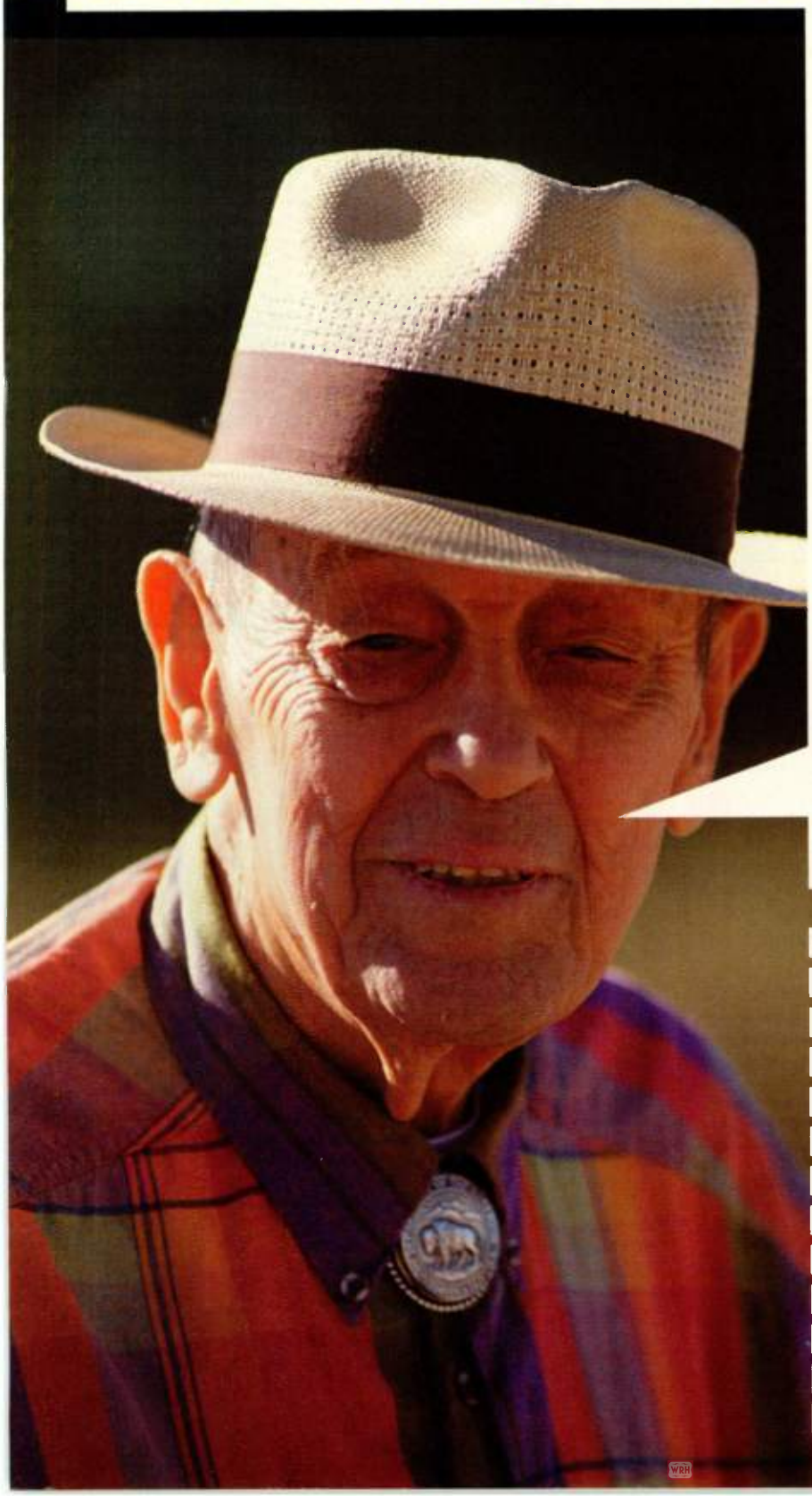

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- Three standard 'D' cell batteries provide up to 7-1/2 hours of operation and the optional RB430 rechargeable battery delivers up to 5-1/2 hours.

General	PMD-101	PMD-201	PMD-221	PMD-222	PMD-430
Stereo/Mono	Mono	Mono	Mono	Mono	Stereo
Heads	2	2	3	3	3
Inputs/Outputs					
Mic Input	1/4-inch	Miniplug	Miniplug	Mini/XLR	1/4-inch
Condenser Mic	Built-In	Built-In	Built-In	Built-In	—
Remote Jack	—	Yes	Yes	Yes	—
Modular Tel. Jack	—	Yes	Yes	Yes	—
External Speaker Jack	—	Yes	Yes	Yes	—
Record Controls					
VU Meters	—	1	1	1	2 (Illuminated)
2-Speed Recording	Yes	Yes	Yes	Yes	—
Dolby B NR	—	—	—	—	Yes
dbx NR	—	—	—	—	Yes
Mic Attenuation	—	0,-10dB, -20dB	0,-10dB, -20dB	0,-10dB, -20dB	0 -15dB, -30dB
Ambient Noise Cont.	—	Yes	Yes	Yes	—
MPX Filter	—	—	—	—	Yes
Manual Level Control	—	Yes	Yes	Yes	—
Limiter	—	Yes	Yes	Yes	Yes
ALC	Yes	Yes	Yes	Yes	—
Peak Indicator	—	—	Yes	Yes	—
Playback Controls					
Pitch Control	±20%	±20%	±20%	±20%	±6%
Bias Fine Adj.	—	—	—	—	Yes
Tone Control	Yes	Yes	Yes	Yes	—
Half-Speed Playback	Yes	Yes	Yes	Yes	—
Memory Rewind	—	—	Yes	Yes	Yes

Telex

ACC2000/4000 Series Cassette Duplicators

Designed for high performance and high production, Telex's ACC Series (ACC2000/ACC4000) and (ACC2000 XL/ACC4000 XL) of expandable duplicators also offer easy maintenance and unsurpassed ease of use. The ACC2000 is a two -channel monaural duplicator, the ACC4000 is a four-channel stereo duplicator. Each produces 3 copies from a cassette master at 16 times normal speed and each can expand up to 27 copy positions (with additional copy modules). With the extra copy modules, you can duplicate up to 27 copies of a C-60 original in less than two minutes. And they copy both sides at once. The XL Series feature "Extended Life" cassette heads for increased performance and wear characteristics. They also offer improvements in wow and flutter, frequency response, signal-to-ratio and bias. Additionally the ACC4000 XL allows for either chrome or ferric cassette duplication. XL- models are available in stereo (ACC4000 XL) or mono (ACC2000 XL) versions.

Fingertip Operation
- Individual rotary audio level controls allow for an increase or decrease of audio levels as the master translates to the copies.
- Peak reading LED indicators allow quick and accurate monitoring of audio fluctuations.
- Side A or A/B select button let you set up for duplication of either 1 side or both sides of a cassette at once.
- Stop all tapes instantly, at any point during the copy or rewind cycle.
- Short tape indicators alert you if a tape stops before the original does, identifying incomplete copies caused by jam or short.
- Automatic or manual selection of rewind and copy operation.
–Rewinds tapes to the beginning or end automatically (AUTO mode) or manually.
–In AUTO mode the copy button activates the entire rewind/copy/rewind sequence. In manual it starts copying immediately.

Easy Maintenance:
- Slanted work surface and unique "heads-up" cassette platform allow less oxide build up on the heads and makes cassette loading and unloading much easier.
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- Track select,short tape indicators auto/manual operation.
- Includes removable power cord and protective dust cover.

ACC2000 XL Mono Master Module:
- Same features as ACC2000, *plus*– Extended Life cassette heads.

ACC4000 Stereo Master Module:
- 1/4 track, four-channel stereo duplicator. Same features as ACC2000 Mono Master Module/

ACC4000 XL Stereo Master Module:
- All features as ACC4000, *plus*– Extended Life cassette heads. Can be configured for chrome or ferric cassette duplication.

ACC2000 Mono Copy Module:
- 1/2 track, two-channel monaural copy module.
- Each module has four copy positions with erase heads and controls for side select.
- LED displays indicate end-of -tape status for each pocket.
- Includes ribbon cables for connection to ACC2000 master and other copy modules.
- Includes removable power cord and protective dust cover.

ACC2000 XL Mono Copy Module:
- Same features as ACC2000 Copy Module, *plus*–Extended Life cassette heads. Connects to ACC2000 XL Master Module.

ACC4000 Stereo Copy Module:
- 1/4 track,four-channel copy module. Has all the features of the ACC2000 Copy Module.

ACC4000 XL Stereo Copy Module:
- Same as the ACC4000Copy Module, *plus*–Extended Life heads. Configurable for chrome or ferric cassette duplication.

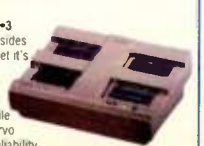
Copyette EH Series Duplicators

The popular Copyette series produces high quality, low cost cassettes in large quantities at nearly 16 times normal speed. This means you can reproduce both sides of a C-60 tape in less than two minutes. Available in two versions, the Copyettes are capable of duplicating either one cassette or three at a time. In addition each are available in both mono and stereo models. They couldn't be easier to use. You simply insert the cassettes, press the START switch and they do the rest. They rewind all tapes to the beginning, copy, then rewind to the beginning again before stopping. The whole process can be stopped at any time by pressing the CYCLE button. Side Select feature allows you to set them up to copy one side of a tape or both sides at once.

Stereo Copyette 1•2•1

Weighing only 8 lbs. (3.6 kg), this unit has a durable, impact resistant housing and includes a removable power cord, carrying handle and protective cover. It also has an optical , non-reflective end-of -tape sensing system that provides gentle tape handling. A mono version is also available.

Stereo Copyette 1•2•3



This duplicator copies both sides of three cassettes at once, yet it's as small as the 1•2•1. It weighs only 12 pounds (5.4 kg) and includes a hard cover to protect the unit while not in use. It uses all DC Servo motors for the ultimate in reliability.

TASCAM

112 MKII
Stereo Cassette Deck

The classic "no frills" production workhorse, the 112 MK II is a 2-head, cost effective deck for musicians and production studios. Extremely rugged and reliable, the 112 MK II is ideal for production mastering and mixdown. It also features a parallel port for external control an and optional balanced connector kit means it is flexible enough to integrate into any production studio.
- Utilizes Dolby B or C noise reduction with Dolby HX Pro.
- Automatically selects proper bias type, so you get optimal recording & playback response with Normal, Metal or CrO2 tape.
- Gear independent input dials let you dial in stereo VU calibration with one dial. You can also adjust for channel specific calibration.
- Offers two Autolocator buttons and a MEMO IN control. Thes controls allow you to select two points on any tape for one button forward/reverse to wherever the action is. Additionally RTZ (return to zero) quickly spools the tape back to 0000 on the tape counter.
- Rear-mounted RCA input/output jacks for easy connection to high-quality sources.
- Optional LA-112 connector provides addtiional balanced or unbalanced XLR inputs and outputs. Installation is simple and requires no special tools.
- 25-pin D sub connector (parallel port) on the back, links the deck to the optional RC-134 remote control unit or for fader start from any mixer that use the same protocol.

112R MKII
Bi-Directional
Stereo Cassette Deck

The 112R MKII is a sonically uncompromising, auto reversing and continuous play cassette deck. It offers the finest independent head auto-reverse design at this price level, plus it has extra dubbing and editing features that make it ideal for long program recording.

All the features of the 112 MK II *plus*—
- Three-head transport with separate high-performance record and playback heads. Manufactured from resilient Cobalt Amorphous materials, the independently-operating heads combine with precision FG servo direct-drive capstan motors to provide the highest standards of reproduction quality and performance.
- Frequency response is 25 Hz to kHz with less than 1% total harmonic distortion.
- Equipped with Hysteresis Tension Servo Control (HTSC) the 112R MKIIvirtually eliminates wow and flutter. HTSC is an advanced servo control system that maintains consistent back tension on the tape all through the reel, combatting inconsistencies brought on by extreme temperatures and humidity.
- Super Acculign Rotating Head System allows recording or playback tape direction to be changed with one button. A single-screw azimuth adjustment makes it easy to maintain the head alignment after many hours of continuous use.
- For unattended record/playback of material that is longer than one side of a tape, there are two features that spare you from constantly attending to the deck.
—Auto Reverse mode plays or records in both directions before stopping, switching sides on the fly.
—Continuous Reverse mode allows you to loop the tape during; layback up to 5 times, or record in both directions, without pausing to flip the tape and re-engage the record mechanism. Bothfeatures are accessible from the front panel, with one-button selection.

122R MKIII
3-Head Stereo Cassette Deck

The standard for production and broadcast facilities, the 122 MKIII features smooth faultless tape handling mechanisms, a three head transport with high-performance Cobalt Amorphous record/playback heads and precision servo direct-drive capstan motors.

All the features of the 112R MK II *(no reverse of course) plus*—
- XLR balanced and unbalanced RCA inputs and outputs are selectable with the flip of a back-panel switch. There are 1/4-inch inputs on the front panel for simple and direct plug-in of line-level gear.
- MPX filter button eliminates polot and sub carrier broadcast tones that can interfere with Dolby noise reduction.
- Bias and level fine tuning for each channel. These tuners can be used in conjunction with the one-touch 400 Hz or 10 kHz oscillator adjustment signals to get proper VU calibration before or during each recording session.
- Record/mute autospacer automatically inserts 4 sec. of silence between songs or broadcast segments for pro quality tapes.

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ALESIS
3630 Compressor

The 3630 provides two full-featured professional compressor/limiters in one rack space. Ideal for any application from studio recording and mixing to live sound reinforcement and broadcast.

- Dual mono or linkable true stereo operation.
- Choose between RMS and peak compression styles as well as hard knee /soft knee characteristics.
- Dual 12-segment LEDs display gain reduction and input/output levels.
- Each channel's built-in noise gate has an adjustable threshold and close rate to ensure clean, transparent performance.
- Variable attack and release times and a sidechain function for "ducking" in broadcast applications.

t.c.electronic
Wizard M2000
Studio Effects Processor

The M2000 features a "Dual Engine" architecture that permits multiple effects and six different routing modes. There are 250 factory programs including reverb, pitch delay, delay, chorus, flang, phase, ambience, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement. The M2000 also features 20-bit analog conversion,AES/EBU and S/PDIF digital inputs/outputs, "Wizard" help menus, 16-bit dithering tools, Tap and MIDI tempo modes and single page parameter editing.

- The array of enhanced pitch shift (up to 8 voices), chorus, and delay effects are characterized by their precision and versatility. Everything from the fine and subtle to the wide and spectacular is handled with equal superiority. The algorithms in the dynamics section (compressor, limiter, expander, gate and de-esser) are unique as stand-alone effects, but are particularly useful in combination with other effects. Those might be de-esser/room, gated hall or compressed pitch. The possibilities are endless.
- Tempo Tap function lets you match effects to the beat. Tempo can be adjusted in beats-per-minute and sub-divided any way you like—even in triplets. The tempo can also be read from MIDI.
- Preset "Gilding" (morphing) function ensures seamless transition between effects. Very useful in live and mixing situations.

JBL
Control 5
Compact Control Monitor Loudspeaker

The Control 5 is a high performance, wide range control monitor for use as the primary sound source in a variety of applications. It's smooth, extended frequency response combines with wide dynamic capability to provide acoustic performance that's ideal for recording studios, A/V control rooms and remote trucks.

- 6-1/2 inch (165mm) low frequency driver provides solid, powerful bass response to 50 Hz and a pure titanium 1-inch dome handles high frequency response to 20 kHz.
- Both transducers are magnetically shielded, allowing use in close proximity to video monitors.
- Dividing network incorporates protection circuitry to prevent system damage and utilizes high quality components including bypass capacitors for outstanding transient accuracy.
- Molded of dense polypropylene foam, with a choice of black, gray or white finish.
- Pleasing enclosure allows it to easily fit into any environment.
- A host of mounting systems including ceiling, rack and tripod allow positioning in exactly the right spot for best performance.

4200 Series
Studio Monitors

The 4200 Series are console-top monitor models designed specifically for use in the near field. Both the 6.5-inch (4206)and the 8-inch (4208) offer exceptional sonic performance, setting the standard for today's multi-purpose studio environment.

- Unique Multi-Radial sculptured baffle directs the axial output of the individual components for optimum summing at the most common listening distance (approx. 3 to 5 ft).
- The baffle also positions the transducers to achive alignment of their acoustic centers so that low, mid and high frequency information reaches your ears at the same point in time, resulting in superb imaging and greatly reduce phase distortion.
- Curved surface of the ABS baffle serves to direct possible reflections of the shorter wavelengths away from the listening position, eliminating baffle diffraction distortion.
- Vertical alignment of the transducers across the baffle center produces natural mirror-imaging.
- Pure titanium diaphragm high frequency transducer provides smooth, extended response.
- Magnet assembly is shielded, allowing placement near magnetically sensitive equipment like CRT's, tape recorders, etc.
- Low frequency components also feature magnetic shielding making the 4200 Series monitors ideal for use in video post production facilities as well as music recording studios.

FOSTEX
XR-5/XR-7 Multitrackers

XR-5 Features:

- High-speed (3-3/4 ips) four-track (2-tracks simultaneously) recorder with built-in Dolby noise reduction (can be turned off)
- Pitch control'er varies the tape speed within a range of ±12%
- Punch in/out function makes corrections and phrase insertions when necessary, can be done easily with optional footswitch.
- Four inputs accommodate two microphones in channels one and two. Has convenient insert points for connecting a compressor/limiter and other devices for the mic channels.
- Each channel is equipped with two-point high/low shelving equalizers to help shape the sound, and an AUX send function for processing ambient system effects.
- Trim function lets you switch High/Mid/Low input levels for channels one and two.
- Alternate Mix mode lets you independently select the signal from the input jack or the tape playback. Prefader effect send, inline monitor & other functions are also possib'e using this mode.
- Post foldback (monitor) send function routes the foldback signal to the AUX send. When the foldback is activated you can actually mixdown at the same time you add reverb to a tape.
- MIDI/TAPE multi-mix mode supports MIDI synchronization. Together with the Alternate Mix mode the XR-5 can simultaniously mix all MIDI sound source output with tape playback sound and effect output while monitoring!

The XR-7 has all the features of the XR-5 *plus*—

- 6 inputs, plus the ability to record four tracks simultaneously.
- Dolby C noise reduction plus dual speed recording.
- During recording, Channels 5 and 6 are the primary inputs for microphones and acoustic instruments. They have trim controls and mid-sweep EQ. During mixdown, these channels act as the main stereo L/R bus.
- Auto rehearsal mode let's you concentrate on the music instead of the machine.

TASCAM
PORTA 03 MKII Ministudio

The easiest way to get into multitrack recording, the PORTA 03 is an extremely economical 4-track recorder that lets you overdub as well as mixdown to standard cassettes.

- 4-track recorder with integrated two channel mixer
- Two 1/4-inch MIC/LINE inputs with trim control
- Extended dynamic range with Dolby B noise reduction
- 3-digit tape counter keeps track where you are on the tape
- Master level control for the entire mix, and the level sent to LINE OUT for stereo mixdown
- Track selector indicates which of the 4 tracks you're recording to
- SAFE selection keeps you from inadvertently recording over tracks you've recorded earlier
- Headphone jack for comfortable monitoring
- RCA output jacks for mixdown to cassette

PORTA 07 Ministudio

The PORTA 07 packs high-end features into a compact and economical package. Achieves great sound with high speed tape transport, high-low EQ and DBX noise reduction.

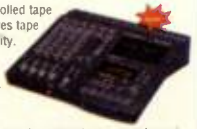
- 4-track recorder with integrated four channel mixer
- Two 1/4-inch LINE inputs and two 1/4-inch MIC/LINE inputs with trim control.
- Separate high and low EQ for each track provides 10dB of boost or cut.
- dbx noise reduction for improved signal-to -noise ratio.
- Punch-in/out r manually or with optional RC-30 footswitch.
- Effects send with stereo return can be applied in varying amounts to all four channels.
- "Bounce or "ping pong" a submix of multiple mono or stereo tracks onto a single empty track, leaving the original submix tracks free to overdub new material onto. You can even add a "live" track to the submix while you're bouncing down, to squeeze in yet another track.

424 MKII Portastudio

The 424 is premium Portastudio that takes multitrack recording to the next level. Features superior audio quality, balanced XLR inputs, enhanced equalization and a big-studio style AUX section.

All the features of the PORTA 07 *plus*—

- 4-track recorder with 8-input mixer (4 mono MIC/LINE inputs with 1/4-inch and balanced XLR jacks and 2 stereo inputs with 1/4" jacks.)
- Separate 3-band EQ section for each of the four mono channels with 10dB of boost or cut and sweepable midrange.
- Auto Punch in/out with rehearsal, plus a Repeat switch lets you set up a tape loop that goes over the same area of a tape while you practice your punch-in/out and overdub moves—without committing a single note to tape.
- Two independent dedicated AUX sends let you use more effects or use one as tape cue during tracking.
- Dual-speeds, logic-controlled tape transport system improves tape handling and sound quality. Select 3-3/4 inch per second HIGH speed for the best possible recording quality or NORMAL 1-7/8 ips speed.
- Monitor output makes it easy to connect an external monitor amplifier without repatching—at mixdown.
- Tape DIRECT OUTS are provided for integration with external mixers.



MIDI Musicians Take Note—If you've got MIDI keyboards, drum machines and sound modules in your set up, you can exploit the power of "virtual tracking" with either the PORTA 07 or 424/464/488 Portastudio. You can use a MIDI synchronizer like the Tascam MTS-30 MIDI-Tape Synchronizer to record (stripe) a code onto track 4 (track 8 with the 488). Just select SYNC mode on the DBX switch and record the tone to tape. After striping the tape with FSK or Song Position Pointer information, all your MIDI instruments will faithfully follow the tape during playback and recording, even if you slow or speed the tape ssing the PITCH controls. The big benefit is that your MIDI tracks (called virtual tracks) don't actually have to be recorded until final mixdown, giving you lots more unused tracks to record on.

464 Portastudio

The functionality of a pro recording studio in a small, lightweight package, the 464 Portastudio is a full-featured eight input, four-track cassette recorder complete with a 12x2 internal mixer and dual buss design that lets you create separate recording and cue mixes.

All the features of the 424 MK II *plus*—

- 4-track recorder with 12-input mixer (4 mono MIC/LINE with 1/4-inch and balanced XLR jacks, 4 stereo 1/4" jack pairs.
- Channels 1-4 offer High and Low shelving EQs and a sweepable Mid EQ. Tracks 5-6 and 6-7 have shelving EQ only, while 9-10 , 11-12 are best used with input that has its own internal EQ.

488 MKII Portastudio

When 4 tracks are just not enough, then you need the perfect creative tool—the 488 MKII Portastudio. The most cost-effective 8-track recorder on the market, the 488 not only offers additional capacity but versatile capability and intuitive operation for easy capturing & manipulation of your ideas. Whether recording acoustic or electronic instruments or vocals, the 488 offers maximum creative freedom to produce your best work. With all the functionality of a professional studio, the 488 may be the ultimate demo recording machine.

All the features of the 464 MK II *plus*—

- Includes phantom power for use with high-quality condenser microphones.
- Built-in mixer features low-noise circuitry, with 12 inputs and 2 group busses. There is a separate input for your stereo master recorder.
- Each of the 8 main input channels includes individual 3-band equalizers. You get Hi and Low shelving EQs, plus a semi-parametric sweepable midrange EQ.
- Unique multi-mix mode with the capability of handling up to 20 inputs at mixdown.
- The only 8-track cassette that offers a servo controlled tape transport complete with electronic braking. Equipped with a high-performance Hysteresis Tension Servo Controlled (HTSC) tape transport, the 488 delivers better sound than the first 8-track reel-to-reel machines.
- HTSC maintains precise and consistent tape tension from the beginning until the end of the tape.It actually dynamically adjusts the back tension on the tape as it moves from one end to the other, allowing precise locating capability.

ALESIS
Monitor One
Near Field Studio Reference Monitor

Designed by engineers with decades of experience, 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.

- Delivers excellent image and transient reproduction, powerful bass, and smooth, extended high frequency detail.
- Exclusive SuperPort speaker venting technology eliminates the "choking" effect of port turbulence for solid high-power bass transients and extended low frequency response.
- Ferrofluid cooled 1" silk-dome driver eliminates the harshness and ear fatigue associated with metal or plastic tweeters, making it easy to mix on for extended periods.
- Monitor One's powerful bass incorporates a proprietary 6.5" low frequency driver with a mineral-filled polypropylene cone and a 1.5" voice coil wound on a high-temperature Kapton former.
- They come in a mirror-image left/right pair covered with a non-slip rubber textured laminate for stable mounting.

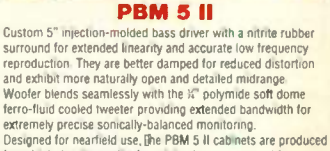
Monitor Two
Mid Field Studio Reference Monitor

With much of today's popular music demanding more bass at louder volumes than a small near field monitor can possibly produce—the Monitor Two delivers—at a price no higher than many of these smaller speakers.

- Utilizes a 10" three way speaker design with a unique asymmetrical crossover to maintain the same accurate tonal balance and imaging of the Monitor One—but with a much larger sound field.
- 10" low frequency driver incorporates Alesis' SuperPort speaker technology to provide powerful, extended bass.
- 5" mid frequency driver offers exceptional mid frequency detail.
- 1" silk dome high frequency driver delivers a broad but natural frequency response from 40Hz to 18kHz.
- Covered in a non-slip rubber finish, the Monitor Two comes in a mirror imaged pair for mixing accuracy.

TANNOY
PBM Series II
Reference Monitors

The PBM II Series is the industry standard for reference monitors. They feature advanced technologies such as variable thickness, injection molded cones with nitrite rubber surrounds and the highest quality components including polypropylene capacitors and carefully selected indicators. With a Tannoy monitor system you are assured of absolute fidelity to the source, true dynamic capability and most important, real world accuracy.



PBM 5 II

- Custom 5" injection-molded bass driver with a nitrite rubber surround for extended linearity and accurate low frequency reproduction. They are better damped for reduced distortion and exhibit more naturally open and detailed midrange.
- Woofer blends seamlessly with the ¾" polymide soft dome ferro-fluid cooled tweeter providing extended bandwidth for extremely precise sonically-balanced monitoring.
- Designed for nearfield use, the PBM 5 II cabinets are produced from high density medite for minimal resonance and features an anti-diffraction radiused front baffle design.

PBM 6.5 II

- Transportable and extremely powerful, the PBM 6.5 II is the ideal monitor for almost any project production environment.
- 6.5" lowfrequency driver and 3/4" tweeter are fed by a completely redesigned hardwired hand selected crossover providing uncompromised detail, precise spectral resolution and flat response.
- Fully radiused and ported cabinet design reduces resonance and diffraction while providing deep linear extended bass.

PBM 8 II

- High tech 1" soft dome tweeter with unmatched pattern control and enormous dynamic capability. 8" driver is capable of powerful bass extension under extreme SPL demands.
- Hard wired crossover features true bi-wire capability and utilizes the finest high power polypropylene capacitors and components available.
- Full cross-braced matrux medite structure virtually eliminates cabinet resonance as a factor.
- Ensures precise low frequency tuning by incorporating a large diameter port featuring laminar air flow at higher port velocities.

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SPIRIT

FOLIO LITE
Compact Professional Mixing Console

- 12 inputs as standard (up to 16 at mixdown)
- 4 mono channels & 4 stereo channels
- Inserts on all mono inputs and mix outputs
- Ultra low-noise (-129 dB EIN) mic inputs
- Musically responsive 2-band EQ
- 2 Aux sends on all channels, Aux 1 switchable pre/post fader
- PFL Sloio on all inputs, dedicated tape return
- Headphone socket and discrete L/R outputs for monitors
- 10-segment three color bar graph metering
- Consistent high performance controls, global phantom powering
- Optional rack mounting panel and PortaPower unit

FOLIO SI
Stereo Input Mixing Console

All features of Folio Lite PLUS—

- 18 inputs as standard (20 including stereo returns)
- 8 stereo channels and 2 mono channels, with 60mm faders
- Comprehensive 3-band EQ on inputs 1-14
- High pass filter on mono inputs
- Dedicated tape return and control room outputs
- Insert points on L and R master outputs
- 12-segment bar graph metering
- Main outputs are ground compensated and impedance balanced
- Free standing or rackmount versions available
- Optional Porta Power unit allows battery powered operation from various sources

FOLIO RAC PAC
4-Bus Multi-Purpose Mixing Console

- 14 input channels with up to 28 inputs at mixdown
- 2 stereo inputs with 60mm faders and 2-band EQ
- Low-noise (-129 dB) mic inputs
- Comprehensive 3-band EQ with swept Mid, plus high pass filter on every mono input
- 6 versatile Aux sends, 4 dedicated fully-fledged stereo returns plus 2 stereo effects returns
- Stereo solo-in-place (PFL) on every input channel
- Direct outputs on each mono channel for recording direct to multitracks
- Dedicated 2-track tape return routable to mix
- Global phantom powering, compact 8U rack-mount design

POWERSTATION
Powered Mixer

Studio quality mixing, with integrated power amp and effects provide an all-in-one solution for live performance.

- 8 mono and 2 stereo input channels
- 18 inputs at mixdown, including tape and effects returns
- Bullet-proof UltraMic pre-amps with 60 dB gain range for stunning signal handling capability
- High-spec 265W +265W (RMS) power amp
- Built-in Lexicon effects mixer
- Consistent high performance controls, PFL solo on all channels
- 3-band EQ with swept mid-frequency on mono channels
- 2 auxiliaries for effects and foldback
- 7-band precision dual graphic EQ
- High pass filter on mono inputs
- 40 Hz subsonic filter on outputs to protect speaker cabinets
- 48v phantom power
- Inserts on mono channels and main outputs
- Separate power amp input to amplify external sources
- Dedicated record outs and tape returns, dedicated mono output
- Rugged steel chassis, hinged cover for protection

PROTRACKER
In-Line Multitrack Recording Console

- In-line monitoring signal format – 2 discrete inputs per channel
- 8 channels with 60mm faders
- Expansion sockets for daisy-chaining ProTrackers
- High quality, high gain mic pre-amp (-129 dB), 5Hz-150kHz) with switchable 48v phantom power on every input
- Switchable high pass filter on every channel
- Built-in limiter (300ms attack time/3 sec release) selectable on every channel. Overload and limiter indicators on each channel
- Insert and aux switchable between channel and monitor paths
- Aux globally switchable pre/post fader
- Monitor fader and pan control
- Balanced tape & send/return, switchable between -4dB &-10dB
- Separate pre-fade insert and return sockets, eliminating the need for Y-cables
- Inputs switchable to mix to allow simultaneous front -of -housing mixing and recording
- Mix routable to tape sends 7/8 for simultaneous 2-track recording on a single multi-track, without effecting multitrack feeds from channels 1 to 6
- Headphone monitoring of 2-track return, aux,7/8 or mix
- Monitor outputs follow headphone output
- Mix output & 2-track return accept +4dB XLRs or -10 dB RCA phonos

SAMSON® MIXPAD 9
Ultra-Compact 9-Channel Audio Mixer

A remarkably compact 9-channel mixer, the MIXPAD 9 offers professional audio performance and a wide range of user-intensive features. It boasts low noise and distortion specifications, includes wide-range gain trim controls for both mic and line inputs and provides exceptionally low group delay over the full frequency bandwidth for a more transparent, open sound. It also has a very high slew rate—usually found only on larger, more expensive mixing consoles—allowing it to react very quickly to transients and maintain a crisp, articulate sound. It offers phantom power (48v) for use with condenser microphones and an in-line power supply eliminates magnetically-induced hum.

- 3 mic/line inputs and 3 stereo channels (total 9 inputs).
- 2 auxiliary sends for effects and two Stereo returns.
- Independent 2-band shelved EQ, pan control for mono channels and balance control for stereo channels.
- Adjustable mic input trims allow use with a wide variety of mics.
- Phantom powered XLR mic input connectors.
- Peak LEDs for left and right main outputs.
- Extremely durable, extruded aluminum chassis.

MACKIE.

MICRO SERIES 1202-VLZ
12-Channel Ultra-Compact Mic/Line Mixer

Usually the performance and durability of smaller mixers drops in direct proportion to their price. Fortunately, Mackie's fanatical approach to pro sound engineering has resulted in the Micro Series 1202-VLZ, an affordable small mixer with studio specifications and rugged construction. It delivers no-compromise, non-stop, 24-hour-a-day professional duty in permanent PA applications, TV and radio stations, broadcast studios and editing suites—where nothing must ever go wrong.

- Working S/N ratio of 90dB, distortion below 0.025% across the entire audio spectrum and +28 dB balanced line drivers.
- 4 mono channels with discrete, balanced balanced mic/line inputs and 4 stereo channels (12 inputs total).
- Line inputs and outputs work with any line level, from instrument level, to semi-pro -10dB, to professional +4dB.
- Switchable phantom-powered (48v) inputs for condenser mics.
- Every input channel has a gain control, pan pot, low EQ at 80 Hz, high EQ at 12.5 kHz and two aux sends with 20dB gain.
- Master section includes two stereo returns, headphone level control and metering.
- Sealed rotary pots resist and other contaminants.

MS1402-VLZ
14 x 2 Compact Mic/Line Mixer

Mackie's fanatical engineers have done it again. Balanced inputs and outputs, 3-band EQ, AFL/PFL and deluxe tape monitor/Control Room feature. Nice long 60mm faders, six studio-quality mic preamps and extra Alt 3-4 stereo bus—in less than 1.3 square feet of space.

- Studio grade mic preamps (chs. 1-6) with high headroom, low noise and phantom power. Also incorporate low cut filters to cut mic handling thumps, pops and wind noise. Lets you safely use low shelving EQ on vocals.
- Trim controls (ch. 1-6) with ultra wide range (+10 to -40dB) handle everything from hot digital multitrack feeds to whispering lead singers and older, low output keyboards.
- Pan control with constant loudness and high L/R attenuation so you can pan hard left or right without bleed-through.
- Two aux sends per channel with 15dB extra gain above Unity.
- 60mm log-taper faders are accurate along their whole length of travel and employ a new long-wearing contact material for longer fader life & uper resistance to dust, smoke etc.
- Control room/phone matrix adds incredible tape monitoring, mixdown and live sound versatility.
- Mute switch routes channel output to extra ALT 3-4 stereo bus. Use it for feeding multitrack recorder channels, creating a sub-group via controlroom/phones matrix, monitoring a signal before bringing it into the main mix or creating a " mix minus".
- Solid steel chassis instead of aluminum or plastic.

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

CR-1604 VLZ
16-Channel Mic-Line Mixer

The hands-down choice for major touring groups, studio session players, as well as broadcast and sound contracting. The new CR-1604 VLZ features everything you would expect from a larger console, and then some! 24 usable line inputs with special headroom/ ultra-low noise Unityplus circuitry, seven AUX sends, 3-bandEQ, constant power pan controls, 10-segment LED output metering and discrete front end phantom-powered mic inputs.

- Lowest noise and highest headroom (90 dB working S/N and 108 dB dynamic range). Many drummers consider it the only mixer capable of handling the attack and transients of acoustic and electronic drums.
- Genuine studio-grade phantom powered, balanced input mic preamps on channels 1-6. All CR-1604 VLZ (and optional XLR10 for ten more) discrete input mic preamp stages incorporate four conjugate-pair, large-emitter geometry transistors. So, whether recording nature sound effects or heavy metal, miking flutes or kick drums, you get the quietest, cleanest results possible.
- True 4-bus design with channel assigns to 1-2, 3-4 or main L-R.
- 3-band EQ with mid-frequency sweep and low cut switch.
- AFL/PFL solo and mute switches with overload and signal present indicators.
- Rear panel features include insert points and 1/4-inch XLR connectors on every channel, as well as RCA tape inputs/outputs.
- New, standard size channel trim pots are found at the top of each channel.
- Rotary input/output "pod" allowing three different positions for set-up.

TASCAM
M2600 MKII Series
16/24/32-Channel 8-Bus Mixers

LOW NOISE CIRCUITRY

- Combining completely redesigned low noise circuitry with Absolute Sound Transparency™ the M-2600 delivers high-quality, extremely clean sound. No matter how many times your signal goes through the M-2600, it won't be colored or altered. The signal remains as close to the original as possible. The only coloring you hear is what you add with creative EQ and your outboard signal processing gear.
- Double reinforced grounding system eliminates any hum. World-class power supply provides higher voltage output for better headroom and higher S/N ratio.

PREMIUM QUALITY MIC PRE-AMPS

- The M-2600's mic pre-amps yield an extremely low noise floor, enormous headroom and an extremely flat frequency response. It also increases gain control to an amazing 51dB. Plus, you get phantom power on each channel.
- Accepts balanced or unbalanced 1/4" inputs, and low-impedance XLR jacks. Better still, the TRIM controls operate over a 51dB input range. For the hottest incoming signals, all it takes is a press of the -20 dB PAD button atop each channel strip to bring any signal down to manageable levels. Plug in anything – keyboards, guitars, basses, active or passive microphones, samplers and more.

THE BEST AUX SECTION IN THE BUSINESS

Versatile AUX section has 8 sends total, 2 in stereo. Send signal in stereo or mono, pre-or post-fader. Available all at once. Return signal through any of 6 stereo paths.

FLEXIBLE EQ SECTION

Bi-directional split EQ means you can use either or both EQ sections in the Monitor or Channel path...or defeat the effect altogether with one bypass button. Other comparably priced mixers will lock the shelving mix into the Monitor path only, limiting your EQ application.

ADVANCED SIGNAL ROUTING OPTIONS

Direct channel input switching. Assign to one of eight buses, direct to tape or disk, or to the master stereo bus. Because the group and direct-out jacks are one and the same, you can select either without repatching.

ERGONOMIC DESIGN

The M-2600 has a big studio feel. All buttons are tightly spring loaded, lock into place and accomodate even the biggest fingers. The faders and knobs have a tight, smooth "expensive" feel and are easy to see, reach and manipulate. Center detents assure zero positions for EQ and PAN knobs. Smooth long throw 100mm faders glide nicely yet allow you to position them securely without fear of accidentally slipping to another position.

BEHRINGER

MDX 1200 Autocom

- Attack and release times, with Intelligent Program Detection, prevents common adjustment errors.
- Newly-developed, powerful noise gate.
- Switchable soft knee/hard knee characteristics for varied sound pressure levels.
- Bright, illuminated LEDs show gain reduction.

MDX 2100 Composer

- Integrated auto/manual compressor, expander & peak limiter.
- Compresses "musically" in dynamic range without any audible "pumping" or "breathing".
- Attack & release times are controlled automatically or manually.
- Interactive Gain Control (IGC) combines a clipper and peak limiter for distortion-free limitation on signal peaks.
- Servo-balanced inputs and outputs are switchable between +4dB and -10dB.

Stewart
Power Amplifiers
PA-1000
PA-1400
PA-1800

- High frequency switch mode power supply fully charges 120,000 times per second (1000 times faster than most power supplies) requiring far less capacitance for filtering and storage.
- High speed recharging also reduces power supply "sagging" that afflicts other designs.
- Incredibly efficient, 5 PA-1000 or PA-1400's (4 PA-1800's) can be run on one standard 20 amp circuit. No need for staggered turn-on configurations or other preventive measures when using multiple amp set-ups.
- They produce smooth and uncolored sound, while offering very full detailed low end response and tons of horsepower.
- Each amp carries a full 5 year warranty on parts and labor.

PA-1000 weighs 9 lbs, is 15" deep and occupies one standard rack space. Delivers 1000 watts into 4Ω when bridged to mono.

PA-1400 weighs 16 lbs, is 15" deep and takes 2 standard rack spaces. Delivers 1400 watts into 4Ω when bridged to mono.

PA-1800 weighs 17 lbs, is 17" deep and takes two rack spaces. Delivers 1800 watts into 4Ω when bridged to mono.

BGW
Performance Series Amplifiers

Performance Series 1
300 Watt Power Amplifier

- Measuring only 3.5 inches high and weighing 26 pounds, the Series 1 delivers more than 150 watts per channel.
- Its welded steel chassis is unbelievably strong while a custom heat sink extension provides exceptional thermal capacity.
- An internal fan provides quiet background noise levels for critical monitoring applications and when pushed hard the cooling system insures continuous cool operation even in the most demanding situations.
- Active balanced inputs with both XLR and 1/4" phone jacks.
- Supplied with quality 5-way binding posts for highly reliable speaker connection.
- Front panel handles are reversible for either rack mount installation or easy handling.
- LEDs are provided for signal presence and clip indication, the detented gain controls have large knobs for easy front panel adjustments.

Performance Series 2
600-Watt Power Amplifier

- Same as above except the Series 2 weighs 32 pounds and delivers more than 300 watts per channel.

Performance Series 4
1200-Watt Power Amplifier

- Same as above except the Series 4 weighs 53 pounds and delivers more than 600 watts per channel.
- Has a switch selectable clipping eliminator that prevents damage to the speakers.

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TASCAM

DA-P1 Portable DAT Recorder

- Rotary two head design and two direct drive motors for the best transport in its class.
- XLR-balanced mic/line inputs (with phantom power) accept signal levels from -60dB to +4dB.
- Analog line inputs & outputs (unbalanced) plus S/PDIF (RCA) digital inputs and outputs enable direct digital transfers.
- Uses next generation A/D & D/A converters for amazing quality.
- Supports 32/44.1/48kHz sample rates & SCMS-free recording.
- MIC limiter and 20dB pad to achieve the best possible sound without outside disturbances.
- TRS jack & level control to monitor sound with any headphones.
- Built tough, the DA-P1 is housed in a solid, well-constructed hard case. It includes a shoulder belt, AC adapter & 1 battery.

SONY

TCD-D8 DAT Walkman Player/Recorder

- Long Play (LP) mode allows 4 hours of record/playback of 12-bit audio on a single DAT cassette.
- Equipped with digital coaxial and optical input connector. Also has analog Mic and Line inputs.
- High-speed Automatic Music Sensor search function finds & plays tracks, skips forward or back up to 99 tracks, all at 100x normal speed.
- Digital Volume Limiter System increases listening comfort & sound quality by automatically adjusting for sudden level changes.
- Two-speed cue-review lets you hear sound while player is in fast-wind modes, up to 3x or 25x normal speed.
- LCD display with backlit windows clearly shows recording level, track number, operating status and 4-segment battery indicator, even in low ambient light conditions.
- Optional RM-D3K System Adapter Kit for complete digital interface. It has input/output connectors for both the optical cable & the coaxial cable. Also includes a wireless remote control.

TCD-D10 PRO II Portable DAT Recorder

- Has balanced XLR input, switchable mic (-60dB) or line (+4dB) inputs. A 12-pin digital connector provides interfacing with AES/EBU digital signals of 32/44.1/48.0 kHz sampling rates.
- Comprehensive self-diagnostics function constantly monitors the rotation of the head drum, capstan and reels. The tape transport mode and load/unload time are continuously checked as well.
- Up to 99 start IDs can be recorded in the subcode area. When the record button is pressed, the start ID is recorded automatically for 9 seconds. During recording, it can also be added manually to any position of the tape. Search for start IDs is 100X normal speed.
- 20-segment digital peak level meters include overload indicators. Closely tracks input signal for accurate level indications.
- During playback, the date and time of recording is displayed.
- Has a record-level limiter with a fast attack time of 330ms. Mic attenuator prevents distortion by suppressing signal level 20 dB.
- Immediate playback is possible through a built-in speaker.
- Supplied wired remote controller also accepts a mic holder. Two mic stand screw adapters are also supplied.
- Supplied NP-22H rechargeable battery provides 1.5 hours of operation. Optional NPA-D10 battery adapter enables 1 hour on AA batt. Supplied ACP-88 AC adapter operates on 100-240v 50/60 Hz.

HHB PORTADAT

PDR1000/PDR1000TC Professional Portable DAT Recorders

- Direct drive transport with 4 heads for confidence monitoring.
- Balanced XLR mic and line analog inputs and two RCA analog line outputs. Digital inputs and outputs include S/PDIF consumer (RCA) and AES/EBU balanced XLR.
- Left/Right channel mic input attenuation selector(0dB/-30dB).
- 48v phantom power, built-in limiter & internal monitor speaker.
- Illuminated LCD display shows clock and counter, peak level metering, margin display, battery status, ID number, tape source status and machine status.
- Supplied Nickel Metal Hydride rechargeable battery powers the PDR1000 for two hours. The battery has no "memory effect" and is charged in two hours with the supplied AC Adapter/charger.

PDR1000TC Additional Features:

In addition to all the features of the PDR1000 recorder, the PDR1000TC is equipped to record, generate and reference to time code in all existing international standards.

- All standard SMPTE/EBU time codes are supported, including 24, 25, 29.97 (drop frame and non-drop frame) and 30 fps.
- External syncronization to video, field sync and word sync.

Roland® DM-800

Digital Audio Workstation

A compact, stand-alone multi-track disk recorder that provides an amazing array of features at an unbelievably low price. Whether for music production, post production or broadcast, the DM-800 lets your work easier and faster. A full function workstation, the DM-800 performs all digital mixing operations from audio recording, to editing, to rotation track-bouncing, to final mixdown. It fully supports SMPTE and MIDI time codes and also features a built-in Sample Rate Resolver to synchronously lock to any time code.

HIGHEST QUALITY SOUND

- Sampling rates of 48/44.1/32 kHz • 24-bit internal processing
- 18-Bit A/D and D/A with 128 and 8 times oversampling

POWERFUL EDITING

- Time compression, pitch compression
- Non-destructive cutting, erasing, copying
- Fast looping for music or ambiance editing
- Six levels of waveform zoom
- Optional RS-422 interface

FULL AUTOMATION

- Microscope editing of automation data
- Dynamic and snapshot automation of level, pan, 2-band EQ, including frequency select, boost and cut •Phase level editing of level, crossfade and fade in/out

TRIGGER FEATURES

- Trigger mode to play any combination of 8 tracks for vocal fly ins or sound effects placements
- Advanced trigger mode for live operation with preset or dial up cue of phrases to be played one after another

FLEXIBLE I/O STRUCTURE

- Full digital patch bay
- Stereo AUX send buss, 2 stereo AUX returns
- Digital stereo input and two digital stereo outputs • Direct channel outs
- 4 balanced analog inputs with gain controls and 4 balanced analog outputs

MIDI FEATURES:

- MIDI machine control • Internal tempo maps •MIDI clock and song position pointer output •8 MIDI triggers for instant phrase playback •MIDI trigger of record and punch in/out • Tempo maps from external sequences, MIDI or tap input

PROJECT CATALOGING

- Up to 150 projects on line at once
- Cataloging of sound effects and projects
- Easy transfer of sounds from one project to another

VIDEO OUT

- Composite, S-video, digital RGB output
- All track overview with infinite level of project zoom
- Views of phrase and waveform editing
- Very accurate level meters
- Track status and time location

ACCURATE SYNCHRONIZATION

- Frame accurate sync to any time code
- Generates/reads SMPTE time code—24,25, 29.97 (Drop/non-drop) and 30 frames per second. • Locks to MTC

RECORDING OPTIONS

- Records to standard SCSI hard drives
- Up to 24 hours recording time possible
- Uses MO,Syquest or Jazz drives for fast project change overs

Digital Multi-Track Recorders

TASCAM DA-88

The first thing you notice about the eight channel DA-88 is the size of the cassette - it's a small Hi-8 video cassette. You'll also notice the recording time - up to 120 minutes. These are just 2 of the advantages of the DA-88's innovative use of 8mm techno'ogy.

- ATF system ensures no tracking errors or loss of synchronization. All eight tracks of audio are perfectly synchronized. It also guarantees perfect tracking and synchronization between all audio tracks on all cascaded decks - whether you have one deck or sixteen (up to 128 tracks!)
- Incoming audio is digitized by the on-board 16-bit D/A at either 44.1 or 48KHz .The frequency response is flat from 20Hz to 20KHz while the dynamic range exceeds 92dB.
- Execute seamless Punch-ins and Punch- outs. This feature offers programmable digital crossfades, as well as the ability to insert new material accurately into tight spots. You can even delay individual tracks to generate special effects or compensate for poor timing.

SONY PCM-800

- Flawless sound quality, outstanding reliability and professional audio interfacing with AES/EBU digital I/O and XLR analog I/O connections.
- Combines audio functions such as precise auto punch in/out digital cross fade technology, external synchronization with SMPTE/EBU time code and selectable sampling frequencies of 44.1 and 48kHz.
- Shuttle dial for precise tape control, variable speed playback of 6% in 0.1% increments and a flat frequency response from 20Hz to 20kHz.
- Operate up to 16 PCM-800's in perfect sync with optional RCC-S1 sync cables,for up to 128 channels of digital audio recording.
- Optional DABK-801 Sync Board provides SMPTE/EBU time code generation and chase sync. It locks to the incoming time code with subframe accurate offset— ideal for audio-follow-video applications. Also synchronizes to external video reference signal.
- Optional RM-D800 provides comprehensive remote control over all PCM-800 functions. The RM-D800 can control up to six units for up to 48 channels of digital audio.

ALESIS adat xt

8-Track Digital Audio Recorder

An incredibly affordable tool, the ADAT-XT sets the standard in modular digital multitrack recording. With new features & enhanced capabilities, the ADAT-XT operates up to four times faster than the original ADAT, offers an intelligent software-controlled tape transport and provides onboard digital editing and flexible autolocation.

Stunning Audio:

- Incorporates ultra-high fidelity 18-bit, 128 X oversampling A/D converters which provide better-than-CD audio quality.
- For outputs, the D/A converters provide 20-bit, 8x oversampling performance for a flatter frequency spectrum, improved phase response and much less low-amplitude distortion.
- 20 Hz to 20kHz ±0.5dB frequency response, 92dB S/N ratio, crosstalk between channels better than -90dB @ 1kHz.

Onboard Autolocator with Auto Record:

- Onboard 10-point autolocate system provides quick access to multiple tape locations. Four specialized locate points make your recording sessions quicker and easier.
- Auto play the moment any autolocation point is reached. Auto Return automatically rewinds at the end of a loop.
- Auto Record function lets you automate punch-in/punch-out times that are accurate to 1/100th of a second.
- Rehearse Mode allows you to enter or exit record modes without actually laying tracks to tape.
- To record on the fly, you can even use the individual Record Enable buttons to punch in and out of tracks.
- Includes remote control with transport and locate functions, offers a footswitch jack for hands-free punch-in.

Intelligent Transport:

- Advanced transport software continuously monitors autolocation performance and the head constantly reads ADAT's built-in sample-accurate time code—even in fast wind modes.
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.

Flexible Inputs and Outputs:

- Servo-balanced 56-pin ELCO connector operates at +4dB to interface with consoles with +4 dB bal/unbal inputs/outputs. Also unbalanced -10dB inputs/outputs (phono connectors).
- Has an electronic patch bay built-in so it can be used with stereo and 4-bus consoles.
- Multiple Optical Digital I/O carries up to eight tracks at once. The digital I/O combined with the ADAT Synchronization Interface make it completely compatible with any ADAT-format recorder or other devices that use Alesis' proprietary digital protocol.

Digital Editor:

- Make flawless copy/paste digital edits between machines or even within a single unit. Track Copy feature makes a digital clone of any track (or group of tracks) and copies it to any other track (or group) on the same recorder. This allows you to assemble composite tracks for digital editing.
- Use multiple ADAT-XTs and Tape Offset lets you copy and paste not only track to track, but from location to location. Tape Offset assembles your project with a minimum of repetitive overdubbing and changes the tape position of a slave XT to its master, so you can "fly" audio to different locations on each tape.
- Track Delay can delay the time reference of a track by up to 170ms. Also easily change sthe groove of a tune. Track Delay is individually adjustable on each channel and is excellent for fixing slight timing errors in recorded tracks (player lags behind or rushes the beat). In recordings with multiple microphones, you can time-align each track, precisely compensating for the spacing between mics with accuracy to 0.0001 seconds.

Panasonic

SV-3800/SV-4100 Professional DAT Recorders

Designed for professional applications, the SV-3800/SV-4100 have highly accurate and reliable transport systems with search speeds up to 400X normal, and 20-bit D/A converters to satisfy the highest professional expectations both in terms of sound and functionality.

SV-3800 Features:

- Recording via analog inputs offers sampling rates of 44.1 or 48kHz. When recording through digital inputs, it automatically clocks to incoming frequencies of 32/44.1 or 48kHz.
- XLR-balanced digital inputs/outputs plus consumer format coaxial and optical inputs/outputs. XLR-balanced analog stereo inputs/outputs. Output level is selectable between +4db and -10db. The input level is +4db.
- Built-in shuttle wheel has two variable speed ranges: 3 to 15x in Play mode and 1/2 to 3x normal speed in Pause mode.
- High speed transport enables searching up to 250x normal speed. Search up to 400x normal speed is possible once the tape has been scanned in Play, FF or REV mode. This ensures access to any point on a two-hour DAT in under 30 seconds.
- Ramped record mute and unmute with three seconds fade-in and five seconds fade-out provides automatic level changes at the start and end of a recording.
- Comprehensive display includes program numbers, absolute time, program time, remaining time and Table of Contents.

SV-4100 Has all the features of the SV-3800 Plus—:

Offers enhanced performance required for professional production, broadcast and live-sound systems. Features such as instant start, external sync capability and enhanced system diagnostics make the SV-4100 the DAT quality standard.

FOSTEX D-5

Digital Master Recorder

With professional features and a consumer price tag, the D-5 satisfies a lot of requirements. It records or playsback four hours of music, includes optical and digital input/output, and TOC functions that are as easy to use as a CD player. It's also equipped with basic pro features such as ID editing function, GPI and XLR connectors and 300X speed locate and search functions.

- Playback/record audio with32/44.1/48 kHz sampling in SP (standard play) mode. Equipped with LP (long play) mode, it can play/record at 32 kHz up to 4 hrs. on a 120 minute cassette.
- Analog interface includes switchable (+4dB/-10dB) balanced and unbalanced XLR inputs and outputs.
- AES/EBU digital interface (XLR) for professional use and optical (S/PDIF) input/output for consumer/semi-pro connections.
- 5-pin GPI Input connector allows, Play, Stop & S-ID search to be implemented through commands from an external source.
- Records CD-Q code sync ID, enabling precise music start up. When performing digital signal transfer from CD through it's optical input, the D5 precisely records S-IDs according to the track number and index information of the CD-Q code. So even if there is a break in the middle of a song or there isn't a non-recorded section between two songs, you can locate to the S-ID location (eg. beginning of song) precisely.

D-10

Digital Master Recorder

- Switchable 44.1 and 48kHz sampling frequecies
- Analog interface includes switchable XLR-balanced (+4dB) and unbalanced RCA -(10dB) inputs and outputs.
- Equipped with and XLR-balanced AES/EBU digital interface and optical (S/PDIF) input/output conforming to IEC consumer
- Built-in 8MB RAM (4 MB x 2) offers instant start as well as scrubbing at 1m/second accuracy.
- Advanced jog/shuttle for precision cueing and monitoring.
- Auto Cue provides automatic locating to the exact start of audio modulation during ID search and tape loading.
- Universal GPI input/output enables easy and fast assemble editing, based on A-time between a pair of D-10s.
- Switchable 2-position reference level: -12dB/-20dB.
- Start and Skip IDs as well as up to 799 P-NOs can be recorded and played back.
- 10-digit key-pad lets you store and recall 100 cue points
- Continuous or peak reading level meters can display available headroom with an accuracy of ±0.1dB.
- Reads and displays A-time or Pro R-time, also provides PCM monitoring.
- Optional 8333 interface card adds timecode and RS-422 (X 2) functionality to the D-10.

–Reads an external timecode and records on the sub-code area

–Reproduces and outputs the timecode from sub-code area

–Switchable RS-422 and ESbus protocols. Using the ESbus, up to 16 D-10s can be daisy chained.

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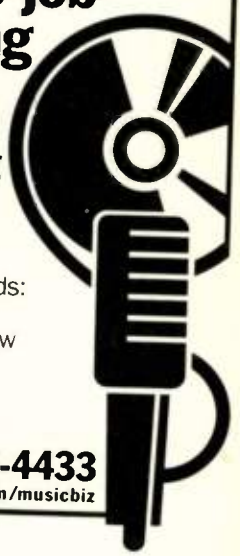

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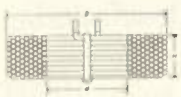

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- Financial stability of the company. (Caution: **there has been a recent rash of duplicator bankruptcies.** Make sure your duplicator won't collapse while it has your masters!)
- Is the price too LOW? If a deal seems too good to be true, it probably is.
- Consider the quality of the company's clientele--does it work with professionals--names you recognize? Ask for references.
- Consider how knowledgeable & helpful the company's staff is on the phone: do they know the music business? Are they interested in your project's potential?

2. Work with a Qualified, Independent Graphic Artist

If you want your product to compete with the major labels, you have to look as good as they do. **One-stop "chop-shop" duplicators who offer one-size-fits-all graphics aren't going to cut it.**

This is your project: you need to sit down and work with your own graphic artist-- **face-to-face.** Resources for finding good graphic artists in your local area include local ad agencies, fellow musicians, or a free referral from the Oasis graphic artist database. (You can e-mail or call Oasis & we'll locate a good graphic artist for you in or near your hometown.)

3. Think Backwards--Plan Your Promotion First

What good is a CD release if nobody hears it? Make sure you get your music to radio. Try to get onto a **radio-oriented sampler CD program,** such as the OASISALTERNATIVE™, OASISACOUSTIC™, OASISROCK™, & OASISJAZZ™ sampler CDs, which go to every radio station in their genres.

Be sure to also take advantage of the inexpensive promotion and distribution opportunities available on the **World Wide Web**. You can set up your own Web "homepage," or you may want to consider joining the Oasis-sponsored **Musicians on the Internet** program, which promotes your CD online & distributes it via the CDnow superstore.

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for a more thorough discussion of the topics we've touched on here.

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ACROSS THE BOARD

continued from page 178

In the mid 1980s rotary-head technology was more advanced, and therefore the R-DAT technology won out for the consumer digital tape format. An R-DAT machine in 1987 cost $2500. A professional stationary-head digital recorder cost $22,000.

DATIQUITTE

If DAT machines cost $10,000 and DAT tapes cost $100 each, most people would take better care of their machines and their master tapes. I have seen artists and producers hand carry their masters with them on flights from L.A. to New York. They make sure that the tapes are hand checked by security and do not go through the X-Ray machine. They then carry them on the plane and put them in the overhead bin right by their seat. If you question them about why they do it, they say, "I have two years of my time and lots of money invested in these tapes, they are priceless."

Five years later, I ran into one of the same artists, on the same flight to New York. I asked what he was up to, and he said, "I'm going to New York to master my new album, would you like to hear it?"

I said, "I would like very much to hear it, do you have a copy with you?" He reached in the pocket of his jeans and pulled out a DAT tape that was covered with more dust and grunge than you would find at a bellybutton-lint convention. He pulled his portable DAT player out of his briefcase, popped it in, and handed me the headphones. I asked if this was a copy and he said, "No, man this is the master. Sounds pretty good, huh!"

The difference here is that the new album was done in his own private studio and mixed to a $10 tape in a $1000 DAT machine. What he didn't realize was that the same amount of effort went into the project and the final mix tape was just as priceless and even more vulnerable to damage.

A friend of mine, Paul Weston, passed away last month. He was a great musician, band leader, a founder of the Grammys, and first president of NARAS. He is survived by his wife, Jo Stafford, daughter Amy, and son Tim. We all miss him.

DIGITECH REVIEW

continued from page 131

parameters (like something that kicks volume up or down, with presettable minimum and maximum limits), or bank select. Programs can be assembled into lists (up to 31 steps) that you can step through live, or you can use footswitches for program increment/decrement.

Most GSP-2101 Artist factory patches have a foot-controlled parameter. MIDI setup for the pedal is easy; you can set min/max settings, polarity, and also recalibrate the pedal curve for consistency from gig to gig.

Remember, the GSP-2101 Artist 1/4-inch outs are designed to feed a guitar amp; to avoid a buzzy sound if you're feeding a board, use the XLR outs to take advantage of the speaker emulator. The digital section is great, but like other complex processors, the operating system (while straightforward) demands a fair amount of button-pushing to get where you want to go. Still, when you create a great sound that you can't get with anything else, it's definitely worth the effort.

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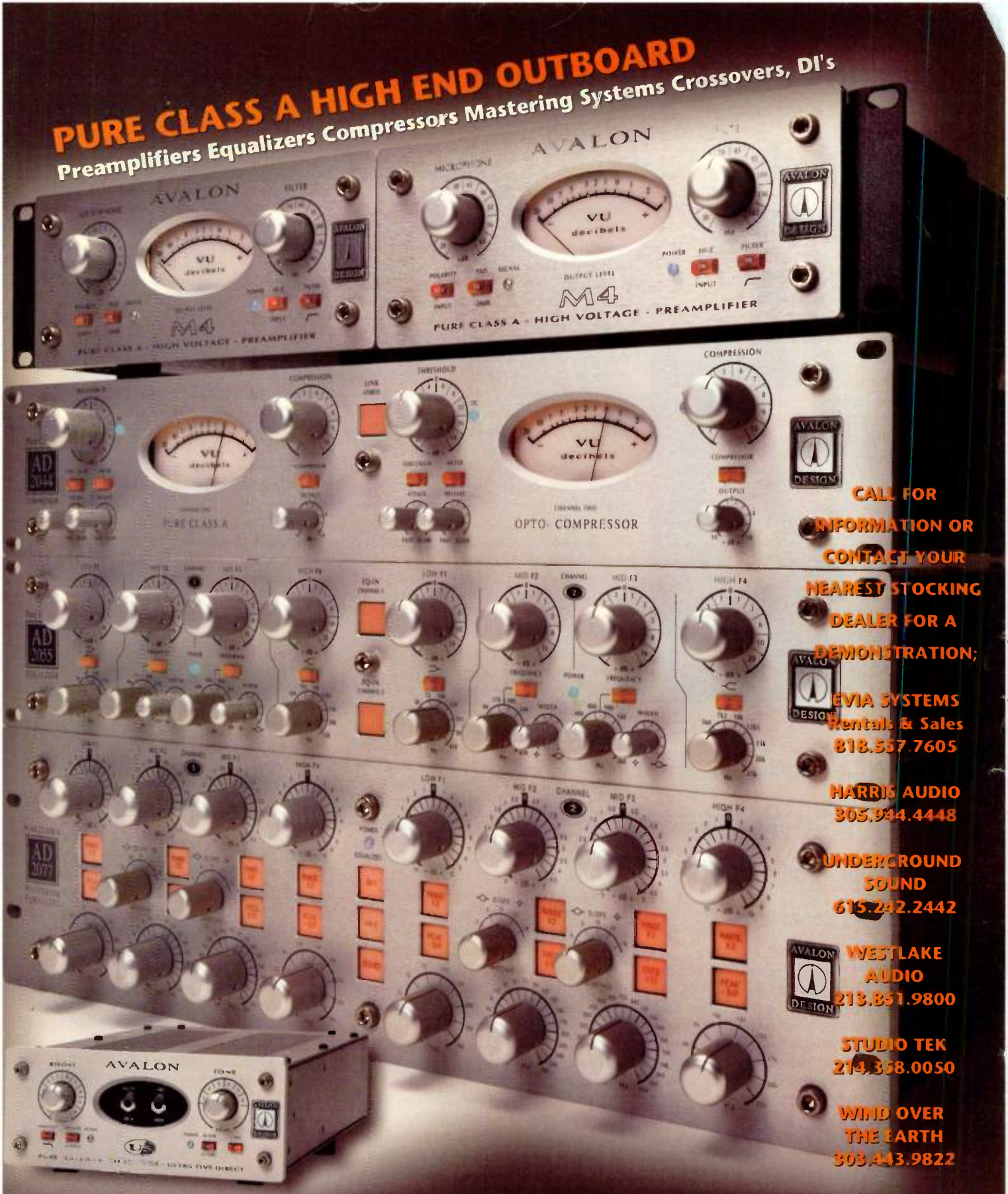

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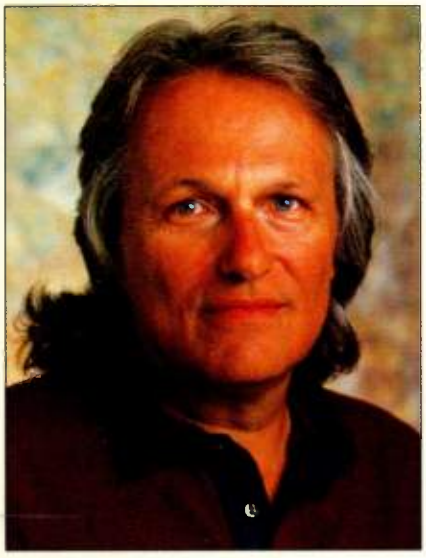
Sirius As A Heart Attack



The facts about DATs — no matter what letter precedes them

BY ROGER NICHOLS

I was in the studio last week recording a group called Gary Vincent And The Swamp Honkys. They have been a solid fixture of the "other than Country" scene in Nashville for quite a few years. I go to most of their standing-room-only bar gigs and have always wondered why they didn't have a record deal. They finally got involved with a good manager who put them in the studio to do an album. (My first analog album since 1986.) There is some radio interest in the band and they have been getting airplay on demos that were cut in Gary's basement project studio.

During the session, one of the guitar players wanted to replace a guitar solo that everyone thought was "genius." I asked him if he was serious and he answered, "I'm as serious as a heart attack." What more could I say. I punched in the replacement solo, which wasn't any better than the original solo, but it made him happy.

Since I seem to have an affinity for puns, I said, "Speaking of Sirius, recording analog makes me about as lethargic as the Dog Days of Summer." All I got was a room full of blank stares. I waited 2000 years for that pun. Ya see, Sirius is the brightest star in the sky. During the summer, the Sun is in the constellation Canis Major where Sirius resides. Ancient cultures thought that those hot days of summer were caused by the light and heat from Sirius adding to the light and heat of the Sun during those few weeks. Canis is the "dog," thus the "dog days of Summer." I can't understand why no one got it!

Back to the analog recording. We recorded analog (24-track, 2-inch) because Gary wanted to. He wanted that raw rock 'n' roll tape crunch. Well, he got it. We did all of the recording and overdubs in six days. By the sixth day you could definitely hear the increase in distortion on instruments and vocals. Band members started commenting about the change in sound during the week. Could it be the console? It was a Neve V3 with Flying Faders in perfect condition. Could it be the tape machine dying? No, it is the tape doing what analog tape does. "We didn't hear anything like that over at Gary's little basement studio," was the comment. No, they didn't, because Gary's studio has ADAT-XT's and he mixes to DAT. Everything stays put with digital recording.

I could see the realization sink in that project studio recording has improved so much that project recording quality often exceeds that of the big (commercial) studios, if you pay attention to the details. Microphone technique, control of unwanted hums, buzzes and air conditioner noise, and proper recording levels and use of EQ together result in a recording that you can be proud of.

They thought that analog tape would add to the project. In this case it seems to have subtracted a little. In two weeks I have to go back in the studio to mix. I get to mix on an SSL 4000G+ with oxygen-free internal wiring. If they include the oxygen-free control room environment, my "dog days" will soon be over.

DAT BASICS REVISITED

I got some e-mail asking about the difference between R-DAT and ADAT. Here is the skinny. ADAT stands for Alesis Digital Audio Tape. This includes the ADAT and ADAT-XT that Alesis makes, as well as the ADAT-compatible machines from Panasonic, Fostex, and whoever else signs up to make ADAT compatible 8-track VHS-based digital audio recorders.

Now, stay with me here. About the time the Sony F-1 was the consumer digital audio flavor of the day (1982–88), development was already under way in Japan for the replacement. There were two basic standards under development: S-DAT and R-DAT. S-DAT stands for Stationary-head Digital Audio Tape and R-DAT stands for Rotary-head Digital Audio Tape.

Digital audio requires a lot of information to be stored on tape. If you have a lot of information to get on tape in a small amount of time, then you must have a high average head-to-tape speed. There are three ways to attack the problem:

1. You can have two tracks on 1/4-inch tape (one each for left and right) and crank the tape speed up to about 75 ips. A 12-1/2-inch reel of digital tape would last about 20 minutes. At a cost of $125 per reel, it gets pretty expensive to store two channels of information.

2. If you have ten tracks on 1/4-inch tape (five for each audio channel), you can split the data between tracks and slow the tape down to 15 ips. This is basically what Sony did for the 3402 reel-to-reel digital machine and Mitsubishi did for the X-80 and X-86. Now you can record for an hour on one reel of tape. Still expensive for consumer recording, but fine for professional use.

With this same scheme, you can build a machine that uses 1/8-inch tape with 40 tracks. Now you can record at 3-3/4 ips or even 1-7/8 ips with tape improvements. Yamaha built a 20-bit 8-track (eight audio channels on 1/4-inch tape in a cartridge) recorder using this technology. DMP Records made a lot of amazing sounding records using this Yamaha system.

3. How about using a video-based system that has high head-to-tape speed, but instead of using video decks, start from the ground up designing for digital audio? Because the tracks are so small (about the size of a human hair on 4 mm tape) the linear tape speed can be low and the tapes can be small and inexpensive.

continued on page 176

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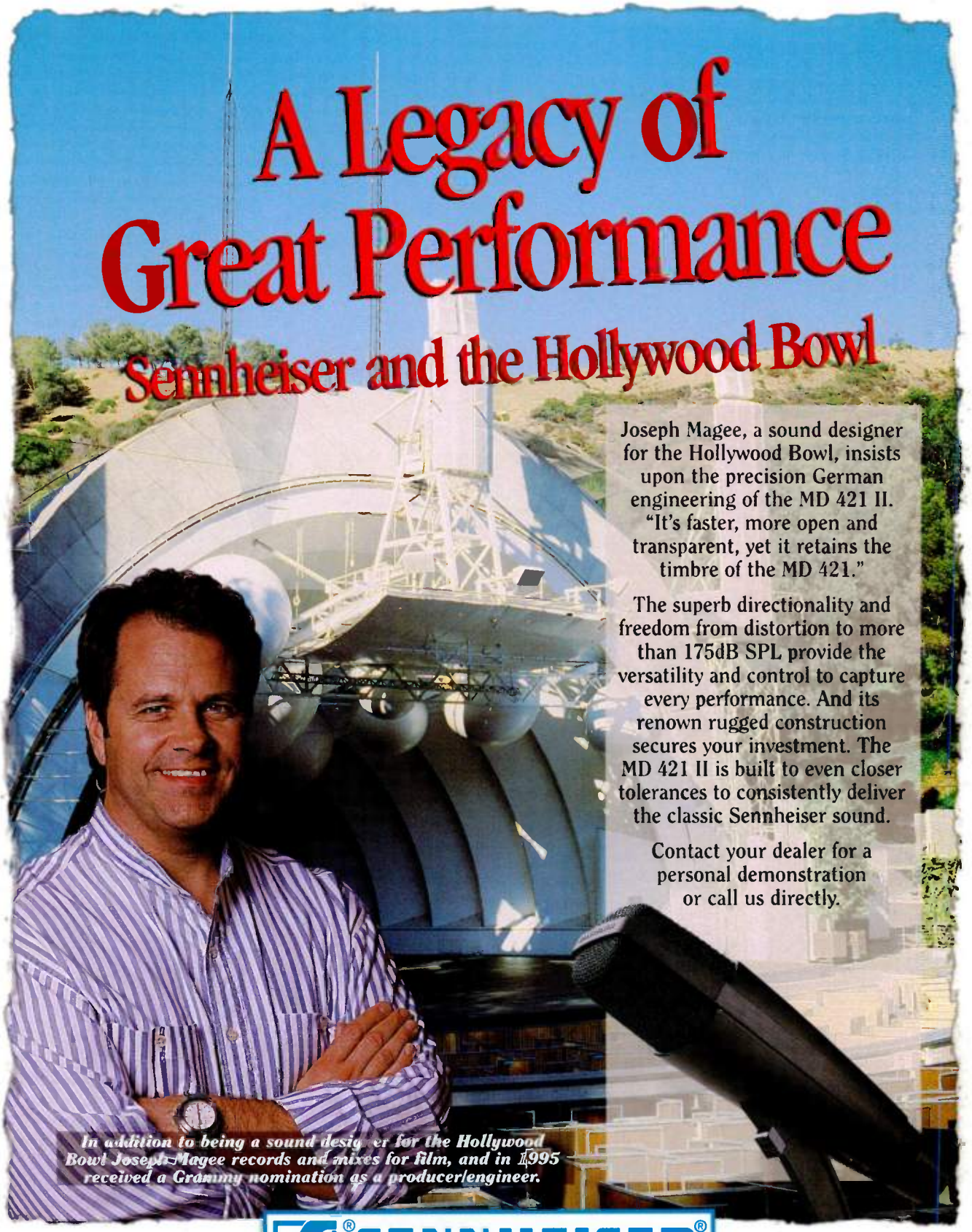

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In addition to being a sound designer for the Hollywood Bowl Joseph Magee records and mixes for film, and in 1995 received a Grammy nomination as a producer/engineer.

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