1996 AES PRODUCT REVIEW

EQ

THE PROJECT RECORDING & SOUND MAGAZINE

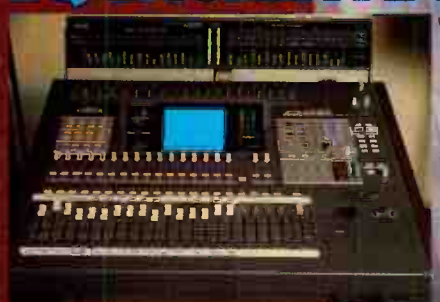
OCTOBER 1995

PROJECT STUDIO OWNER OF THE YEAR

HANS ZIMMER

FIRST LOOK
ALESIS ADAT-XT

EQ EXCLUSIVE REVIEW
YAMAHA PROMIX 02R



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PROJECT RECORDING
& SOUND TECHNIQUES
VOLUME 6, ISSUE 10
OCTOBER 1995

ON THE COVER:
Hans Zimmer stands in his personal room at Media Ventures, his project studio complex. Photo by Ed Colver.

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LETTER FROM THE EDITOR

40 EQ's Later...

EQ is so hot that even Time magazine recently featured us on its cover... Well, not exactly, but here's an update on the latest stage of the project recording and sound revolution.

Five years ago this month the current editorial and publishing team took over *EQ* to serve the information needs of a new generation of recordists. We walked the floor at AES, telling manufacturers that a new age of recording was upon us — one in which the creative end-user was taking control of the recording process. We shunned the term "home recording," since it sounded like a hobby. We adopted a term that a few visionary manufacturers had been using themselves — "project recording" — to reflect the growing professionalism of this new breed of creative recordists and live sound engineers.

Unfortunately, many of those we met at AES looked at us with blank stares. Several of the commercial studio owners we talked to looked at us as if we were the enemy.

Forty issues later, *EQ* stands at the forefront of the most important technology wave in the history of recording. Not only have we published our biggest issue ever at this year's AES, but the entire industry recognizes that *EQ* has led the project studio revolution. The success of manufacturers like Alesis, Mackie, and TASCAM validated our mission. And at this year's AES virtually every exhibitor has some product targeted at the recording needs of today's project recordist and live sound engineer.

The magazines have changed accordingly. *REP* is out of business and its readers are now active participants in the new *EQ* scene. *MIX* is now chasing *EQ*'s editorial leadership and readership response, finally acknowledging this hot and happening marketplace that *EQ* originally defined.

Nobody looks at the editors of *EQ* with blank stares when we talk project recording any longer. Even commercial studio owners recognize that we're the magazine that their customers are reading. The type of useful, hands-on, how-to information that *EQ* delivers every month has helped thousands of project studio owners build and perfect their personal production environments.

Where do we go from here? You will see issues with more articles and more reviews. You will see more electronic publishing ventures like the new *EQ CD-ROM*. You will see more major producer/engineers like Phil Ramone joining up as regular contributors. And you will see an emphasis on higher-end project studio environments, much like the one that Hans Zimmer, Project Studio Owner of the Year, owns and operates.

Now that we have achieved our goal of promoting the project studio revolution it is time to move on. It is time for us all to rock the record industry and change the world.

Martin Porter
Executive Editor

World Radio History

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HE'S A MAGIC MAN

Re: August 1995 article on the Roland DM800.
I've been reading *EQ* Magazine for quite some time, and I am quite fond of the publication. However, I am somewhat dismayed by David Miles Huber's review of the Roland DM-800.

While I agree that there are some things I would like to include on the wish list, like the battery pack, I found no other flaws in the unit. In regards to the EQ, I found it quite musical, personally.

I have respect for David's ability to review pro audio equipment, however, I find it hard to believe that David really got into the DM-800. I have recorded three major albums during the past year using only direct-to-disk recording mediums. Recently, I purchased a Roland DM-800 and have found it to be incredible, to say the least. It has surpassed all of my expectations in a portable direct-to-disk recorder (except the lack of a battery pack).

In fact, I like this damn thing so much (it's slowly moving into a love thing), that if I weren't a producer and a musician myself, I'd be at Roland selling 'em. (Maybe I can do all three, hmmm?)

If this unit is being compared to Pro Tools or the likes thereof, try propping a full-blown Pro Tools system under your arm. In my opinion (and that's all this is), I have yet to find anything on the market better in terms of portability or sound — and believe me, I've looked.

I would like to sincerely thank David for extending his honest opinion and I hope there are those who will appreciate mine.

Keep up the good work *EQ*. I still love ya.

Magic
Magic Muzik Productions
Moorpark, CA

HAWK EYES

"Get Stephen Hawkins on the phone, something is wrong here."

You aren't kidding. The problem may be that you haven't updated your personal User Dictionary's Spell-Checker.

Oh, well, at least you get to apologize to one hell of a smart guy! And Mr. Hawking will no doubt be amused.

Hank Alrich
via America Online

[*Actually, Roger is not at fault here — the editorial staff has to take the blame for this one. During some mysterious part of the editing process, the letter "g" somehow morphed into the letter "s" (where's LetterMan when you really need him). Our apologies to both Roger and Stephen Hawking (whom we also congratulate on his recent nuptials). —Ed.*]

AMONG THE CONVERTED

In your August 1995 issue, a reader named Will Gilman expressed fears about having his audio undergo sample-rate conversions on its way from ADAT to DAT to CD. This was in the context of a question involving what happens to BRC-synced sequencer tempos when you change the ADAT's sample rate. Although Craig Anderton's reply addressed the sequencer tempo questions, sample-rate conversion itself is a topic worthy of some elaboration.

First, some background information: Sample-rate conversion (the changing of sampling frequencies) may be done in two ways — via the analog or digital domains. In the digital domain, an AES/EBU, S/PDIF, or optical output is taken from the source machine and transferred through an external sample-rate converter or to a workstation (where the conversion is done). The converted output is then fed to another machine's digital input (again through AES/EBU, S/PDIF, or optical connectors) for re-recording at the new sample rate.

In the digital domain, the audio passes through a pair of D/A converters as it leaves the source machine, becoming an analog signal. That analog signal is then fed to a second machine's analog input where it passes through a complementary set of A/D converters, being re-recorded at the new sampling frequency.

The perils involved? Simply the potential for changing the sound (sometimes in not so pleasant ways). In the digital method, the samples taken at 44.1 kHz and at 48 kHz will occur at different points in time. Since these points in time don't align themselves precisely, the digital sample-rate converter must interpolate values for the waveform for those new points in time — making its best representation.

What happens in the analog domain is similar. The source machine's D/A converter takes digital audio information and constructs its best analog representation of that data. The analog waveform then flows into the A/D converter of the destination machine that constructs its best digital representation of the analog waveform.

As an analogy, picture a box that has been measured, cut, and constructed using metric measurements — exactly to the millimeter. Now re-do those measurements and dimensions using English units, using inches and feet. The problem occurs where a given length falls in between the lines of the ruler. We have to round it off, but do we round up or down? Will everybody round the same way we choose to? All the time? Since digital audio is stored with a limited number of digits (bits), the same problem occurs during conversion. There are a lot of numbers that are "pretty close, but just a little bit off." In audio terms this translates into changes in timbre, shifts in the stereo image, and a loss of low-level warmth and detail.

Now back to Will's ADAT. If he's using the fiber-optic 8-channel digital outputs to feed a workstation or a console with a true digital signal path, then he should be concerned with sample-rate conversion; to get 44.1 out, it would be best to put 44.1 in. Here though, please note the very important distinction between a console with a *digital* signal path and one with a *digitally controlled analog* path. If you can unplug one of the ADAT's outputs from the board, plug in a guitar, a synth, or a microphone in its place, and get sound out, the signal path is *analog*. If Will is like 90 percent or more of ADAT users, he's running the 1/4-inch outputs or the XLR outputs (via ELCO connectors) to a good-old regular analog board, in which case he's hearing the output from the ADAT's D/A converters. Whether he recorded on his ADAT at 44.1 kHz (using vari speed, I presume) or at its standard of 48 kHz, it's still the *analog* output of the unit's digital-to-analog converters. And since the ADAT is designed around a 48 kHz sampling architecture, it would probably be more advantageous to simply leave it as it is — and spare the computational headaches associated with vari speeding and altering the tempos of MIDI sequences, especially if the tapes stand a chance of being exchanged with those who run their machines at the regular speed.

Steve Revilak
Boston, MA

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SEND IN THE CLONES

Q *I've "cloned" both ADAT and DA-88 tapes and noticed that there are subtle sonic differences between the two. I know this shouldn't be the case, since the same digital data ends up on clone tapes, but my ears tell me something different. What's the story?*

Kim Kinnear
Boston, MA

A According to Marcus Ryle, co-inventor of the ADAT, "A digital copy from one ADAT to another is no different from copying a computer file from one floppy to another. As long as there are no data errors, the information on the copy will be identical to the information on the original. If there are errors in the transfer, the result would be random garbage on the copy. Random data in digital audio will not cause sonic differences such as changes in frequency response, imaging, etc., but would instead produce clicks, pops, or harsh noise.

"When you hear sonic differences, investigate every possible cause before deciding on the reason for the differences. Logic must play a role in this process; a digital copy without errors will contain numbers identical to the original, and therefore cannot contribute to any difference in sound. Possible causes are subtle differences in DACs between different machines; differences in levels and/or signal circuitry at the console, cables; psychoacoustics, etc. Personally, I don't trust my own ability to truly A/B two different signals unless I have verified both signal path's distortion and frequency response with an Audio Precision, have matched the two signals to within 0.1 dB, and am performing the test double-blind (neither the tester or the listener knows which signal is from which source).

"I recommend this level of scrutiny to anyone who wants to eliminate as many variables as possible and truly determine the differences in audio performance between any two pieces of equipment. I can't say enough about the importance of level matching. Differences of as much as 2 dB in level are perceived by many people as having 'more bottom' or 'definition' without them recognizing that it is louder (due to such factors as hearing loudness curves)." Thanks, Marcus!

Craig Anderton
Technology Editor
EQ Magazine

GET BACKUP

Q *I am looking to buy a DAT machine that can be used to record audio and also backup my computer and audio data. Apparently, none of the pro or consumer audio DAT machines can be used to safely backup computer data. Are there any digital data storage machines that can be used to record audio and create masters? If so, what types of things should I be concerned with?*

John Gilbert
Vienna, VA

A DAT devices, such as the DDS Digital Data Storage drives, are commonly used in computer backup applications and employ a significantly enhanced scheme for error correction compared to audio DAT recorders.

In audio applications, part of the error-correction strategy includes "interpolation," where corrupted samples of audio data are replaced by a value that is an average between adjacent correctly decoded data words. While this is undesirable even in audio use and should only occur to a minimal extent in a well-maintained machine, the effect is usually inaudible. Clearly, the effect of such an approximation in computer data, where the outcome would probably be that a character would be replaced with something completely spurious, would be unacceptable. For this reason, extra levels of error correction are included in DDS drives to ensure that the correct symbol can be more readily recovered when a decode error does occur.

It would be technically possible to produce an audio product that could deal with both encoding schemes and fit a computer connection such as the widely used SCSI interface — this would almost certainly lead to costs that were far greater than simply buying a separate computer backup drive.

A small number of the DDS computer storage devices are capable of decoding the DAT audio format as well as the data storage format, but these would require appropriate software specifically written to interface with them.

Finally, it is also possible to produce software to drive PC interface cards with AES/EBU or SPDIF outputs that could output files rather than audio for storage on a normal DAT recorder. It is believed that some of the audio-editing software now available is able to do this. This is, however, likely to be at the expense of losing the random access capabilities that computer devices are specifically designed to possess. DDS drives include a file directory structure that allow them to locate a single file from within a very large amount of data at high speed. Using a digital audio format to transfer the data will also be comparatively very slow and great caution is required to ensure that any tape errors are properly handled.

The short answer would clearly be to use a DAT recorder for audio and a DDS drive for data.

Jeremy Federman
Independent Audio Inc.
Portland, ME

QUESTION MACHINE

Q *Do you know of any schools or training for live sound in the Maryland area? Are there any plans to archive a full year of EQ magazine on CD-ROM and/or a complete index of perhaps 5 years?*

I am a bass player in a part-time cover band. We had a soundman who miked the drums from underneath, yet almost every group I see on Leno [The Tonight Show], Saturday Night Live, etc., has the drums miked from above. What are the pros and cons? We do gate the drums.

Mike Iwancio
via America Online

A Whoa, Mike, you are a question machine! There are many recording programs offered across the nation, but few that specialize in sound reinforcement. It might be best if you checked out some of the local/regional recording programs and learned techniques that you could then utilize in the SR discipline. A very good program

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WITH WORD-OF-MOUTH LIKE THIS, WHO NEEDS AN AD AGENCY?

"The ProMix 01 gives me the flexibility to control all the elements of a show from my computer. Superb sonic quality and remarkable features, you just can't beat it."

Stan Miller, Sound Designer, Neil Diamond Tour

"I bought four of them for the Steely Dan Tour, and I haven't shut up about the 01 yet."

- Roger Nichols, Engineer, Steely Dan

"Bottom line, the ProMix really does live up to all the hype. It's very quiet, it sounds great, it operates very cleanly." "One of the most amazing introductions in years."

Recording Magazine, October 1994

"I did my latest project on the ProMix. And it's one of my best sounding yet. The ProMix 01 is really great!"

-Hans Zimmer, Composer, The Lion King

"ProMix 01 stands every chance of becoming a landmark product, changing the way a lot of people currently work."

Studio Sound And Broadcast Engineering, July 1994

"We're not normally violent, but in this case, we're willing to make an exception. We're not letting this mixer go."

- Mix Magazine, November 1994

"Premium ... the trimmin's. ... through ...

Songwriter/Music...

"As a sound designer, I create illusions. Yet, the power and flexibility of the ProMix is no illusion. It most certainly contributes to the prestige of Machine Head."

- Stephen Dewey, Sound Designer/Founder, Machine Head

"After working with ProMix 01, I am convinced its sound, quality and flexibility rivals that of mixing consoles costing many times more."

- Calvin L. Harris, Engineer/Producer - Lionel Richie, Diana Ross, Stevie Wonder

"My two ProMix 01s store all the parameters of my mix and play it back exactly as I heard it at the moment of creation. More importantly, they sound great!"

- David Schwartz, Composer for Northern Exposure

"Yamaha has done it again, just as it did in the early '80s with the DX-7 keyboard. It has created a cool piece of gear that does more, does it better, and costs less."

- I Q Magazine, December 1994

"It took Yamaha to create a brilliant sounding digital mixer with full MIDI control. I have no doubt that the ProMix 01 will quickly become an industry standard."

- Jeff Bova, Keyboardist/Arranger/Composer - Vanessa Williams, Robert Palmer

"Clean, quiet, powerful. The best words I can think of to describe the ProMix 01, the latest addition to my toolbox."

Tom Jung, Producer/Engineer/President, DMP Records

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If you think the ProMix 01 sounds good here, wait 'til you hear it in action. Call our 800 # and send for your free CD of The ProMix Sessions, produced and engineered by Tom Jung, President of DMP Records. Our ad agency thought we needed to say something clever here, but we told them we had enough opinions already. To order your CD, call 1-800-937-7171, Ext. 450.

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YAMAHA

Smart Mixing.

EXT. 1-800-937-7171 450

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CIRCLE 73 ON FREE INFO CARD

World Radio History

in Maryland is the one at the Peabody Conservatory at Johns Hopkins University. Also, check out the Mix Plus (from *Mix* magazine) directories for listings of regional and national programs. You might also try calling *Pro Sound News* magazine (212-213-3444) about its yearly SR program held in the Anaheim, CA area just prior to the NAMM convention. This PSN/Syn-Aud-Con program has been getting rave reviews for some time.

Next, you ask; *EQ* delivers. *EQ* on CD-ROM is presently available. It offers 30 complete issues in an easy-search format for Mac- or PC-based platforms. This CD-ROM is very cool. Call 212-213-3444 for more information.

Finally, miking is a personal kind of thing. What sounds right is right. Still, there are reasons for miking a drum from above or below. Aesthetically speaking, miking from below can keep mics out of the audience's sight line. Plus, it can prevent drummers from bashing the mics. If the drums have no bottom heads, you can get slightly better isolation and bottom end by placing the mics just inside the drum. This technique may, however, pick up more mechanical noise from the drum. Bottom-miking a snare drum can provide: 1) More "snap" because of the mic's proximity to the actual snare on the snare drum's bottom; 2) Better isolation from the hi-hat and cymbals; 3) Protection from getting damaged by drum sticks. Miking from above can bring a more ambient and, therefore, more "natural" sound. The mic "hears" what we hear.

It's cheap to experiment. Find out which method provides you with the sound you want.

By the way, gating isn't always necessary. It can make drums sound small and unnatural if the gates are incorrectly set. If, on the other hand, you're experiencing heavy leakage from drum to drum or stage amps or are using the gates to effect the drum sound, keep right on gating. Readers? Any suggestions and comments?

Hector G. La Torre
Executive Director
EQ Magazine

UP TO SPECK

Q *In one of your back issues, there was an advertisement for a company out of Southern California called SPECK. I am in urgent need of their services as I own a mixing board from them and my power supply has burnt out. How can I contact them?*

Jim Edgar
via America Online

A Speck Electronics is a manufacturer of consoles, keyboard and line mixers, EQs and cables. They are located at 925 Main Street, Fallbrook, CA 92028. Telephone: 619-723-4281.

Hector G. La Torre
Executive Director
EQ Magazine

Send your queries to:
EQ Editorial Offices,
939 Port Washington Blvd.,
Port Washington, NY 11050
E-mail: EQMagazine@AOL.COM

World Radio History

Squeeze The Most Out Of Your Music

When you're performing or recording, nothing should stop your music from reaching its full potential. Especially your dynamics processor. No matter where your creativity leads you, the Alesis **3630 Compressor/Limiter** is the tool that lets you squeeze the most out of your music.

3630 COMPRESSOR

RMS/PEAK DUAL CHANNEL COMPRESSOR LIMITER WITH GATE

The 3630 provides two full-featured professional compressor/limiters in one rack space. Its ease of use, extensive feature list and flexible operation make it an excellent dynamics processor for any application, from studio recording and mixing to instrument rigs, live sound reinforcement and broadcast.

True Stereo Operation and Flexible Features

The 3630 offers dual mono or linkable true stereo operation, so you can process your stereo signal (or two mono signals) from a single unit. Its flexible interface lets you choose between RMS and peak compression styles as well as hard knee or soft knee compression curves to customize the 3630's response for any source material. The 3630 also provides dual 12-segment LEDs that allow you to meter gain reduction *and* display input and output levels.

Clean, Quiet Professional Performance

Of course, the 3630 Compressor Limiter also has the great sound that has made it the choice of over 80,000 artists and engineers worldwide. We use the industry standard super low-noise VCA chip to eliminate pumping and breathing, and each channel's independent built-in noise gate has an adjustable threshold and close rate to ensure clean, transparent performance. The variable Attack and Release parameters offer wide ranges (0.1ms - 200ms and 50ms - 3s), allowing you to precisely control the dynamic response for the job at hand. The 3630's sidechain function can be used for ducking rhythm tracks and background music, or for de-essing vocals when used in conjunction with your favorite EQ device. And, of course, the 3630 allows the highest signal-to-noise ratio for mixing to analog tape *and* optimizes hot levels for digital recording.

Advanced Compression For Everyone

Along with its outstanding features and unparalleled performance, the 3630 Compressor Limiter remains incredibly affordable. Squeezing the most out of your music is easier than ever. Grab a 3630 at your Authorized Alesis Dealer today.

For more information about the 3630 Compressor/Limiter, see your Authorized Alesis Dealer or call Alesis at 310-836-7924.
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ALESIS STUDIO ELECTRONICS

CIRCLE 030 ON FREE INFO CARD

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24x4x2...SWEPT MIDS...PFL/AFL...6 AUX
NOW SHIPPING: MACKIE'S SR24•4, THE

GREG MACKIE DID IT AGAIN... The new 4-bus SR24•4 is the first live sound console with the high headroom, low noise and superb sound quality that have established our 8•Bus console series as an industry standard.

That's because the SR24•4 is a direct descendent of the 8•Bus and is equipped with many of the same features, components and circuitry.

Through economies of materials and manufacturing processes, we're able to offer the SR24•4 at an astonishingly low price.

Call us toll-free for full information. Better yet, visit your nearest Mackie dealer. The SR24•4 is in stock right now.

VLZ (Very Low Impedance) circuit design developed for our 8•Bus consoles reduces noise and crosstalk at critical points in the SR24•4's signal path.

CHANNELS 1-20 are mono with 3-band EQ, 1/4" TRS balanced line inputs and Mackie's renowned, high-headroom, low-noise mic preamps.

SWEEPABLE MID EQ from 100Hz to 8kHz. 1.5 times wider bandwidth than other consoles for more musical equalization. 15dB boost/cut.

–20 SIGNAL PRESENT LED on every channel.

80Hz LO SHELVING EQ. Even at ±15dB, it doesn't interfere with mid EQ the way many shelf EQs do.

New-design **60MM FADERS** with the same precision, log-taper as our 8•Bus consoles give you more useful control range than cheaper, D-taper faders. SR24•4 faders use a recently-developed, long-wearing wiper contact material first employed in sophisticated automotive sensors. You'll get longer fader life and improved resistance to solid and liquid contaminants that inevitably get into live sound boards.

SOLO/MUTE LED on every channel (plus our mondo master rude solo LED over in the master section).

HI SHELVING EQ with 15dB boost/cut at 12kHz. Designed with the same circuitry as our 8•Bus Hi EQ. It won't interfere with mid EQ.

LOW CUT FILTER with 18dB/octave roll-off at 75Hz just like on our 8•Bus console. Gets rid of room rumble, wind noise and mic thumps — which can save amp power, too. Also allows you to safely use Lo EQ on vocals — the audible bass range is boosted but the unwanted frequencies below 75Hz (like microphone handling noise) are chopped off. Also very useful for miking during studio recording.

Mackie's renowned ultra-high headroom **MIC PREAMPS** on Channels 1 through 20. –129.5 dBm E.I.N., ultra-wide bandwidth and 0.005% distortion. The same Mackie mic preamps top artists and groups are using to track their current albums.

Not shown but definitely there: The usual Mackie **INTERNAL FEATURES** like impact resistant, double-thru-hole-plated fiberglass circuit boards, sealed rotary controls, gold-plated interconnects, RFI rejection, electronic protection and ultra-high headroom mix amp architecture.

INSERTS on every mono channel and subs as well as main L/R outputs.

The **MOST COMPACT 24-CHANNEL** live sound console ever!

At 30.75" wide, the SR24•4 takes up less space than most 16-channel live sound boards, yet its controls are still spaced so that they're easy to use.

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World Radio History

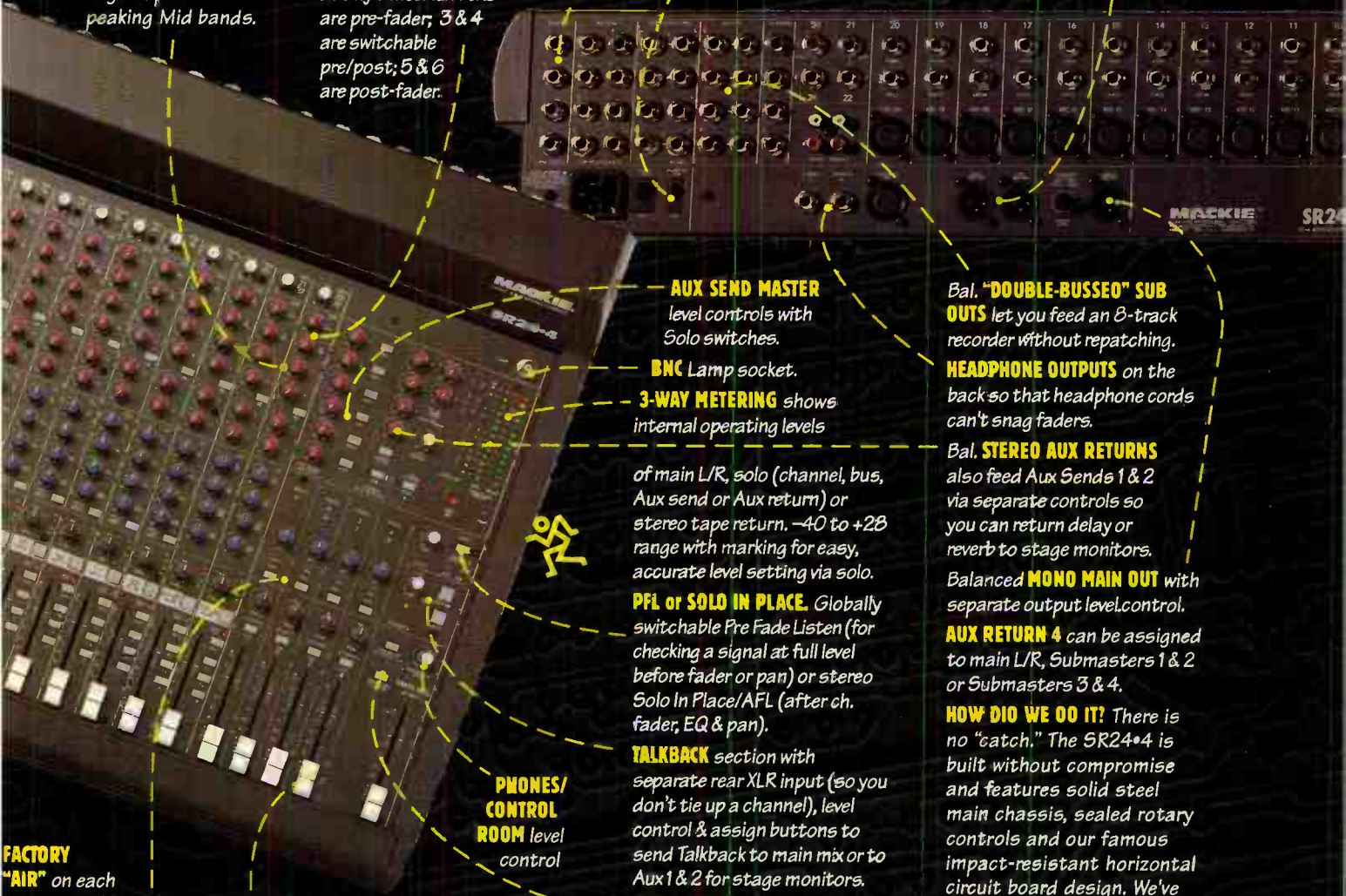
SENDS...8-BUS SOUND QUALITY...$1599* MSRP. BEST LIVE SOUND CONSOLE VALUE EVER!

CHANNELS 21-24 are stereo line input channels with Hi & LO shelving EQ plus 2 peaking Mid bands.

6 MONO AUX SENDS per channel, ALL accessible at any time. Aux 1 & 2 are pre-fader; 3 & 4 are switchable pre/post; 5 & 6 are post-fader.

Balanced **1/4" TRS OUTPUTS.**
PHANTOM POWER switch.

Balanced **XLR MAIN OUTPUTS** with +28dB capability.



AUX SEND MASTER level controls with Solo switches.

BNC Lamp socket.

3-WAY METERING shows internal operating levels of main L/R, solo (channel, bus, Aux send or Aux return) or stereo tape return. –40 to +28 range with marking for easy, accurate level setting via solo.

PFL or SOLO IN PLACE. Globally switchable Pre Fade Listen (for checking a signal at full level before fader or pan) or stereo Solo In Place/AFL (after ch. fader, EQ & pan).

TALKBACK section with separate rear XLR input (so you don't tie up a channel), level control & assign buttons to send Talkback to main mix or to Aux 1 & 2 for stage monitors.

TAPE RETURN TO MAIN MIX not only routes Tape Returns to Main L/R outputs but also disables all other inputs to the mains. This feature enables you to play a tape or compact disc during intermission without losing channel and submaster settings.

BALANCED INPUTS & OUTPUTS. Important, but really hard to point to with a yellow arrow.

Bal. **"DOUBLE-BUSSED" SUB OUTS** let you feed an 8-track recorder without repatching.

HEADPHONE OUTPUTS on the back so that headphone cords can't snag faders.

Bal. **STEREO AUX RETURNS** also feed Aux Sends 1 & 2 via separate controls so you can return delay or reverb to stage monitors.

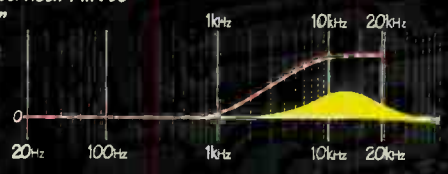
Balanced **MONO MAIN OUT** with separate output level control.

AUX RETURN 4 can be assigned to main L/R, Submasters 1 & 2 or Submasters 3 & 4.

HOW DID WE DO IT? There is no "catch." The SR24•4 is built without compromise and features solid steel main chassis, sealed rotary controls and our famous impact-resistant horizontal circuit board design. We've drop-tested, drop-kicked and "beta-tested" the SR24•4 with local grunge-thrash bands for months before release. This is one tough mixer.

***THE USUAL FINE PRINT.** Price is U.S. Suggested Retail only. Slightly higher in Canada.

FACTORY "AIR" on each submaster! A unique peaking equalization circuit for enhancing guitars, vocals, drums — and sound reinforcement speaker systems themselves. Centered at 16K, AIR applies a gentle boost to the extreme high end without affecting lower treble octaves like Hi sheiving EQ does (red line). You've gotta hear AIR to believe the "hi fi" effect it has on PA systems, with horns and compression drivers.



PHONES/ CONTROL ROOM level control drives two stereo Phone outputs and Control Room output on rear panel. Switch can route stereo Tape Return to Phones/Control Room for monitoring 2-track recording.

SUBMASTER FADERS have Pan controls, L/R Assign & Solo switches.

SEE US AT AES BOOTH #572

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CIRCLE 68 ON FREE INFO CARD

World Radio History

Special F/X

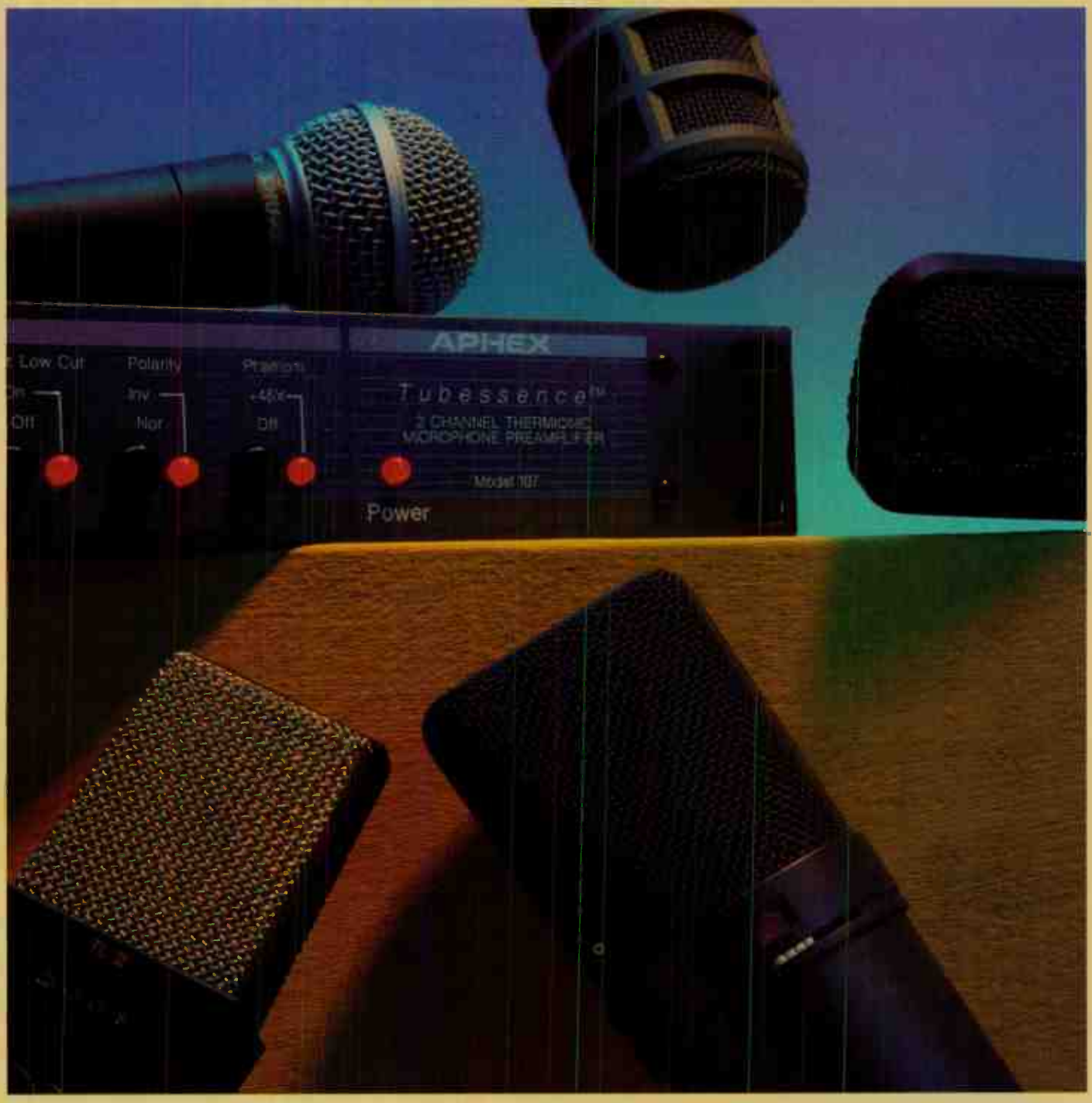
There's no tape allowed in this exclusively Otari RADAR project studio

STUDIO NAME: Damian F/X Studios
LOCATION: Glendale, California
PROJECTS RECORDED: Eyes, *Eyes, Windows of The Soul, November Mass/Full Moon; The Dance Box* (30 of today's hottest dance tracks); *The Watcher*, Paramount T.V. series; Larry Tagg, *With a Skeleton Crew; Mad Wax Vol. 1, The Black and the Brown Side* (projects for: Capitol, Pasha, Curb, Warner/Chappell, Intercord/EMI)
KEY CREW: Aldy Damian, owner; Cliff Zellman, engineer; Jeffers Dodge, engineer; Frank DeLuna, mastering engineer
CONSOLE: Allen & Heath GS3V 64-channel with full VCA and mute automation
KEYBOARDS: Roland JV-880 [2]
SAMPLERS: Roland S-750 with 10 MB of RAM, ddrum2 AT pro drum sampler
MONITORS: UREI 809 time align; custom Foster nearfields; Auratones
AMPLIFIERS: Roland 2400 main; Yamaha 2050 nearfield; SAE 400 monitor
COMPUTERS: IBM 486/66 DX Pentium; Cakewalk Pro; Cool Shoes Drummer; V-Edit direct to disk automation with total recall
RECORDERS: Otari RADAR direct-to-disk 24-channel recorder; 6 GB internal, Dynatek 8mm backup drive.
DAT MACHINES: Sony 55ES w/ SMPTE Lock
OUTBOARD GEAR: Yamaha SPX-900 and SPX90II [2]; Lexicon PCM 80; DigiTech 265XL; Symetrix 554 gates and 528 vocal preamp; dbx 166 and 266; SansAmp PSA-1
MICROPHONES: Neumann U47; Sennheiser 421 [5] and 409 [2]; AKG D112 [2]; Shure SM10, SM57, and SM58
ADDITIONAL: Auto time infrared security system with silent police dispatch.
STUDIO NOTES: Damian F/X is the first official beta test site for the Otari RADAR direct-to-disk digital recorder. The studio is totally isolated from the hustle and bustle of Los Angeles. It features a pool and jacuzzi high on top of Verdugo Hills with a panoramic view of the San Fernando Valley, as well as a 1200-square foot-drum room with 12-foot ceilings.
EQUIPMENT NOTES: Damian states: I love the RADAR. I record one song at a time and do multiple takes for overdubs that I store on one dedicated tape. I have an external Dynatek backup drive that I take out of the rack and dump it down through SCSI right to digital tape or right to computer. I also can take the RADAR and go direct to analog.

The Symetrix preamp is a beautiful piece of gear. I use it like a lunch-box item, routing the signal directly from the Neumann U47 to the input of the Otari RADAR unit for an unbelievable crisp, clear vocal. As for the A&H board, for the price and quality it is awesome. It's very quiet. It and the RADAR are the best investments I ever made.
PRODUCTION NOTES: Damian continues: Very Simple: Take your time and do it right the first time! Otherwise, I recommend having a straight signal path, print it hot, and write great songs. EQ

World Radio History

Upgrade all your microphones



Smooth and intimate, dimensional and detailed...is that the sound you're looking for? The Aphex 107 Tubessence® Thermionic Microphone Preamplifier reveals the subtlety and power in both vintage condensers and popular dynamic mics. Qualities that are lost on your console's mic preamp.
Tubessence, for the long journey from microphone to CD.

The Aphex Model 107, tube mic pre - two channels of Tubessence for $595.00 MSRP (U.S.).
Call or fax for a dealer near you.

CIRCLE 09 ON FREE INFO CARD

APHEX SYSTEMS

*Improving the way the world sounds*SM

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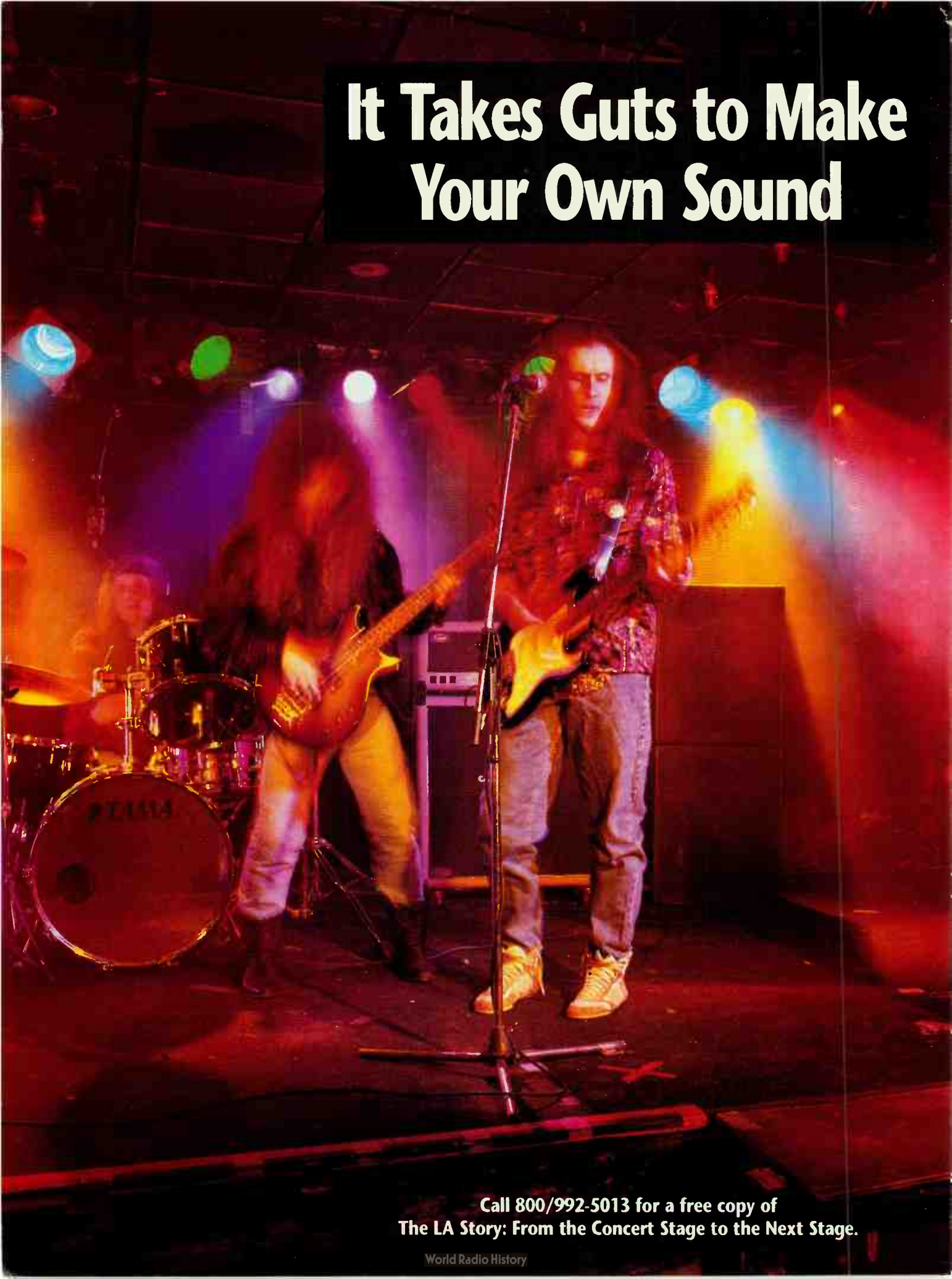


World Radio History

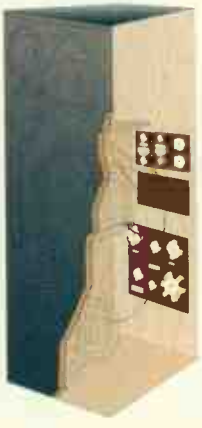
Welcome to LA

Linear Activation: The Next Stage In Sound Reinforcement

Linear Activation is an advanced approach to speaker design that draws on years of experience with professional touring systems. When you're ready to stand out from the crowd, the LA Series of Linear Activation loudspeaker systems is engineered to take you beyond the same old noise, to something no one else has ever really heard: your own sound.

Until now, the only place you could really hear the details that define your individual sound was the studio "sweet spot." The LA Series delivers studio monitor clarity to the entire audience. That's because the Linear Activation design process optimizes each LA Series system's total acoustic output to put high definition, high impact sound everywhere you want it. Simple idea. Took us over a year to make it a reality. These boxes have a new kind of guts inside - let us show you what they're made of.

The LA325's dual 6.5 in. cones are specially treated to dampen spurious resonances. We mount them in a line array subenclosure to direct acoustic energy away from ceilings and floors. This separate midrange system delivers the character of voices and instruments without the distortion that makes ordinary PA speakers sound harsh or "mushy."



Why is this crossover so complex that it took a computer program to help design it? Because integrating five high performance transducers into a single acoustical unit is not as simple as wiring up a couple of capacitors and inductors.

You've seen waveguides on high end studio nearfields, but no one has ever seen anything like this: our Elliptic Conical Waveguide™. It works with the LA325's 2-in exit compression driver (like the ones in our large touring systems) to project high definition upper octave detail in live sound nearfield applications (15 to 65 feet).

LA

Performance Audio Redefined

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CIRCLE 34 ON FREE INFO CARD

World Radio History

Use the Force

Sennheiser's ProForce series has its roots firmly planted in an old favorite

MICROPHONE NAME: Sennheiser MD 735
PRICE: $179
TYPE OF MIC: Dynamic
POLAR PATTERN: Supercardioid
FREQUENCY RESPONSE: 50–18,000 Hz
SENSITIVITY: (1 kHz) 2 mV/Pa
ELECTRICAL IMPEDANCE: 350 ohms
APPLICATIONS: Lead Vocals
MIC NOTES: The MD 735 is recommended for vocalists because it has a suspended capsule that is isolated to reduce handling noise. It is also comprised of a durable glass-composite housing and a NdFeB magnet structure that allows for a high output voltage.

MICROPHONE NAME: Sennheiser MD 504
PRICE: $169
TYPE OF MIC: Dynamic
POLAR PATTERN: Cardioid
FREQUENCY RESPONSE: 40–18,000 Hz
SENSITIVITY: (1 kHz) 1.8 mV/Pa
ELECTRICAL IMPEDANCE: 350 ohms
APPLICATIONS: Drums, guitar amps, horns
MIC NOTES: The compact MD 504 is small enough to fit in tight spaces, and is made up of a glass-composite housing to help it stand its ground against stray drum hits. Like the MD 735, the MD 504 also has a NdFeB magnet structure.

MIC NAME: Sennheiser ME 64/K6
PRICE: $495
TYPE OF MIC: Modular Condenser
POLAR PATTERN: Cardioid
FREQUENCY RESPONSE: 40–20,000 Hz
SENSITIVITY: (1 kHz) 30 mV/Pa
ELECTRICAL IMPEDANCE: 200 ohms
APPLICATIONS: Acoustic guitars, hi-hat cymbals, drum overheads, piano
MIC NOTES: The ME 64/K6 can either be operated by a AA battery (for 150 hours of use) or used with 12-48 volt phantom power. It includes a bass rolloff switch. A wide variety of ME Series capsules may be used with the K6 powering module.

MICROPHONE NAME: Sennheiser BF1051
PRICE: $795
TYPE OF MIC: Dynamic wireless
POLAR PATTERN: Supercardioid
FREQUENCY RESPONSE: 40–18,000 Hz
SENSITIVITY: Less than 5 µV for 100 dB S/N (receiver)
S/N RATIO: 116 dB(A) (receiver)
APPLICATIONS: Vocals
MIC NOTES: The BF1051 features a true-diversity receiver with a logic switch that continually monitors the field strength captured by two independent receiver sections and automatically chooses the one with the strongest signal. And the built-in voltage stabilizer

World Radio History

FIVE EASY PIECES: (From left to right) MD 421, BF1051, ME 64/K6, MD 735, and MD 504.

Photo by Ed Colver

keeps the performance constant for the life of the battery.

MICROPHONE NAME: Sennheiser MD 421
PRICE WHEN NEW: $485
YEAR RELEASED: 1960
TYPE OF MIC: Dynamic
POLAR PATTERN: Cardioid
FREQUENCY RESPONSE: 30–17,000 Hz
SENSITIVITY: (1 kHz) 2 mV/Pa ±3 dB
NOMINAL IMPEDANCE: 200 ohms
MIC NOTES: The most popular application for the MD 421 is probably on kick drum although this medium-size diaphragm mic can be found in use on spoken word, bass amplifiers, and toms. Experienced engineers will be familiar with the rotary switch that surrounds the XLR receptacle at the rear of the mic. This five-position switch, labeled "M" (music) at one end of its travel and "S" (speech) at the other is a gradual bass rolloff filter. EQ

World Radio History

THE COMPRESSOR LIMITER EXPANDER/GATE

The name that defines great compression!

A/B the sound with and without sidechain processing. No patching required.

OverEasy®-- the choice of top professionals for soft-knee compression.

12-segment gain reduction meter allows precision monitoring of compression.

Tells you when the zero-attack PeakStopPlus™ limiter is doing its thing.

Link both channels the best way with True RMS Power Summing— a very musical way to achieve stereo compression.

Flexible expander/gate works over a 70 dB range.

Monitor sidechain processing when setting up the unit.

Prevents low-frequency energy from punching holes in the sound.

Get that classic dbx sound by selecting program dependent attack and release times. or (see #18)

Monitor either input or output signals.

The illuminated switches are not only cool, but are easily seen in light or dark.

Internal power supply with easily replaceable power cord.

Easily accessible fuse — you'll probably never need to find out how easy.

Connect the unit hassle free using either unbalanced or balanced 1/4" TRS or balanced XLR connectors.

Ensure signal path integrity with gold plated locking Neutrik® XLR connectors.

Add processing to detector path for frequency-conscious compression/gating/special effects.

Save The Planet It's The Only Market We've Got.

World Radio History

THAT WILL TURN THE WORLD ON ITS EAR.

AGAIN.

Over/Under LED's let you know at a glance if you're expanding/gating.

3-segment OverEasy® indicator lets you know when that classic dbx compression starts happenin'.

Fully adjustable attack and release controls offer maximum flexibility. or (see #7)

Peak-reading meter allows easy setting of optimum input and output levels.

Vary the Ratio to select anywhere from gentle downward expansion to gating.

Detented controls and soft-touch knobs assure precision adjustments.

Adjusts from mild compression to ∞:1 limiting.

Add make-up gain or match levels over a 40 dB range.

Newly developed PeakStopPlus™ circuit intelligently tames signal peaks.

Add optional custom dbx output transformers manufactured by Jensen®.

Heavy-duty steel chassis will take years of road use and abuse.

Servo-balanced outputs drive up to +22dBu

Convert semi-pro -10dBV signals to the dbx 1066's professional +4dBu internal level.

Precision balanced inputs reject hum and noise in tough audio environments.

Separate sidechain send and returr jacks —no special "insert Y-cables" required.

You've seen and heard dbx signal processors for as long as you've been involved with audio. After all, our boxes are in daily use all over the world, with major touring companies, world class recording facilities, radio and television broadcast facilities and anywhere else audio professionals ply their trade.

Now, after over twenty years of pleasing the most finely tuned ears in the business, dbx has done it again with the new 1066. The dbx1066 will, of course, be the standard against which all compressor/limiter/gates are judged. State of the technology VCA's, meticulous component selection, and scrupulous testing procedures are just a few reasons the new dbx1066 is the latest in a long line of pedigreed signal processors.

So head on down to your local dbx dealer and audition this box. We're sure you'll see why the dbx1066 is destined to turn the world on its ear.

For more information contact us at:
(801) 568-7660
Fax (801) 568-7662
dbx 8760 S. Sandy Parkway, Sandy, UT 84070 USA or if you prefer surfing to snailing send e-mail to customer@dbxpro.com

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CIRCLE 27 ON FREE INFO CARD

World Radio History

"More Human Than Human"

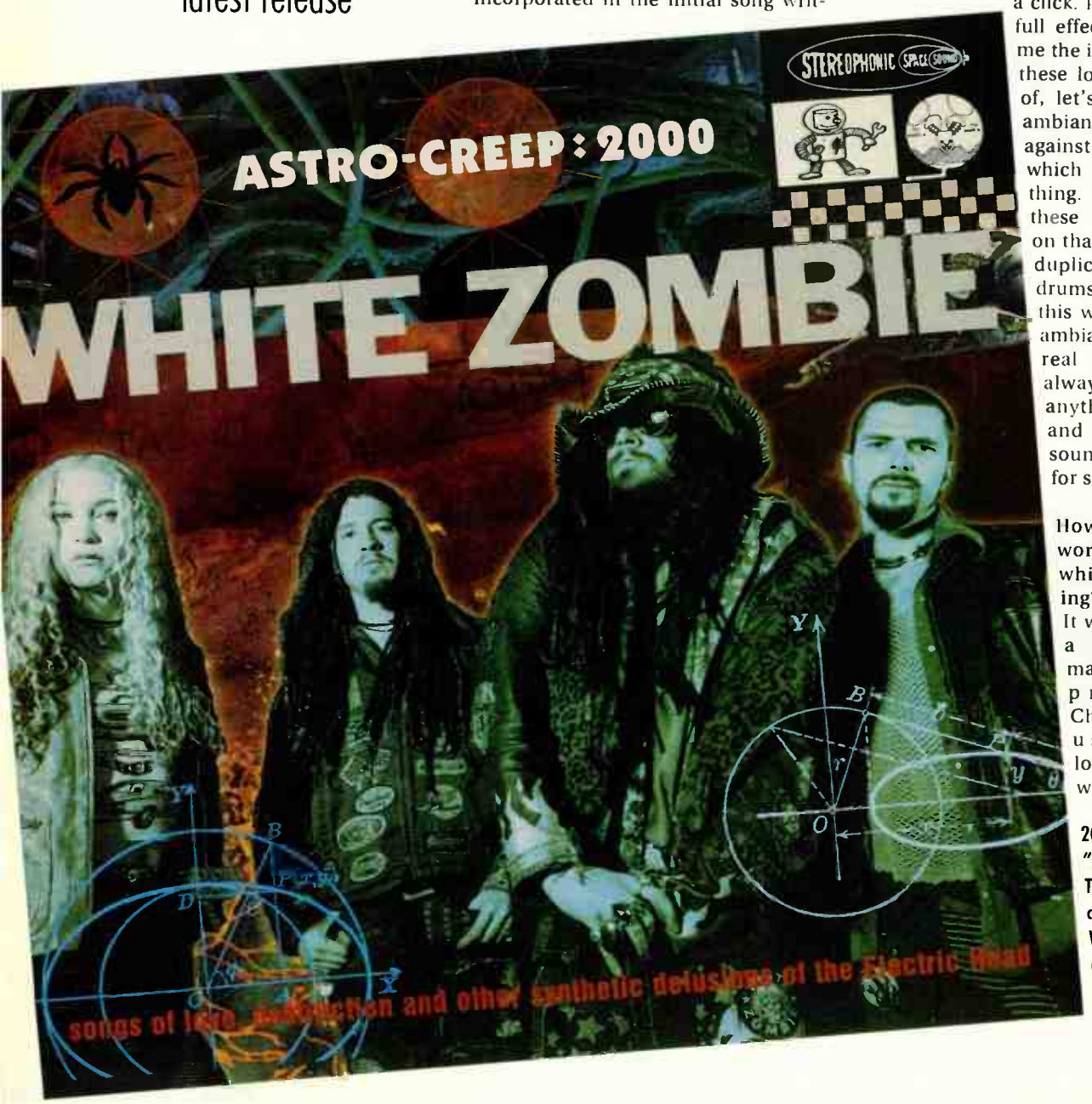
EQ speaks to producer/engineer Terry Date about White Zombie's latest release

EQ: In addition to the live band, there is a fair amount of sequenced material in this track. How did you go about combining the two?

Terry Date: All of the computer and keyboard work on this song was done by Charlie Clouser, who is now playing with Nine Inch Nails. When the band talked to me about incorporating some of the computer elements into this record, I thought of Charlie and he turned out to be great. The loops and synthesizer parts were really not incorporated in the initial song writing. The song pretty much started out with the band in rehearsal. Then when the basic format of the song was figured out, Charlie took [drummer] John Tempesta's actual drum parts and put them into his program. Charlie also programmed John's own little idiosynchracies and inflections. So this is not just a generic loop, it is based on what John actually played. We wanted to have something that John could play along with comfortably, and wouldn't be as restrictive as a click. It had a nice full effect and gave me the idea of using these loops instead of, let's say, room ambiance or reverb against the drums, which is a typical thing. If you have these loops going on that are almost duplicates of the drums, you create this weird sort of ambiance. John's real drums are always above anything else, and the other sounds are used for support.

How did you work this out while recording?

It was actually a fairly normal recording process. Charlie gave us these loops before we went to



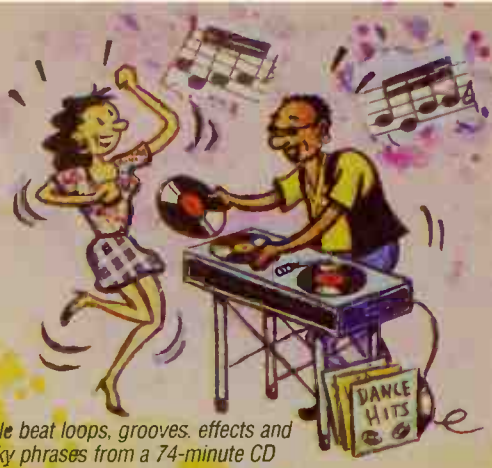
2000 MEN: "More Human Than Human" can be found on White Zombie's album, *Astro-Creep 2000.*

World Radio History

INSTRUCTIONS:

Buzz just bought a new Roland MS-1 Digital Sampler. Now he's dying to see how versatile his cool new purchase is. See how many ways you can get Buzz to work his MS-1 before he kicks back at home with his pal, Spot.

START



Sample beat loops, grooves, effects and funky phrases from a 74-minute CD that comes with every MS-1.

Play mondo drum sounds or any sound from a MIDI percussion controller.

Eight easy-to-use pads with multiple banks trigger sound effects instantly.

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the studio. We printed those on the multitrack and then we ran the tape with the loops out to the band. While they played the song they could hear the loops. They did a standard live-band-type of recording where they played the song and then J. [guitarist] and Sean [bassist] went back to fix things that needed to be fixed. One thing that we did on this record that I have been doing a lot of lately is we eliminated the headphones with the exception of when Tempesta did the drums — I couldn't really get away with floor monitors for him with all the mics around the drums. We had some special closed-ear 'phones made for John so he really didn't hear anything except what we pumped through the 'phones. But we used floor monitors for everyone else. We had the guitar and bass amps isolated, but the band had a full live-stage mix coming through the floor monitors. I was trying to make it as close to what they have live as I could get away with. I think it makes everybody feel better, especially vocalists. I don't think I have recorded vocals with headphones for two years. It has all been floor monitors, played incredibly loud — the way the singer is comfortable doing it live. Then of course we did some layering of the guitars as overdubs, basically doubling and tripling the main riff. I think the slide parts were all tripled just because it made more of a chaotic sound than a straight slide. It made things more unruly.

What about the eighth-note guitar part that enters in the chorus?

J. doubled and possibly tripled his guitar parts in the chorus. We arranged the song so that when we got to the chorus we could have room. We didn't want a big barrage of guitar through the whole song. We wanted it to be big in that one spot. I tend to do guitar-heavy records and this record was nice because we could pick our spots real carefully and give them impact that way. J. knew what he wanted to play and he knew what sound he wanted, which makes my job really easy from both a producer's and engineer's standpoint. My engineer, Ulrich Wild, was instrumental in getting a lot of the sounds for this song, so it was a combined effort. Sometimes I might turn the knobs, but generally Ulrich is the guy who keeps me from going off the deep end. There were a lot of more subtle guitar things that we threw in to fill gaps, similar to what some of the computer parts would do. But none of the guitars were played via computer — all of the guitars were played live by J.

You mentioned doing vocals with floor monitors...

I'll either record the vocals in the control room with the big monitors up really loud or I'll put floor monitors and a little mixer out in the room with the singer so he can adjust his own levels — I've been doing this for about two or three years now. Basically, it's a lot of stereo volume so that the singer doesn't have to wear headphones — it's as if he is listening to his stereo and singing along with it. I find that I get a way better performance and

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probably a lot worse sound. But I have learned to deal with the sound through heavy compression and very careful gating after the fact. On this song we compressed heavily, put some basic effects into the monitors, and tried to EQ as much feedback out of the monitors as we could. As a matter of a fact, on all of the records I have been doing this way if you listen — sometimes you don't have to listen too carefully — you'll hear feedback on the track. Part of this approach came about because I started getting really frustrated with guys who were used to singing live coming into the studio and then having to put on headphones, hold their hands to their ears, and sing into this big dental apparatus (one of these $3000 microphones). They are used to having a mic in their hand, against their mouth with their finger across the front of it or whatever they do live. That microphone in my opinion is their instrument. It is almost the same as telling a guitar player who has been playing the same guitar since he was eight years old, "Here I want you to play this guitar because it sounds better." The guitar player wants to play the one that's comfortable. It is the same kind of thing. It never made sense to me for them to sing differently in the studio from what they were normally doing live. What I give up in being technically correct I get back in a better performance.

Having said that, was Rob using a handheld mic?

Yes. The vocals were all overdubbed and we used a Shure SM58. That '58 was all I needed, and it was probably the most beat up one in the studio too. If it wasn't before we started then it was by the time we finished! It is a nightmare from a technical standpoint because you have leakage and feedback. If you are giving the singer any effects in the monitors then you have to worry about spill-over of those effects in case you don't want to use them later on. It's really not as easy as setting up an '87 and a headphone mix and saying "go for it." I personally will work any way the singer is most comfortable. Rob did the verses first and then went back to do the choruses. He felt he could concentrate better on what he was doing that way.

Steve La Cerra

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Wide Open Mixes

Some tested tips on getting the best mixes from your project studio

BY CRAIG ANDERTON

We know them when we hear them: wide, spacious mixes that sound larger than life and higher than fi. A great mix translates well over different systems and lets you hear each instrument clearly and distinctly. Yet, judging by a lot of project studio demos that pass across my desk, achieving the perfect mix is not easy...in fact, it's damn hard. So here are some tips on how to get that wide-open sound whenever you mix.

THE GEAR: KEEP IT CLEAN

Eliminate as many active stages as possible between source and recorder. Many times, devices set to "bypass" may not be adding any effect but are still in line, which can add some slight signal degradation. How many times do line-level signals go through preamps due to lazy engineering? If possible, send sounds directly into the recorder — bypass the mixer altogether. For mic signals, use an ultra-high quality outboard preamp and patch that directly into the recorder rather than use a mixer with its onboard preamps.

If you print with the highest possible fidelity, you can always play with the signal on mixdown if you want to mess with it. Although you may not hear much of a difference if you do the above when monitoring a single instrument, with multiple tracks the cumulative effect of stripping the signal path to its essentials can make a significant difference in the sound's clarity.

THE ARRANGEMENT

Before you even think about turning any knobs, scrutinize the arrangement. Solo-project arrangements are particularly prone to "clutter" because as you lay down the early tracks, there's a tendency to overplay in order to fill up all that empty space. As the arrangement progresses, there's not a lot of space left for overdubs.

Here are some suggestions when tracking:

• Once the arrangement is fleshed out, go back and recut tracks that you cut earlier on. Try to play these tracks as sparsely as possible to leave room for the overdubs you've added. I've found it very helpful to recut a song from scratch as soon as I've finished mixing it. Like many others, I write in the studio, and often the song will have a slightly tentative feel because of that. Recutting always seems to both simplify and improve the song; it's the project studio equivalent of road-testing a song, then going into the studio to cut the "real" version.

• Try building a song around the vocalist or other lead instrument instead of completing the rhythm section and then laying down the vocals. I often find it better to record simple "placemarkers" for the drums, bass, and rhythm guitar (or piano, or whatever), then immediately get to work cutting the best possible vocal. Then I go back and re-record the rhythm section. When you recut the rhythm section for real, you'll be a lot more sensitive to the vocal nuances.

• The previous tip is also a real good justification to use sequencers that include digital audio capabilities (StudioVision, Digital Performer, Cubase Audio, Logic Audio, etc.). Lay down the vocal before you get too heavily into sequencing, and your sequenced parts will be more sensitive to the vocals.

• As Sun Ra once said, "Space is the place." The less music you play, the more weight each note has. Or as Hector La Torre says, "It ain't the number of notes, it's the spaces in between..."

PROOFING THE TRACKS

Before mixing, listen to each track in isolation and check for switch clicks, glitches, pops, and the like, then kill them. I do this by bouncing digitally from ADAT to Sound Tools, then cleaning up the track before sending it

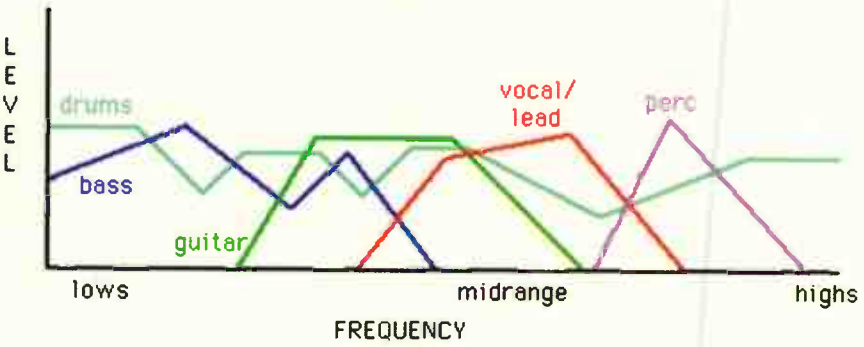

FIGURE 1: Different instruments sit in different portions of the spectrum (of course, this depends on lots of factors, and the above is only a rough approximation). Use EQ to distribute the energy from various instruments so that they use the full spectrum rather than bunch up in one specific range.

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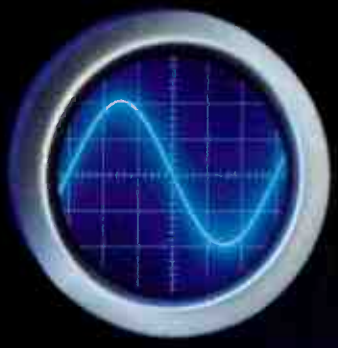

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back. These low-level glitches may not seem that audible, but multiply them by a couple dozen tracks and they can definitely muddy things up.

EQUALIZATION

The audio spectrum has only so much space, and you need to make sure that each sound occupies its own corner without fighting other parts. This is one of the jobs of EQ. For example, if a rhythm instrument interferes with a lead instrument, reduce the rhythm instrument's response in the part of the spectrum that overlaps the lead.

One common mistake I hear with tapes done by singer/songwriters is that they (naturally) feature themselves in the mix and worry about "details" like the drums later. However, since drums cover so much of the audio spectrum (from the low-frequency thud of the kick to the high-frequency sheen of the cymbals), and since drums tend to be so up-front in today's mixes, it's usually best to mix the drums first, then find "holes" in which you can place the other instruments. For example, if the kick drum is very prominent, it may not leave enough room for the bass. So boost the bass at around 800 to 1000 Hz to bring up some of the pick noise and brightness. This is mostly out of the range of the kick drum, so the two won't interfere as much.

Try to think of the song as a spectrum, and decide where you want the various parts to sit, as well as their prominence (see fig. 1). I often use a spectrum analyzer when mixing — not because your ears don't work well enough for the task — but because it provides invaluable ear training and shows exactly which instruments take up which parts of the audio spectrum. This can often alert you to a buildup of level in a particular region.

If you really need a sound to "break through" a mix, try a little bit of boost in the 1 to 3 kHz region. Just don't do this with all the instruments; the idea is to use boosts and cuts to differentiate one instrument from another.

To place a sound further back in the mix, sometimes engaging the low-pass filter will do the job by "dulling" the sound somewhat — you may not even need to switch in the main EQ. Also, using the high-pass filter on instruments that veer toward the bass range, like guitar and piano, can help trim their low end to open up more space for the all-important bass and kick drum.

COMPRESSION

When looking for the biggest mix, compression can actually make things sound smaller (but louder) by squeezing the dynamic range. If you're going to use compression, try applying compression on a per-channel basis rather than on the entire mix. Devices like the Ensoniq DP/4 (which can do four compressors simultaneously), Symetrix 488, and ART MDM-3L can help in this respect. Compression is a whole other subject (check out my December column in *Keyboard* magazine for an overview), but suffice it to say that many people have a tendency to compress until they can "hear the effect." You want to avoid this; use the minimum amount of compression necessary needed to tame unruly dynamic range.

If you do end up compressing the

continued on page 156

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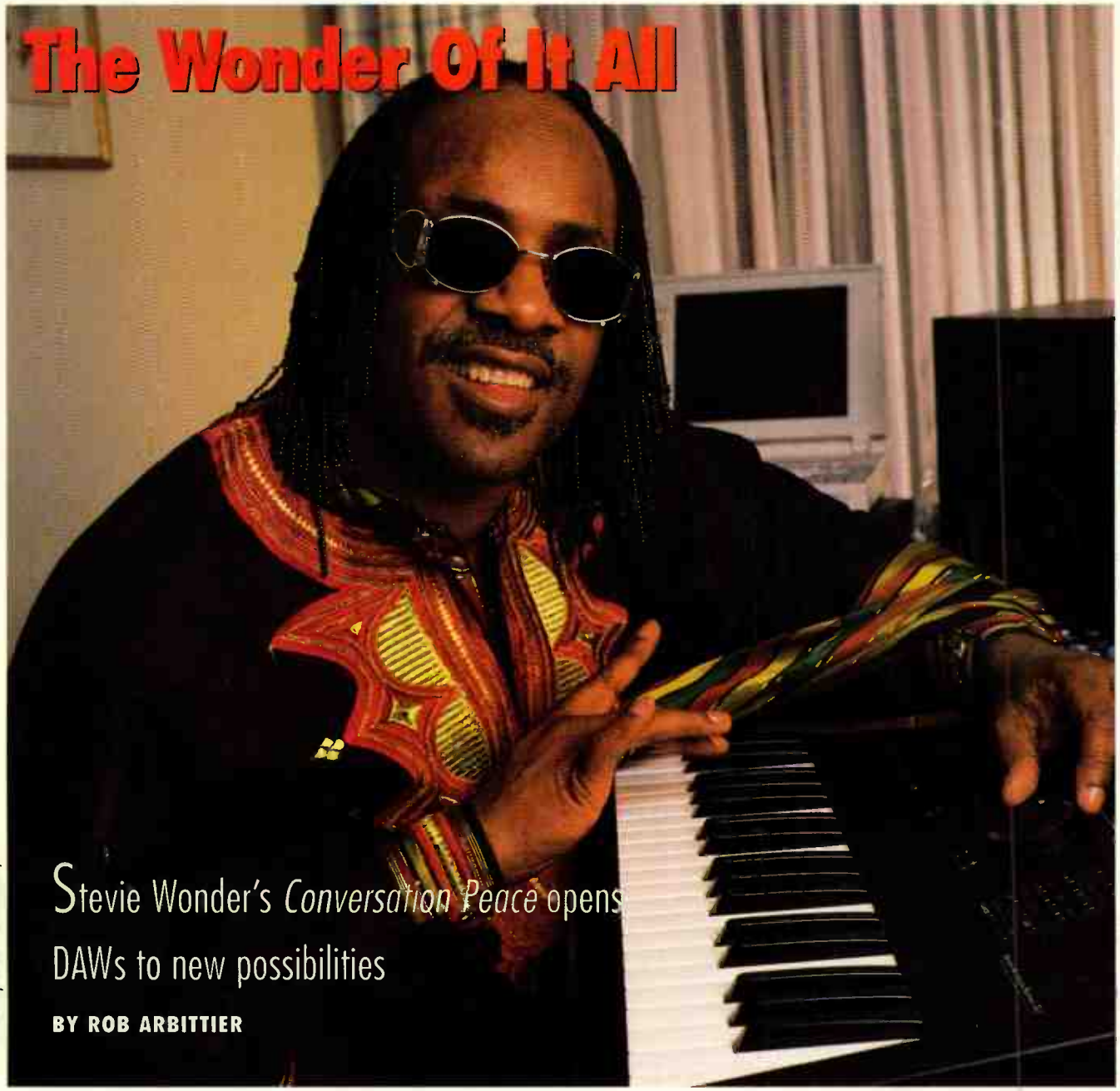

Photo by Matt Mendelsohn/LGI

Stevie Wonder's *Conversation Peace* opens DAWs to new possibilities

BY ROB ARBITTIER

I've worked with Stevie since 1985 as a programmer/synthesist. I met him when I was in a band in Philly that he was going to produce an album for. I ended up heading out to L.A. with them to meet him and get to know him, and later ended up working for him full time in 1987 on his album *Characters*. He had been using drum machines and early MIDI synthesizers, but was not doing any sequencing on a personal computer. I had been using IBM PCs since they first came out, and had written a lot of software for the PC. I was using the PC in my studio with a very basic sequencer that I had developed myself.

After I moved to L.A. to meet Stevie, he left on tour in 1986. I ended up getting bored and booked a plane ticket to New York and showed up at his hotel room at the Plaza Hotel with a computer saying, "Hey Stevie, remember me? I'm Rob with the band Myx that you're producing and here's this computer that I think you're going to really love so why don't you check it out?" I basically only had enough money for a one-way ticket and one night at the Plaza. I went there hoping

Rob Arbittier is a producer/composer and partner, along with Gary Adante, of the L.A.-based production company Noisy Neighbors, which does scoring for commercials and television programs, including national commercial work for ABC and CBS, Coca-Cola, Acura, Ford, and Anheuser-Busch, as well as album production work. Arbittier has spent most of a decade as the electronic guru behind several Stevie Wonder records. Wonder's most recent recording, Conversation Peace, *reveals how digital audio workstations are transitioning from the post world back into music production.*

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Photo courtesy Lisa Stansfield's Gracieland Studio, Rochdale, UK.
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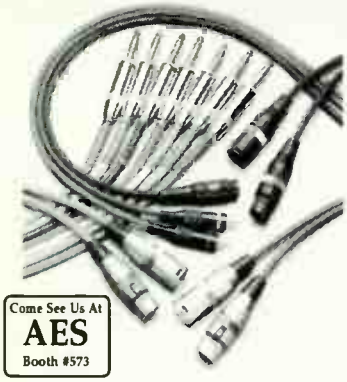

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NOISE MAKER: Rob Arbittier sits at his studio, which includes TimeLine's DAW and Yamaha ProMix 01's.

he was going to love the computer approach to music production and pay for a hotel for me and my way back to L.A. Otherwise I was just going to go back to Philadelphia where I'm originally from. But he ended up loving the whole concept of sequencing into a computer and I finished the whole tour with him. I've remained involved with Stevie quite a bit since then.

STRIKING UP CONVERSATION

For this record, most of my involvement ended up being what I'd call delicate audio surgery on tracks that needed some repair, and that's where the TimeLine system came in.

On one of the tracks on the album, called "Taboo To Love," Stevie composed and sequenced a bunch of stuff on Cubase sequencing software for Windows, which he then had transcribed and recorded at Wonderland, his private studio in L.A., using a medium-sized live orchestra. They recorded it against a metronome, but the orchestra's timing is never as precise as a computer's. So when we tried to put the synthesizer tracks against the orchestral tracks, they didn't always line up perfectly — with a human conductor, things will feel a little more human.

We transferred the orchestra tracks from tape (both Sony and Mitsubishi digital multitracks) into Stevie's TimeLine Studioframe system running the latest TimeLine 6.0 software, essentially making it the same as a new TimeLine DAW-80. The TimeLine was chosen because, although Stevie's is an 8-track system, you can do editing across as many tracks as you need to. We ended up with approximately 26 individual tracks of live performance information, some in stereo and some in mono. (This and all other hard-disk recording was done at the 48 kHz sampling rate.) Then that was all brought in sync into the Studioframe so that the timecode within the workstation matched the master tape. That meant that when the repairs were done, it could easily be laid back to the master tape.

We didn't want the orchestra to sound sterile and computerized, and we didn't want the sequenced stuff to sound totally sloppy in parts, so we loosened up the timing of the sequence a little bit to get it closer to what the orchestra was playing. But at times the orchestra would be laying back a little too much or pushing ahead of the beat too much, and then I'd bring the timing of the orchestra back to match the sequence. It was like hand-quantizing the live audio. We did it on that song and on a few other songs that have choirs and background vocals.

I want to emphasize that we didn't take the orchestra and try to make it computer-perfect; this was still a live orchestral performance and the changes we did were very subtle. But it did make it possible for the synthesizers and the live players to come together and made it sound as though they had been on the same session together.

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MULTIPLE UNDO

The Studioframe was mainly used as an audio scalpel on this album, and it was a good one because a lot of times we were not manipulating one or two tracks at a time; often I would have to do edits that covered 16 to 24 tracks. Another reason I chose the Studioframe is because an artist like Stevie will want to try something many different ways before making a decision. With the Studioframe having unlimited levels of Undo functionality, I could be trying really crazy edits knowing that we could always get back to where we were.

For instance, we would often double or triple or quadruple a vocal performance, either by having them sing it over and over or by moving a performance to the left channel and delaying it a little bit and throw it to the right channel to add some thickness. On the title track, the background vocals of the choir was a group called The Sounds Of Blackness — a big choir, but Stevie kept saying, "Let's see how much bigger we can get it to sound." So we would take a performance by Sounds of Blackness, take the left channel, delay it, and put it on the right side. Then we'd take the right channel, delay it a different amount, and put it on the left side in order to hear what it would sound like. Then Stevie'd say, "Let's hear what it would sound like if you quadrupled it." So I would redouble the double that I had just created to hear what that sounded like.

Now when you do this too many times, it starts to sound unnatural and you hear weird phasing and things like that, so that was one example where we'd go back and forth between the number of doubles that we were creating. I remember getting it up to the point where we had it up to six doubles and him finally saying, "O.K., that's too much." I backed it down to two times and he said it's too little; then I would rebump it up to four times and A/B between different versions. You have nondestructive editing throughout this and you can undo and redo as many steps as you need to. And you could, at any point in the process, lock down a version of what you've been working on and move on and do more editing, always knowing you can go back to that previous version.

Another use of a DAW in music production was the real-time time expansion and compression capability of the Studioframe. At the end of the album, as it fades, you can hear voices saying, "conversation, conversation peace." It's Stevie's family doing these voices, which he recorded over the telephone because they were all in different locations and he often had to reach them at weird hours. Rather than use an ISDN patch, we recorded over the phone straight to a Sony MiniDisc recorder plugged into the phone. He wanted the telephone effect, and it ended up sounding really cool.

"Conversation, conversation peace" had to be said with a certain rhythm to fit in with the song, but the performances Stevie got over the phone had the words but little in the way of rhythmic feel. What I did was take their performances into the Studioframe and cut the individual syllables apart on the ones that needed help. Then I sped up and slowed down each syllable using the time-fit algorithm so that I could rebuild the

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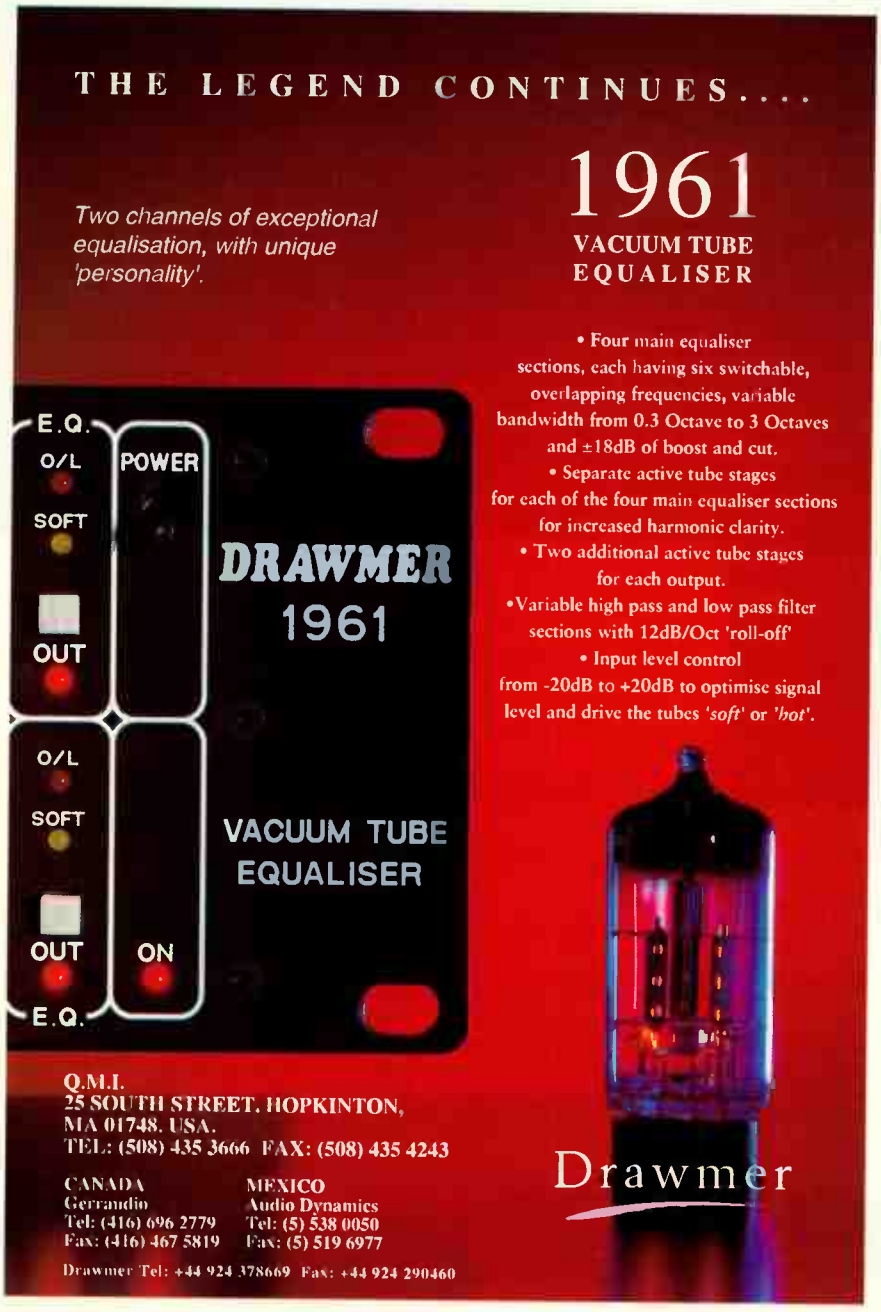

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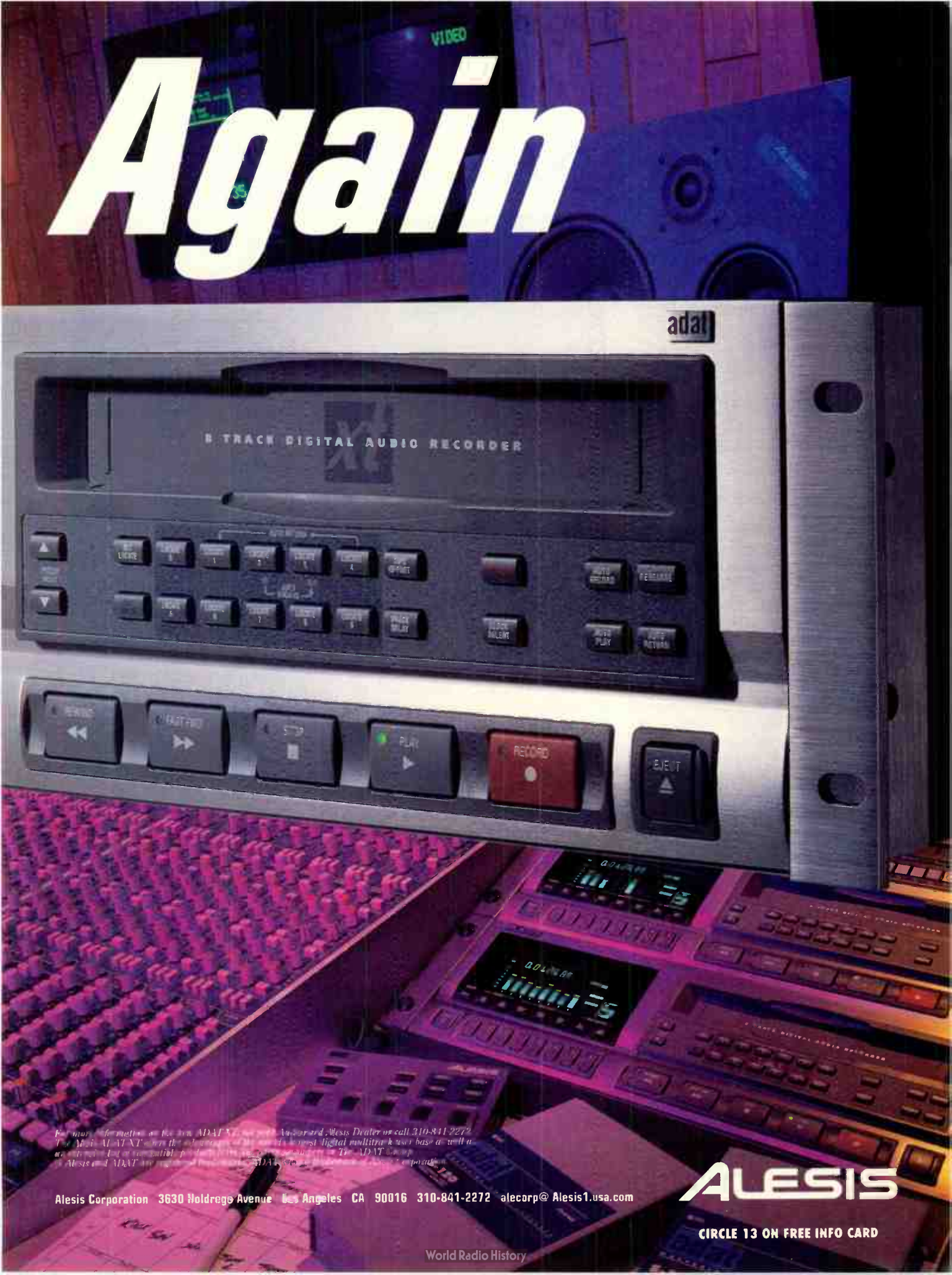

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Jook Who's Talking

Francis Buckley reveals what went on behind the scenes of Quincy Jones's *Q's Jook Joint*

BY MICHAEL GELFAND

Photo by Ed Colver

KEEPING UP WITH JONES: Francis Buckley used his Spectral DAW to manage the Quincy Jones project.

"My resume definitely went from moderate to quite lengthy on one record," says Francis Buckley, reflecting on his role as chief supervising engineer on Quincy Jones's soon to be released (Nov. 7) *Q's Jook Joint* [Qwest Records]. "We had Ray Charles, Stevie Wonder, Bono, Phil Collins, Gloria Estefan, Shaquille O'Neal, Tone Loc, Queen Latifah, Herbie Hancock, Barry White, Babyface...it was just an incredible list of people, just about everybody you can imagine."

Buckley, whose resume also includes work with Alanis Morissette, Wilson Philips, Paula Abdul, The Pointer Sisters, and Curtis Stigers, signed onto the project initially for a four-day stint to cut the basic tracks. "Quincy was going to do a live big-band record, and I was going to cut 15 tracks in four days." As it turned out, Buckley wound up working on the project for seven-and-a-half months.

"On the first day I came down, Quincy and I sat and talked about what the project was all about. We started working, and by the end of that day we had cut maybe one-and-a-half songs, and I realized then that the project was going to take a little longer than four days. I called Jolie [Levine, the project coordinator] and told her that if Quincy needed me, I'd clear my calendar for the next week, and it just kind of went like that for seven-and-a-half months."

According to Buckley, one of the best aspects of working with Quincy Jones, other than the obvious high of simply working with *Quincy Jones*, was his respect for everyone else's professionalism. "Quincy doesn't tell you how to do your job or what to do. He just expects you to do whatever is necessary to get the results he's looking for," he explains. "There was one point where we had cut one song that we all really liked, but Quincy wanted to rearrange it. Everybody wanted to know how we were going to do it, but I told them that I had it all in my Spectral digital editor. But then Quincy said we needed to do more than just cut it, and that we needed to put the same vocals over different sections of music. But since I had it all on separate tracks, it was easy.

"Quincy was quite amazed at how I was able to do it," reflects Buckley. "We were able to go through it and do a lot of experimenting to decide how things should go, without the expense of having to sit there cutting the tape or doing bounces.

"The way I typically used the Spectral was that at the end of the week, Quincy would want mixes so that he could analyze what we had on tape. So I would dump the tracks into the editor in my typical fashion and then if he wanted to hear something a little different, I could do it.

"Quincy likes to get a basic idea on tape to see how it works out," says Buckley. "The basic idea of the song should always be there, but as to the form of the song, we had two or three songs where the band came in and cut the tracks only for Quincy to come in three days later to say that he liked the song but wanted to change the format. We would recut the chorus and put it in a different spot, double the B-section, or take the B-section out completely. That's where the Spectral equipment really came in handy. Instead of me calling up all of the individual tapes, I was able to call up the music on its own two tracks.

"There was a lot of information to work with, which would have taken a lot of time if we were doing things normally. But instead of calculating offsets and moving all these things around, I could just do it in the editor. It was definitely an asset, because the things we tried that didn't work on the editor would have meant that we'd have to spend just as much time undoing if it had been done on tape." Buckley says that most of the basic tracks were cut on analog SR, with all of the overdubs being done on ADAT. By the

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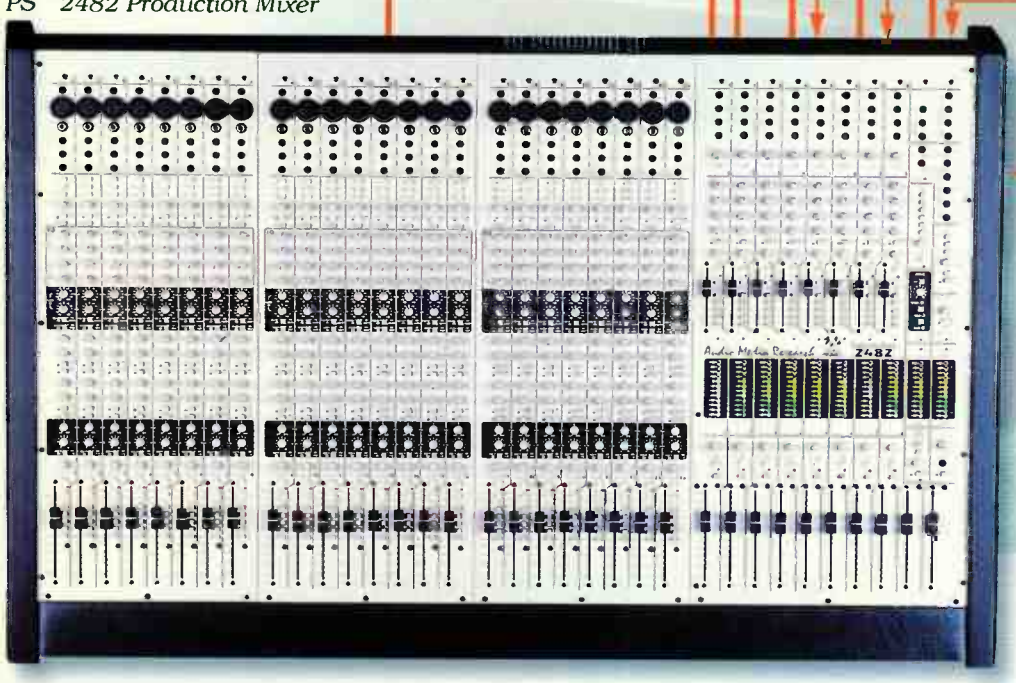

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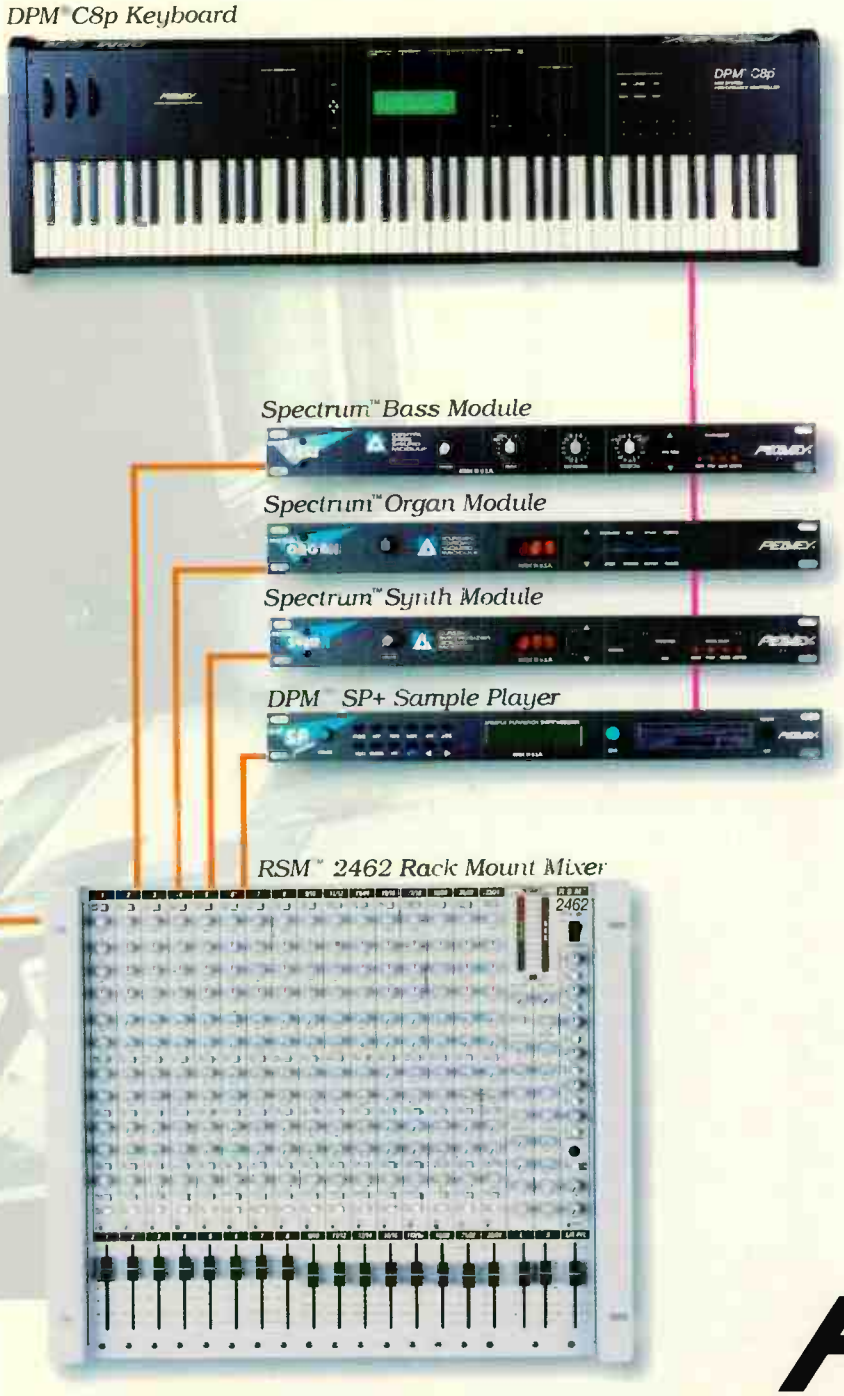

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end, about 75 percent of the album was done on ADAT.

WANTED: A $10,000 RAZOR BLADE

"There was a time back in 1992 when I was constantly getting into situations where we needed to do digital editing, and it always seemed I would go someplace where they didn't really know how to work the gear," says Buckley. "It would take me five hours to do a half hour's worth of work, and it would always be so frustrating because I knew that if I had the gear and knew how to run it, ten minutes would be all that I'd need.

"I finally said, 'I need to have one of these tools,' so I went out and did a lot of research." Research for Buckley meant testing out every digital editor on the market. "When I started looking for the right one, all I was really interested in was a $10,000 razor blade. I didn't care if it made your breakfast and did your laundry." His criteria was to dump a mix down from DAT into the editor, and then back out again. He'd then compare the two tapes to hear if there were any changes occurring. "What I usually found was that there was a little high-end difference, or a little openness. Spectral was the only one I used where I didn't hear a difference. It didn't alter the sound on its way back out."

Buckley still uses the same basic Spectral system, which employs a 486 PC with 8 MB RAM and a stereo A/D converter. His only addition was two 1-GB removable drives and an internal 680 MB drive, which gives him 32 minutes on 16 tracks inside the box. "I just purchased Spectral's Translator, which allows me to dump eight tracks digitally to and from my ADAT along the optical connection," he says. "The Translator has been a real boon to me because when I'd finish products in the past, I'd have to dump them down. Now I can take eight tracks and dump them optically, locked to video, over onto the

continued on page 156

YOU GOT THE RIGHT ONE, BABY!

"It seemed as though every day there'd be someone new coming in to lay down a track," says Francis Buckley, recalling his seven-and-a half month journey through the recording of *Q's Jook Joint* with Quincy Jones. Luminaries like Stevie Wonder, Barry White, and Herbie Hancock dropping by to lay down tracks was a regular occurrence, says Buckley, "and we even did a bunch of stuff on the EdNet — including Phil Collins from Zurich, Switzerland, Chaka Khan from London, and Gloria Estefan from Miami. But one of my favorite moments was working in the studio with Ray Charles, because I've been a huge fan of his since I was a kid.

"Ray's been around a long time, and he has his way of doing things," says Buckley. "So one day, Ray just walked into the studio and sat down in front of the mic, but he didn't make a sound." The mic was on, and Buckley, who began to grow nervous, waited for Quincy to break the ice by saying "Let's roll some tape."

"Ray just sat there, not saying a word. So I went in and repositioned the mic, thinking it might prompt Ray to start singing a bit when Ray reached up toward me. His hand grabbed at the mic, and then he asked if he was holding a windscreen, which he was. Ray pushed it away, saying, 'That's only for people who don't know how to sing.'

"He just kept sitting there quietly, until he screamed out, 'Engineer, do you have a sound yet?' Fortunately, I'd done enough vocal sessions to know what would be considered average vocal settings for my limiters and mic preamps. Ray sang the third verse of the song, "Let The Good Times Roll," and his version is the one and only take that he sang.

"Luckily we had a U47 on him, and he just belted it out. And then he was gone. That quick, that good. What he did in 15 minutes was more than most musicians could do in a day, because he's just the real thing.

"It will be a long time before something can top this one," says Buckley. "My assistant at Westlake had just been promoted to assistant from being a runner, and when we finished, I told her that I felt sorry for her, because it was going to be all down hill from then on. It was definitely the project of a lifetime."

—Michael Gelfand

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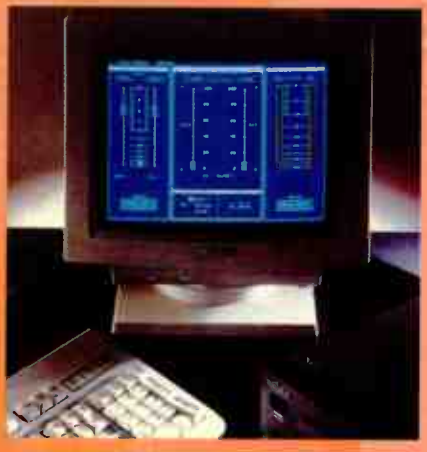

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96 EVIEW

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Eight independent, full-featured channels of gating are what you get from the ART Pro Gate. This digitally controlled analog device is housed in a steel and aluminum 2U chassis. The front panel controls of the Pro Gate are laid out in traditional analog form. Users have complete control over each channel's HP/LP key filter, threshold, attack, release, hold time, and range. Each group of eight channels may be stored as scenes and downloaded or uploaded from internal memory locations or through MIDI. Balanced 1/4-inch TRS inputs/outputs, an independent relay bypass per channel, and real-time MIDI control are just some of the features that the Pro Gate includes. For more information, contact ART, 215 Tremont St., Rochester, NY 14608. Tel: 716-436-2720. Circle EQ free lit. #105.

COOL CARD

New from Lexicon is the Dual FX card, which adds 25 new algorithms and 250 new presets to Lexicon's PCM-80 effects processor. The card plugs into the unit's front-panel PCMCIA card slot. The 25 new algorithms in the card each offer two independent effects blocks, including five types of stereo reverb and five types of stereo multieffects. The Dual FX Algorithms feature the full set of modulation and patching features introduced with the PCM-80. A new range of capabilities such as stereo reverb into stereo effects and vice-versa, reverb and effects in parallel, dual mono-in/stereo-out processing, and independent processing of two mono signals are also included on the card. For more information, contact Lexicon, 100 Beaver St., Waltham, MA 02154-8441. Tel: 617-736-0300. Circle EQ free lit. #106.

COLORFUL CORDS

Belden Wire & Cable Company got colorful this year with its plastic-jacketed cord products. Called PowerBrite, these highly visible colors are initially being offered in neon-like shades of pink, green, and yellow. The new jacket colors are suitable particularly for broadcast or rack-mounted applications where a number of power cords are utilized in the same area, or where limited work space makes the identification or classification of cables difficult. The new jacket colors can be ordered with two new series of shorter length, detachable power cords (in both shielded and unshielded versions). The shielded and unshielded versions are available in lengths that range from 12 to 36 inches. For more details, contact Belden Wire & Cable Co., Cord Products Division, 11611 North Meridian, Suite #300, Carmel, IN 46032. Tel: 800-246-CORD. Circle EQ free lit. #107.

World Radio History

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UNIFICATION

With the number of digital formats found in today's recording studios, Anatek has designed the SR-7, a digital audio conversion product. The SR-7 is housed in a single-rack-space chassis, and performs sample-rate conversion. Supported formats are AES/EBU, optical, and S/PDIF with a choice of output sample rates from 32, 44.1, and 48 kHz with resolution to 20 bits. Using an external sync source connected to the dedicated sync input, any sample rate between 25 and 55 kHz is possible. A variety of I/O connectors including XLR, RCA and optical ensure compatibility with a variety of digital audio devices. Retail price is $599. For details, contact Anatek, 3938 N. Fraser Way, Burnaby, B.C., V5J-5H6. Tel: 604-430-4336. Circle EQ free lit. #108.

THE QUAD SQUAD

If you want to achieve maximum flexibility with a signal processor, check out DigiTech's new Studio Quad. Offering four completely independent inputs and outputs, and driven by DigiTech's proprietary S-DISC technology, the Studio Quad is capable of providing a wide number of combinations of effects and signal paths. Featured on the front panel is a new easy-to-use interface and large custom display to provide control over the Studio Quad. DigiTech provides features such as automatic input leveling, real-time dynamic parameters modifiers, full MIDI implementation, and multifunction effect modules. There are 128 preset factory programs with room for 128 additional user-defined settings. All input and output connectors are 1/4-inch balanced TRS. Analog-to-digital conversion is accomplished in stereo at 44.1 kHz using 18-bit, 128x oversampling. For more details, contact DigiTech, 8760 South Sandy Parkway, Sandy, UT 84070. Tel: 801-566-8800. Circle EQ free lit. #109.

GIVE ME AN "S"

Akai has introduced three samplers into its new S-Series. Included in the series are the S2000 and the second-generation S3000XL and S3200XL, which are based on the Akai 32-voice S3000 LSI. The S2000 ($1195) is a two-rack-space unit with 2 x 16 character LCD display, stereo outputs, and a standard 25-pin SCSI port. The optional Multi-8/D board adds eight assignable outputs plus S/PDIF digital I/O for $299. The S3000XL ($1995) is a two-rack-space unit incorporating all the features of the S3000, as well as the ability to utilize SIMM RAM, SampleVerb effects processing, and flash ROM storage. The S3200XL ($2595) is a three-rack-space unit that has been re-engineered to allow the same expansion capabilities as the S3000, along with the back-to-back dual LSI processing power of the S3200. For more information, contact Akai, 1316 E. Lancaster Rd., Ft. Worth, TX 76102. Tel: 817-336-5114. Circle EQ free lit. #110.

EXPRESS YOURSELF

The Model 661 Tube Expressor from Aphex is a single-channel compressor/limiter. Three compression curves are offered: hard knee, soft knee, and no knee. Automatic (Easyrider) or manual (Expressor) operation is easy to select via the unit's front panel. The Model 661 features Aphex's patented TUBESSENCE tube circuitry in a one-rack-space unit. The patented High Frequency Expander (HFX) allows higher compression ratios and automatically decompresses high frequencies up to a maximum of 6 dB with user-adjustable ratio and corner frequency. Users can adjust the bass frequencies without adding any bass level boost by using the Model 661's Spectral Phase Reflector. Switchable link modes include stereo link, master/slave link, and unlink. Sidechain access is provided on the back panel. The Advanced Servo-Balanced input circuit absorbs high voltages and maintains headroom, while the Advanced Servo-Balanced output is short-circuit proof. The Model 661's output is switchable between -10 dB or +4 dB, with a bargraph output level meter on the front panel. For details, contact Aphex, 11068 Randall St., Sun Valley, CA 91352. Tel: 818-767-2929. Circle EQ free lit. #111.

World Radio History

IN BRIEF

Even more cool products that you should know about from AES

•**Nady Systems** (Tel: 510-652-2411) introduced the ENG-11 VHF and ENG-12 UHF, two snap on wireless transmitters. Both are designed with compact, black-metal housings that attach to any mic with an XLR connector. They each are powered by a single 9-volt battery.

•**SADiE Inc.** (Tel: 615-327-1140) has a new version of its original SADiE software. SADiE3 features multitasking, waveform and scrub editing in the playlist, unlimited virtual tracks, clip-based automation, real-time EQ, and more.

• Putting new meaning to the term, "Hit the deck," was **OSC** (Tel: 415-252-0460). The company has added new effects and more tracks to its popular Deck II sound recording and editing program. Deck II Version 2.5's effects are in real-time and are in-line nondestructive. Other new features include built-in destructive effects, Adobe Premiere-compatible plug-in architecture, enhanced playback track capacity, PowerBook 500 compatibility, and more.

•**Harman Pro North America** (Tel: 818-830-8278) had a ton of gear on display. Equipment from AKG, BSS, JBL, and Soundcraft were all available for viewing. On hand was the BSS DPR-901 II, the second generation of the DPR-901. The unit is designed for adding density and definition to instruments, voice, and programs. A 4-band parametric EQ feeds discrete compressor/expander sections, and there are also dual inputs for split band operation. JBL displayed the 6208 biamped nearfield monitor, while Soundcraft was busy talking up its DC2020 surround-sound console.

• Ride easy with **Aphex**'s (Tel: 818-767-2929) Model 108 Easyrider two-channel auto compressor. Aphex's new unit sports an exclusive feature — a rotary speed control that allows users to tailor layered time constants. Cool for achieving warm and realistic sound. Another Aphex exclusive feature, the patented Wave Dependent Compressor circuitry, adjusts attack and release times according to the texture of the input. Maintaining true Aphex sound quality is the 1001 VCA. The Model 108 can be used on the road and in the studio.

• Sounds like **Eventide** (Tel: 201-641-1200) is putting together even more sounds for its popular DSP4000 Ultra-Harmonizer. The new internal sampler card made for the DSP4000 will be available in 22-, 87-, and 174-second versions (11, 43.5, and 87 seconds in stereo) that can be combined within virtually any preset. Audio samples and edit parameter values can be downloaded to the PCMCIA card for removable storage. Several samples can be stacked and independently edited, pitch shifted, and/or time compressed or expanded. The internal sampler allows full, on-the-fly digital Timesqueeze time compression/expansion.

• **Peavey**'s (Tel: 601-483-5365) CEQ 280 programmable 1/3 octave equalizer with built-in RTA is now shipping, and feedback will no longer be able to hide from us. The CEQ 280 will soon be incorporating the Automatic Feedback Locating System, or FLS. The Q 431F graphic EQ is the first to incorporate it. The FLS consists of LED lights located above EQ sliders that indicate where the feedback is. Lights stay lit for five seconds when intermittent feedback occurs.

• It was a no-holds-barred showing for **Furman** (Tel: 415-927-1225). The esteemed manufacturer brought everything with them to AES except for the kitchen sink. Here's a briefing (though not so brief!) on the new gear that was there: the AR-1230, a 30-amp AC Line Voltage Regulator that features power conditioning similar to that of the PRO Series; the IT-1220, a 20-amp rack mount toroidal isolation transformer which provides balanced AC power; the MiniPort, a 20-amp duplex outlet and relay; the RS-1, a standard wall-mount plate which provides a key switch and LED indicator.

•**3M** (Tel: 612-737-4218) has professional extended-play DAT cassettes that provide additional record time for each product. The DAT cassettes will be available in 16, 34, 48, 64, 94, and 120 minutes. 3M also introduced Digital Audio Cassette Headcleaners, the ASD HC Head Cleaning Cassette, and an AHD HC Head Cleaning Cassette. The ASD HC carries the ADAT logo and is recommended by Alesis. The AHD HC is for D8-format recorders, such as the TASCAM DA-88 and Sony PCM-800. 3M's magnetic-based head cleaning system uses no liquids.

• **Bag End** (Tel: 708-382-4550) debuted the 1995 edition of the deluxe "Studio A" studio monitor system, which consists of the following components: the MM-8 nearfield monitors, the D10E-S subwoofer cabinets, the ever-popular ELF-1 dual integrator, and the optional SST-1 studio stands. You can still purchase these items independently, or you can put together your very own Bag End "Studio A."

• Digital audio master cassettes from **Sony** (Tel: 201-930-6981) were a welcome introduction. The DARS-116 is the first metal evaporated tape for use in 8 mm D8-format recorders, and has an extended recording time of 116 minutes. The DASV-40 sets a new standard for ADAT format modular digital multitracks and is 19 microns thick.

• If you're into the MiniDisc technology, **TASCAM** (Tel: 213-726-0303) introduced two new MD units. The MD-801R is the record-capable version, while the MD-801P is the playback-only version. Both models include features such as quick-locate capability, repeat playback, move, insert, combine, divide, title, and more.

•**ART** (Tel: 716-436-2720) announced the revival of the Power Plant studio guitar preamp and showcased its Tube MP preamp, the newest addition to the Personal Processor Series of effects, and its MDM-8L eight-channel limiter.

• With **Roland**'s (Tel: 213-685-5141) new DIF-800 Digital Interface, the DM-800 can talk to a variety of other digital devices including tape-based recording systems and video editing machines. The DIF-800 affords instant communication between the DM-800 and an ADAT, DA-88, or Sony PCM-800.

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ROCKIN' RENKUS

The new Renkus-Heinz CE64T, CE94T, and CE125T full-range CoEntrant loudspeakers are based on the company's CE-3T speakers. These 60° x 40°, 90° x 40°, and 120° x 50° (respectively) versions of this cabinet are designed for fixed installations. The CEMH64-2, CEMH94-2, and CELF94-2 Mid/High + Low CoEntrant loudspeakers offer a cost-efficient alternative to the Renkus-Heinz CEMH64-3 and 94-3 models. The transition between the two horns in the CEMH64-2 and 94-2 cabinets allow the dual 6.5-inch drivers and the 12-inch woofer to operate in parallel for optimum high level, wide performance. The CELF94-2 low-frequency enclosure reaches way down to 60 Hz. For further details, contact Renkus-Heinz, 17191 Armstrong Ave., Irvine, CA 92714. Tel: 714-250-0166. Circle EQ free lit. #112.

GET IN THE MIX

Rane's MP 22 mixer/preamp is the little brother to the MP 24, and is designed for DJ use, though it can be used for other applications as well. The MP 22 features six stereo inputs on two mixing busses, each with four band stereo EQ, allowing separate equalization for different sources. The crossfader is front-panel replaceable, and each of the two phono inputs can be switched to CD use. The main mic input has tone controls and an effects loop. Retail price is $899. For more details, contact Rane, 10802-47th Ave. West, Mukilteo, WA 98275-5098. Tel: 206-355-6000. Circle EQ free lit. #113.

POINT OF REFERENCE

Studio Reference 1 & 2 power amplifiers from Crown have been designed for studio usage. The new Studio Reference amplifiers boast a low-frequency damping factor. Total Harmonic Distortion is less than 0.05% to full bandwidth power 20–20,000 Hz, while intermodulation distortion won't top 0.025% from a few milliwatts to full-rated power. For more information, contact Crown, 1718 Mishawaka Rd., Elkhart, IN 46517. Tel: 219-294-8000. Circle EQ free lit. #114.

You're a Musician. Your Language is Music and BBE is Your Essential New Tool!

You speak through your instruments and your songs. No ordinary words can convey all the complexities, the joy, the pain, the ideals and the dreams. Only your music can do that. But how does the music you hear in your head fight its way through a morass of electronics to reach the ears of your audience without losing some of your meaning? ***BBE IS THE ANSWER!***

BBE is your indispensable companion in the recording studio, the club and concert stage. BBE reveals the richness of your texture, the nuances, the subtleties, the inner meanings in your music. Your artistic presence is more vivid–the colors in your sound more vibrant. The crystalline clarity of your music is triumphantly unveiled!

World Radio History

LIGHT ENOUGH 4.0 YOU

QSC has expanded its PowerLight series of amplifiers with the PowerLight 4.0. It is the largest and most powerful amplifier of the series delivering 1400 watts per channel into 4 ohms, and 2000 watts into 2 ohms in a three-rack-space chassis that weighs less than 30 lbs. The audio circuitry of the 4.0 is based on QSC's other PowerLight amps. It features a three-step output and draws less than 14 amps during normal 4-ohm operation. A 115 kHz switching frequency eliminates AC hum and reduces noise to −105 dB, unweighted. Other features include detented calibrated gain controls, Neutrik "combo" connectors for XLR and 1/4-inch inputs, LED indicators, and a stereo/parallel/bridge switch. For information, contact QSC, 1675 MacArthur Blvd., Costa Mesa, CA 92626. Tel: 714-754-6175. Circle EQ free lit. #115.

BUILDING BRICKS

A digitally controlled analog custom console called Console Bricks is introduced by Crookwood. The console is completely modular, and can be configured to exact customer requirements. The circuitry is mounted on Eurocards contained in a 19-inch cardframe. This cardframe also contains a power supply and a processor card, which controls the analog functions of the Console Brick. There are no controls on this cardframe, just audio inputs/outputs, and a serial control port linking the rack to the control surface. For more information, contact Crookwood, The Old Police House, Station Hill, Cookham, Berkshire, SL6 9BS, England. Tel: 44-1628-528-026. Circle EQ free lit. #116.

WRIGHTEOUS CONSOLE

Ramsa has introduced new models in its WR-C4500 series consoles, including the 12-channel WR-C4512 (8 mono/4 stereo inputs) and the 24-channel WR-C4520 (16 mono/4 stereo inputs) models. Each 4-bus model offers an additional left and right output, 4 x 8 matrix, and 4 aux sends with an additional channel direct output. A 12-segment/3-color VU meter and LED bargraph monitors signal status. In addition, the consoles feature a wide-input range with over 20-dB headroom and a separate grounding system for minimum crosstalk. For more details, contact Ramsa, 6550 Katella Ave., Cypress, CA 90630. Tel: 714-373-7277. Circle EQ free lit. #117.

"Increases intelligibility, restores harmonics, and improves clarity . . . recaptures the natural sparkle and punch . . . "
Mix Magazine

Wherever There is Music and Sound, BBE Plays A Vital Role:

Electric and Acoustic Guitars have sparkle, clarity, and definition. BBE brings out the harmonic complexity and bite–significantly increases cutting power.

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Percussion The snap of the drums, the ping and sizzle of the cymbals never sounded so real as with BBE.

Stage and Club Sound systems are wondrously improved with BBE. Discos leap into life. The vitality, presence, texture and realism of the performance shines through.

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DUDE, LOOKS LIKE A NADY

Nady Systems, known for its wireless technology, introduces the WQ-4000 IFB system. The WQ-4000 system consists of a rack-mountable, modular base station transmitter that can be ordered with one-to-four channels and up to four miniature two-channel wireless receivers. Additional receivers may be purchased as any number can operate with the base transmitter. Each of the channels installed in the crystal-controlled base station transmitter can be configured in various ways for balanced and unbalanced audio input. The base station front panel features two color LED audio level bargraphs, an LED transmit indicator, and audio volume control for each channel. The compatible Nady WQ4R receiver is compact, comes in a metal case, and features two switchable channels. For details, contact Nady Systems, 6701 Bay Street, Emeryville, CA 94608. Tel: 510-652-2411. Circle EQ free lit. #118.

LISTEN TO THE BANDS

The Peavey CEX 5 digital crossover/EQ with limiters utilizes the processing power of multiple Motorola 56002 digital signal processors. Each unit comes with five bands of parametric EQ on each input and three bands of parametric EQ on each of the four outputs for a total of 22 bands of parametric EQ. The crossover has selectable filters and slopes with a choice of using asymmetrical Linkwitz-Riley, Butterworth, and Bessel filters with variable slopes of 6, 12, 18, 24, or 48 dB per octave. The front control panel provides LED level indicators for inputs and outputs. The CEX is flexible in that it accepts both analog and digital I/O, and is MediaMatrix compatible. This means that the CEX 5 can be used in addition to a mainframe for distributive processing, I/O, and communication, while in an expanded "stand-alone" mode, it can provide a complete digital audio system for small jobs. With a laptop connected to the unit's rear RS-232 port, a MediaMatrix .PAV file can be downloaded to create a complete sound system. For more information, contact Peavey, 711 A Street, Meridian, MS 39325. Tel: 601-483-5365. Circle EQ free lit. #119.

ADD SOME JOY TO YOUR CONSOLE

Penny & Giles latest joystick provides automated panning control for surround-sound applications, enabling the programmable movement of spot effects. The joystick features a dual-axis design with a touch-sensitive finger grip, which performs the same function as the touch-sense facility on a conventional motorized fader. This allows users to overwrite previously programmed movements swiftly and easily. The new Penny & Giles joystick has been designed for use primarily in postproduction facilities. For more information, contact Penny & Giles, Santa Monica, CA 90405. Tel: 310-393-0014. Circle EQ free lit. #120.

KNOW THE CODEC

MPR Teltech Ltd. has introduced Capella LIVE, the first real-time PC audio codec. The Capella is capable of real-time transmission up to 384 kbps and offers all sampling rates, balanced and unbalanced analog audio interfaces, AES/EBU and SPDIF digital audio interfaces, RS530/V.35/X.21 connectors, and implementation of ISO/MPEG Layer II audio compression. Capella also allows for real-time record to and from hard-disk recorders. Optional editing and call control software is available. Upcoming new features include MPEG to .WAV transcoding, direct dialing from the PC, MCI drivers, and improvements in the MPEG implementation. For information, contact MPR Teltech Ltd., 8999 Nelson Way, Burnaby, BC, Canada, V5A 4B5. Tel: 604-294-1471. Circle EQ free lit. #121.

INFRA TREAT

Bag End's newest subwoofer, the ELF-P18 INFRA-sub, is the company's first self-powered subwoofer. It features a low-frequency response that reaches down to 8 Hz in a three cubic-foot enclosure. The system will accept left, right, and center signal inputs, combine them to drive the built-in ELF integrator and 400-watt power amp, and provide an adjustable three-channel, high-pass, line-level output for the front monitor speakers. The power amplifier and 18-inch ELF driver have been optimized for high output and low distortion. The INFRA-sub can be used in film postproduction, mastering labs, and recording studios. For more information, contact Bag End, P.O. Box 488, Barrington, IL 60011. Tel: 708-382-4550. Circle EQ free lit. #122.

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3M DIGITAL AUDIO

Do your ears have a vision?

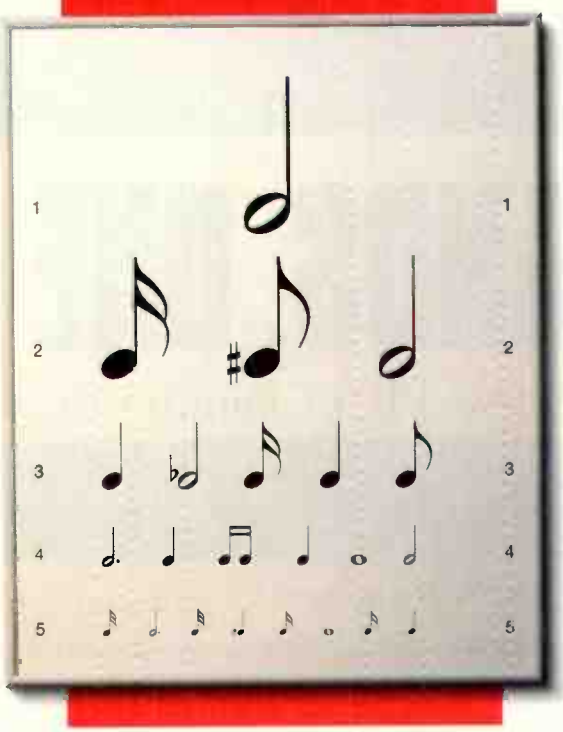
In the audio industry, success depends upon vision. It's vision that gives our ears not just the ability to hear, but to create. It's what makes an innovator an innovator and others mere spectators.

A few years back, 3M had a vision. We set out to produce the fullest line of digital recording media for audio professionals. The result can be summed up in two words: mission accomplished.

First, there's 3M™ 275LE – an open-reel, digital tape which delivers clear, clean sound for the most critical music mastering. Next in line are 3M ASD (for studios that want to hear unparalleled sound from their ADAT® recorders) and 3M AHD (for incomparable sound from audio Hi-8 recorders). Where others might stop, our list keeps going with 3M DAT, 3M Audio U-matic Digital (AUD), and for professionals who are after the latest in digital recording, there's 3M CD-Recordable and Magneto-Optical Disks. Finally, 3M 8mm and 4mm Data Tapes are perfect for back-up and archiving.

3M Digital Audio Media

Our analog tapes have built a reputation for performance and reliability. Our digital line lives up to that high standard in every respect. So it comes as no surprise that 3M digital audio recording products have consistently low error rates throughout.



Picasso had his paint and canvas. Shakespeare had his pen and paper. You have your ears and 3M Digital Audio. So what's your vision? For more information on our full line of professional digital audio products call 1-800-752-0732.

3M *Reliability*

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GET CONNECTED

The UNI-BNC connector for digital audio has been engineered with an all-metal, fully shielded cover. A heavy duty cable clamp provides secure strain and pull relief. It attaches to any diameter cable from the most miniature up to size RG/59. The interlocking parts are made for longevity — a gold-plated center pin, threaded metal cover with high-tech matte finish that offers RFI protection, and solder cup. For details, contact Marshall Electronics, P.O. Box 2027, Culver City, CA 90231. Tel: 310-390-6608. Circle EQ free lit. #123.

ABSOLUTELY AMEK

Amek makes its presence known with two new product introductions: the VTX automation package and the Rembrandt console. The VTX automation package allows remote operation of popular effects processing and control devices via MIDI. The program runs within Amek's Supertrue, Supermove, and Showtime automation systems and provides a screen-based computer graphics control template for each device. The Rembrandt console replaces Amek's Einstein console, but maintains a similar architecture. For more information, contact Amek, 1001 E. Burbank Blvd., North Hollywood, CA 91501. Tel: 818-508-9788. Circle EQ free lit. #124.

DISC JOCKEYS

Marantz has introduced the PMD320 and the PMD321 CD players. The PMD320 features a fader start that allows broadcast installations to start CD playback by raising console faders. Tempo pitch can be adjusted by ±12 percent for aerobics/dance applications, mobile DJs, karaoke, and vocal soundtrack applications. One-bit high oversampling D/A converters ensure exceptional sonic performance. The unit fits into two 19-inch rack spaces without modification or additional hardware. An RC-5 control bus on the rear panel makes the unit compatible with major remote control systems. The PMD321 includes all of the above features, plus +4 dBu balanced XLR outputs and a cue-to-audio feature for DJ and broadcast use. The retail price for the Marantz PMD320 and the PMD321 will be $429 and $529, respectively. For more information, contact Superscope Technologies, Inc., P.O. Box 2066, 1000 Carpenter Blvd., Suite D, Aurora, IL 60504. Tel: 708-820-4800. Circle EQ free lit. #125.

FIVE BANDS, ONE COVER

Introducing the new PE 17 Parametric Equalizer/Notch

The Quietest Bands On Tour. The PE 17 boasts noise and dynamic range performance surpassing 20-bit digital audio quality! With both input and output level controls you can always achieve maximum headroom with minimum noise.

Clean Up Your Room. With each of 5 bands able to access the entire audio spectrum, you can aim as many guns at feedback or sweetening as the situation demands. And with a bandwidth range from 1/30 to 2 octaves there is not much that can get by the PE 17.

Handles Rejection Well. With two extra filters for high and low shelving, you can tune out entire trouble areas of the rumble and squeak variety.

"Is That All?" The typical response to learning the price of all this quality.

Rane performance, Rane value. The unbeatable combination.

PURITY BY DESIGN

RANE

PE 17 PARAMETRIC EQUALIZER/NOTCH FILTER

RANE CORPORATION 10802-47th Ave.W., Mukilteo, WA 98275 (206) 355-6000 Fax (206) 347-7757

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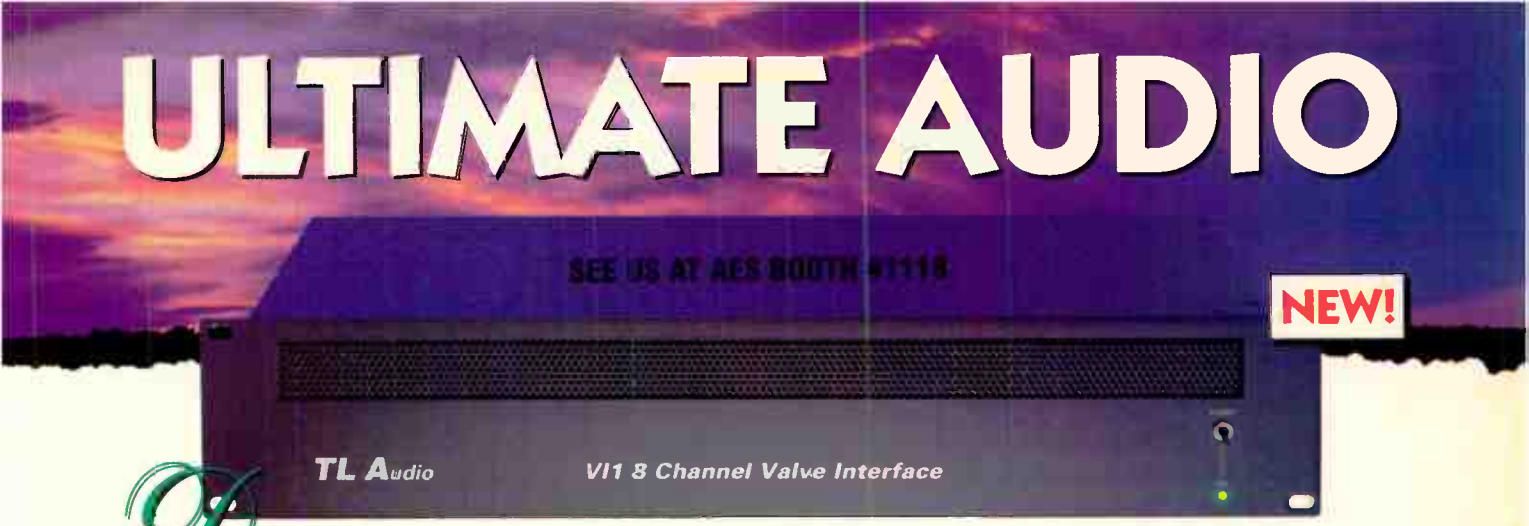
ULTIMATE AUDIO



Digital is great isn't it? Superb quality and ultra clean. We've come to expect all this and more from today's sophisticated multitracks. However in amongst all this high fidelity there's often the feeling that there's something missing and as a result recordings can sound cold - sterile even.

No longer. Now you can add all the warmth you need with the new TL Audio VI-1 Tube Interface.

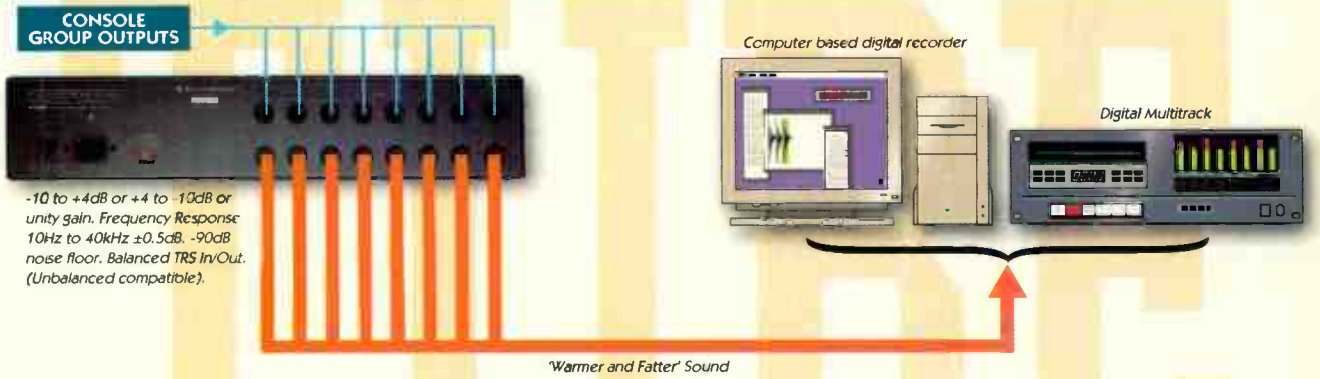
Ian Silvester from Digital Audio Technology, London agrees:

"I first tested the TL Audio VI-1 in conjunction with a Yamaha AD8X A-D convertor and a Sony 3324 digital multitrack. - I was so impressed with the warmth and smooth bottom end that the unit added to the recording that I have ordered a VI-1 for our in-house studio and for our hire stock."

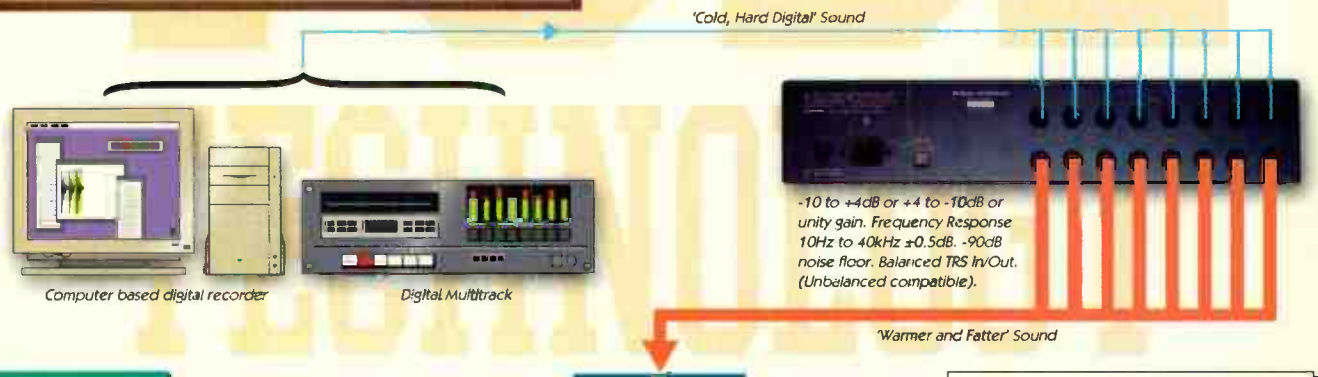
Coming from him that's quite an endorsement.

And one which we're sure you'll agree with when you hear what a VI-1 can do for you at your local TL Audio dealer.

'WARMER & FATTER' TRACKING



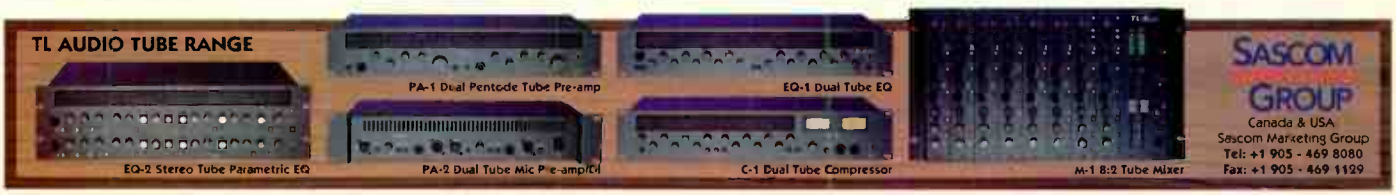
'WARMER & FATTER' MIXING



TL Audio

Also available TL Audio VI-S Record/Playback switching unit with channel bypass facility.

Worldwide Distribution & UK Sales: **Tony Larking Professional Sales Ltd.** Letchworth, SG6 1AN (UK). **Tel: +44 (0)1462 490600 Fax: +44 (0)1462 490700**



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EQ 1996 PREVIEW

LIFE IS A (DIGITAL FIBER OPTIC) HIGHWAY

LSI (Lightwave System, Inc.) known for its Fibox, has gone further in its pursuit to deliver audio with its new Fibox DATI-SL and DATO-SL DATA transmitter and receiver modules. The DATI-SL and DATO-SL are two slave modules that provide an interface capable of moving unidirectional control signals through Fibox's digital fiber-optic transmission systems. Each system requires at least one set of master modules, because the DATA modules operate in slave mode only. Signals that may be input or I/O to the data modules include RS232, RS422, RS485, MIDI, SMPTE, and switch closures. For more information, contact LSI, 900 Jackson St., Suite 700, Dallas, TX 75202. Tel: 214-741-5142. Circle EQ free lit. #126.

NEW & IMPROVED

For owners of the PORTADAT PDR-1000 portable DAT recorder, you will be happy to know HHB has announced that PDR-1000 owners will be able to upgrade their machines to a PDR-1000TC industry standard specification, equipping them to record, generate, and reference timecode in all existing international standards. The upgrade is available for $3995. For more details, contact HHB Communications, distributed in the U.S. by Independent Audio, 295 Forest Ave., Suite 121, Portland, ME 04101-2000. Tel: 207-773-2424. Circle EQ free lit. #127.

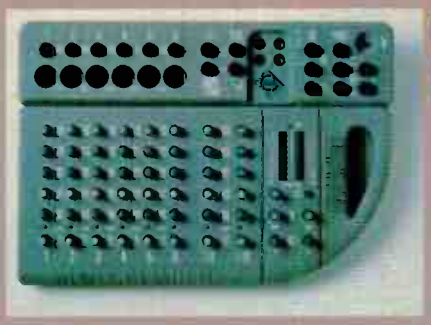
DEAL WITH DIABLO

Hafler's newest amp is called the P-7000 Trans•nova D.I.A.B.L.O. Hafler's amplifier is sporting new circuitry that works on a variable-gain current-steering principle in its driver system that results in linear current headroom of 20 dB or more — much different than the common 6 dB of headroom. Hafler achieves this by combining the linearity of a Class A system and the power characteristics of a Class AB system. The Trans•nova is designed for live sound, but can also be used in the studio. It delivers 375 watts per channel at 8 ohms, 525 watts per channel at 4 ohms, and 1050 watts bridged mono at 8 ohms. For more information, contact Hafler, 546 S. Rockford Dr., Tempe, AZ 85281. Tel: 800-366-1619. Circle EQ free lit. #128.

HOW SUITE IT IS

The D/ESAM 200 digital edit suite audio mixer is the latest addition to the Graham-Patten Systems family of edit suite mixers. The 200 features eight inputs and routing to four digital and analog outputs for full compatibility with current-generation VTRs. Sample-rate converters handle nonsynchronous sources, such as CD players and R-DAT machines operating at sample rates between 29 kHz and 54 kHz. Additional inputs are available via plug-in modules to provide a total of 16 digital and/or analog input channels. Other features include Graham-Patten System's award-winning Virtual Machine concept, a total of 12 long-throw input faders, 4-channel metering and monitoring, user-assignable VU/PPM meter ballistics with peak indicators, and analog monitoring outputs. For more information, contact Graham-Patten Systems, P.O. Box 1960, Grass Valley, CA 95945. Tel: 800-422-6662. Circle EQ free lit. #129.

World Radio History



TAKE IT WITH YOU

GeneralMusic Corporation proves good things come in small, and we do mean small (3.3 lbs.) packages with its PickPad compact mixer. The PickPad's small size and compact design make it most suitable for desktop computer music applications and multimedia presentations. PickPad's six mono and two stereo channels, up to 14 inputs on 7 outputs, overload peak LED, and 12-part LED stereo bargraphs provide are just some of the offered features. Each mono channel features a dual input (line and mic) with phone jack and XLR connectors, gain control, equalizer (high and low), aux send, pan control, peak LED, and rotary fader. Retail price is $399. For more information, contact GeneralMusic, 1164 Tower Lane, Bensenville, IL 60106. Tel: 708-766-8281. Circle EQ free lit. #130.

GET IN CONTROL

Do you need control over audio and video transports, digital workstations, film dubbers, MIDI devices, and peripheral studio products? If so, you should check out the Adams-Smith SuperController/Machine Controller. This new system provides complete remote control over the aforementioned devices, and is designed for ease-of-use, with software-only upgrades via floppy disk or modem. The SuperController/Machine Controller features multiple interface formats and protocols to compensate for all the nonstandard device interfaces in today's editing and storage products. For details, contact Adams-Smith, 34 Tower Street, Hudson, MA 01749. Tel: 508-562-3801. Circle EQ free lit. #131.

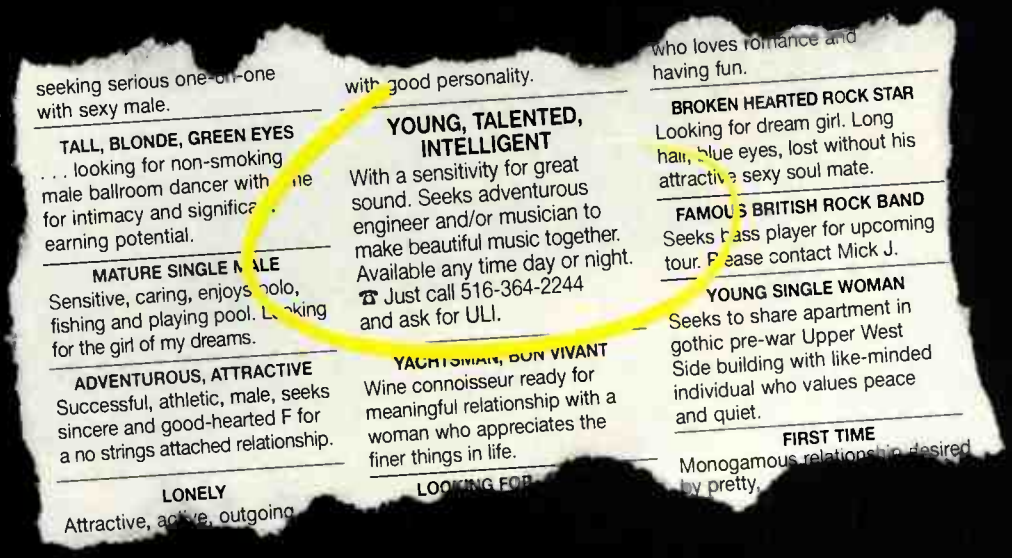
A LITTLE SKETCHY

It's portable, it's analog, and it's from Fostex. The XR-3 multitrack recorder/mixer serves as the "sketchpad" for today's musician. So even if you're away from the studio, the XR-3 can capture and record ideas quickly without having to set up a whole myriad of gear. The Auto Bounce feature gives XR-3 users the ability to bounce down previously recorded tracks or combine them into an open track, just by rotating a dial. And because the logic-controlled circuitry for bouncing down is built into the recorder, users don't have to fuss with pin jacks or switches. Also, there are no buttons to press when doing all of this bouncing, so the risk of pressing a wrong button and losing your idea is eliminated. Retail price is $419. For more information, contact Fostex, 15431 Blackburn Ave., Norwalk, CA 90650. Tel: 310-921-1112. Circle EQ free lit. #132.

HAVE YOU HEARD

The SADiE Mobile, from **Studio Audio** (Tel: 6 5-327-1140) makes hard-disk field recording a reality. The digital SADiE Mobile has been designed to work exclusively with SADiE Hard Disk Editing Systems...**Nady** (Tel: 510-652-2411) said, "Stick it in your ear!" to AES attendees. Its SEM-6000 VHF and SEM-7000 UHF wireless ear monitors did just that, while **AKG** (Tel: 818-895-3426) said, "Hang with us!" Or rather with its new hanging condenser microphones, the C947CM and the C921CM...**Cedar Audio** (dist. by Independent Audio, Tel: 207-773-2424) introduced a new processor board, the ProDSP/R-20. It is compatible with Cedar's new Auto De-Hiss software, which is compatible with the Cedar DH-1...**Symetrix** (Tel: 206-787-3222) showed its 488 DYNA-Squeeze and its 620 20-bit A/D converter...**Sennheiser** (Tel: 203-434-9190) showed off its SZI 1029 infrared emitter panel and the SI29-5 multichannel infrared modulator...**PreSonus** (Tel: 504 344-7887) gave our wallets some welcome relief with the announcement that the PreSonus DCP-8 dynamics processor carries a new retail price of $999 — $500 less than the original price. This is very cool. **JRF Magnetic Sciences** (Tel: 201-579-5773) introduced a 2-inch, 8-track head conversion package for Studer A-800 multitracks. The record and play heads each have eight 200 mil-wide audio tracks, and a fourth head places an 18 mil timecode track aligned between audio tracks four and five. The conversion package includes all the necessary electronics for the time code track...Gobs of fun was the **Middle Atlantic** (Tel: 201-839-1011) Gob Stop. It's a mic pop filter made of a double nylon screen designed to keep you popless and to keep airborne particles from landing on your mic. The Gob Stop is equipped with a slimline gooseneck and all necessary mounting hardware...**Bag End** (Tel: 708-382-4550) has its first time-aligned loudspeaker system called Sapphire ST-2. It's a high-output PA featuring a 1 5-inch high-compression driver and a 12-inch high-efficiency cone driver. The system comes with built-in flying hardware and a wedge shape for flying in arrays, as well as being angle cut for floor monitor applications...**TASCAM** (Tel: 213-726-0303) has begun shipping the 302 double auto-reverse cassette deck and the DA-20 DAT recorder. Reserve your rack spaces now...**GML** (Tel: 818-781-1022) released its latest advance for its automation systems. The GML/Macintosh interface attaches any late-model Mac to a new VME Motorola 68040 in the GML computer via a high-speed Ethernet link. This means that system speed and the graphic interface are greatly enhanced...**beyerdynamic** (Tel: 516-293 3200) showed its U 600 UHF true-diversity wireless system, DT 200 headset, and MCE 83 cardioid condenser mic, while **Korg** (Tel: 516-333-9100) showed off its hip Trinity and Prophecy keyboards.

World Radio History



BEHRINGER

THE PERFECT EAR

If you want *all* the personal details about these and the 13 other processors in the dynamically expanding Behringer line, please call (516) 364-2244 or fax (516) 364-3888 and ask for Behringer Sales.
Or write us for a Behringer product brochure at
Samson Technologies Corp., P.O. Box 9031, Syosset, NY 11791-9031.

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COMPOSER World-class Interactive Compressor/Expander/Peak Limiter for the most critical applications. High-end audio performance. $329.

AUTOCOM Dedicated Compressor/Limiter utilizing Behringer's Interactive Auto Processor. $219.

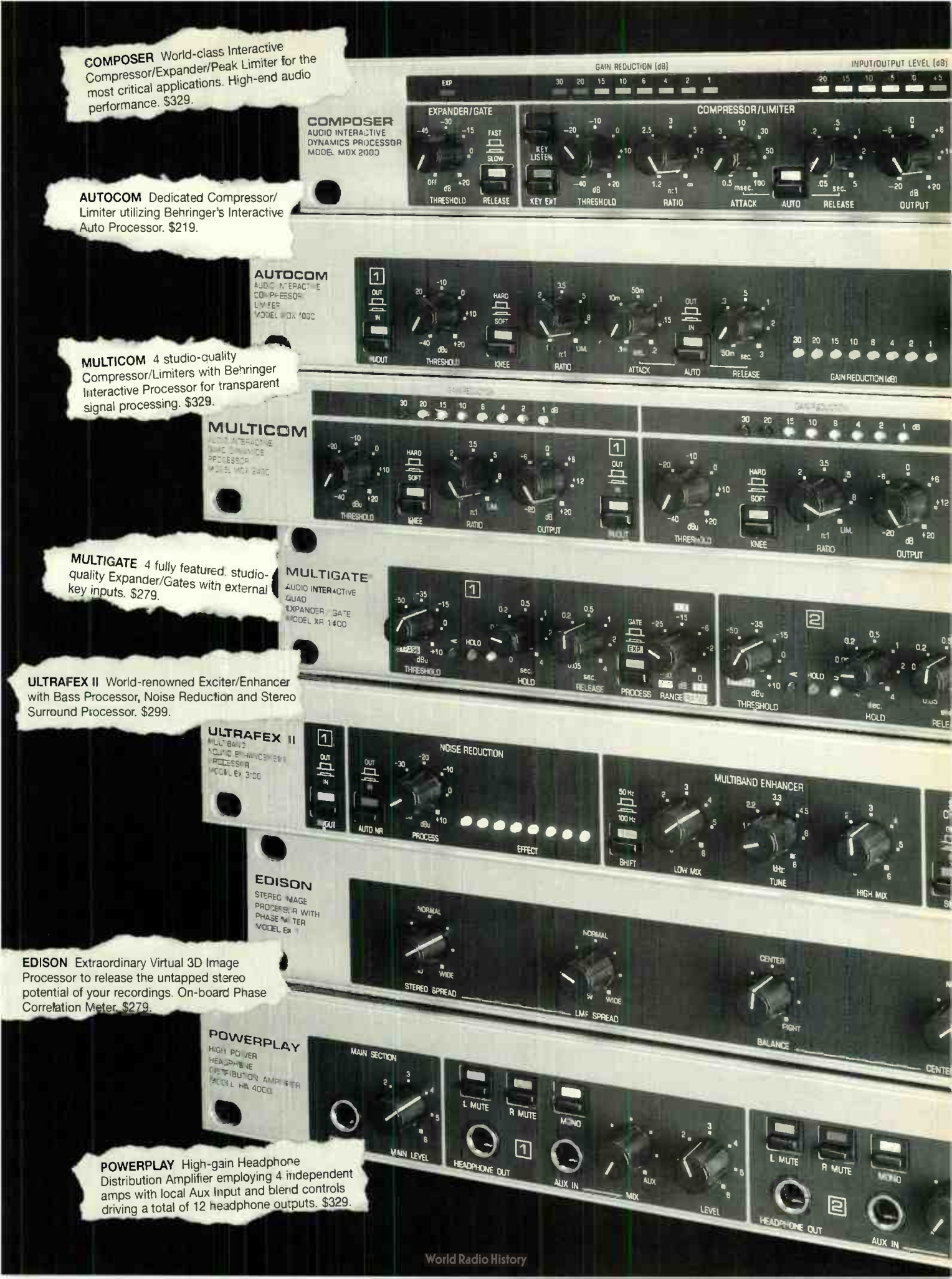
MULTICOM 4 studio-quality Compressor/Limiters with Behringer Interactive Processor for transparent signal processing. $329.

MULTIGATE 4 fully featured, studio-quality Expander/Gates with external key inputs. $279.

ULTRAFEX II World-renowned Exciter/Enhancer with Bass Processor, Noise Reduction and Stereo Surround Processor. $299.

EDISON Extraordinary Virtual 3D Image Processor to release the untapped stereo potential of your recordings. On-board Phase Correlation Meter. $279.

POWERPLAY High-gain Headphone Distribution Amplifier employing 4 independent amps with local Aux Input and blend controls driving a total of 12 headphone outputs. $329.



World Radio History

EQ 1996 PREVIEW

GETTING EVEN

So you think your Eventide DSP4000 Ultra-Harmonizer is good. Wanna make it better? Eventide has just released Version 2.0 software for the DSP4000, further expanding the unit's performance. Programs load 30 percent faster and internal processing speed is increased with the new Version 2.0 operating system. The patch editor function, which users can use to create new effects, has been modified, making it easier to use. Version 2.0 also adds 40 new patchable modules for a total of 130 modules in all. Over 500 presets, including 300 new ones, are standard features on the Version 2.0. Preset links allow the user to load a preset from another program's bank and location. A Compare function lets the user modify a preset and switch between the modified preset and the original, for a quick A/B comparison. Version 2.0 now supports larger PCMCIA memory cards; 32 k to 4 MB static RAM cards can now be used. For details, contact Eventide, One Alsan Way, Little Ferry, NJ 07643. Tel: 201-641-1200. Circle EQ free lit. #133.

WHAT'S MY TIMELINE

Timeline Vista has introduced several new products for its Studioframe DAW: software Version 6.20, a Soundfile Server, and optional OMF compatibility. The enhanced Version 6.20 is based on Version 6 software. Waveform redrawing is now faster, regardless of the zoom-view level used. This newly enhanced function operates on any individual track or on all tracks simultaneously. The Soundfile Server offers Studioframe users the ability to network systems via an industry standard file server. Users can now access more sound effects through a central sound library, audition files on the server before loading them into the workstation, and move sound files as groups between workstations. OMF (open media framework) compatibility allows interchange of sound files originating on other sound-system libraries. This feature cuts down significantly on transfer and conversion time. For information, contact Timeline Vista, 2401 Dogwood Way, Vista, CA 92083. Tel: 619-727-3300. Circle EQ free lit. #134.

SUPER SERIES

The Super Isolator Series from Equi=Tech provides 100 dB of common-mode noise isolation for electronics. The high-efficiency toroid power transformer in each system, (1.5 and 2-KVA models) has been specifically engineered to meet high-end analog and digital equipment's power requirements. The system's balanced output eliminates AC hum and noise from sensitive audio and video circuits. The Super Isolator Series units both are rack mountable, and can be plugged into any 120-volt standard wall outlet. For more information, contact Equi=Tech, 5628 Lakeshore Drive, P.O. Box 249, Selma, OR 97538. Tel: 503-597-4448. Circle EQ free lit. #135.

POST IT

The CS2000F film re-recording system from Euphonix has been designed for use in audio postproduction where surround-sound mixing to multiple stem formats is required. Every fader (two per channel) has full EQ and is able to route to 8 stereo mix busses as well as to the multiformat busses, providing completely independent, equal facility signal paths per channel. This reduces the overall size of the system making it possible to handle a large number of inputs. Systems may be supplied with the PicMix 8-channel monitor matrix and the PicMix joystick panners. For details, contact Euphonix, 11112 Ventura Blvd., #301, Studio City, CA 91604. Tel: 818-766-1666. Circle EQ free lit #136.

World Radio History

BEHRINGER GOES DIGITAL

Behringer, known for its popular line of analog processors, introduced the Ultra-Curve digital equalizer. The Ultra-Curve is a fully digital 31-band stereo graphic EQ that features high-grade 20-bit A/D and D/A converters made by Burr-Brown. Behringer's unit also includes three fully parametric stereo EQs for notch filtering. The Ultra-Curve's on-board RTA features both peak and RMS weighting, a noise generator with a separate output, and a wide selection of auxiliary functions such as variable integration time, peak hold, and more.

Other key features in the Ultra-Curve include 100 user presets with security coding, a "Search and Destroy" feature for real-time feedback suppression, an option of up to eight seconds of delay, an optional AES/IBU digital I/O, balanced inputs/outputs using both 1/4-inch jack and XLR connectors, and fail-safe relays that automatically put the unit in bypass mode in case of a power failure. Better yet is the Ultra-Curve's reasonable price, $899.99.

The Ultra-Curve wasn't the only piece of gear that adorned Samson's booth. Providing you with four compressors in one unit is the new Behringer Multicom MDX2400 (shown above), a four-channel compressor/limiter with intelligent program detection. The Multicom also features an Auto switch that automatically derives attack and release times from the program material.

The Multicom includes four individual compressor/limiters, hard and soft knee switching, balanced inputs and outputs with XLR and 1/4-inch connectors, and slaving capability. The Multicom retails at $329.99.

Also at the AES were the Topaz Mini, Macro, and Maxi mixers. The Topaz Macro provides ten balanced XLR mono mic/line inputs and four balanced stereo inputs, providing 14 in total. Macro sports a full 3-band EQ section with 15 dB of boost/cut for the mono inputs, a 2-band EQ and +4/–10 switching for the stereo inputs, two aux sends per channel, two stereo effects returns, balanced stereo outputs, full PFL capability, and linear faders on all channels and master outputs.

Samson wasn't just present as a distributor, it brought along its own gear as well. The affordable PL 1602 ($349.99) line mixer is a 16-input (eight stereo channel), two-bus unit with 56 mm faders on both bus outputs, along with two XLR mic inputs, two-band EQ with ±15 dB boost/cut, two stereo aux sends per channel, two stereo effects returns, balanced inputs/outputs, and a headphone out.

For more information, contact Samson, P.O. Box 9031, Syosset, NY 11791. Tel: 516-364-2244. Circle EQ free lit. #137.

WELL DEFINED

Pacific Microsonics, the developer of the HDCD (High Definition Compatible Digital) process, has introduced the Model One HDCD processor. For the uninitiated, the HDCD process is an encode/decode system that significantly reduces distortions in digital audio recordings. The Model One is designed to provide HDCD process mastering, postproduction, and monitoring capabilities in both studio and remote environments. Analog and 16- to 24-bit AES digital inputs and outputs are provided along with LED bargraph level metering and a graphic operating display. For more information, contact Pacific Microsonics, 2560 Ninth Street, Suite 219, Berkeley, CA 94710. Tel: 510-644-2442. Circle EQ free lit. #138.

World Radio History

EQ 1996 PREVIEW

UPGRADE WITH SABINE

Sabine showed two products at AES, the ADF-1201 and 2402. These two newly upgraded workstations, (one- and two-channel, respectively) allow filter editing in graphic display screens. They also include an improved RTA feature, a new "lock fixed" filter option, and a brighter LCD screen. The ADF-2402 ships with a Windows disk for interfacing the unit via computer. The ADF Workstation is a digital signal processor that incorporates Sabine's patented automatic feedback detection algorithm. For more information, contact Sabine, 4637 N.W. 6th St., Gainesville, FL 32609. Tel: 800-626-7394. Circle EQ free lit. #139.

NOW WITH BRIDGE

The new TASCAM M-2600 mkII digital recorder/mixing console provides all the features of its predecessor, while adding switchable –10 dBv or +4 dBm signal levels for tape in and group/direct outs, increased trim control range, improved EQ, enhanced power supply, and a meter bridge. Available in 16-, 24-, or 32-channel versions, the M-2600 mkII also features mute switches in the monitor path, full 4-band EQ accessible in the monitor path, and a control room section. Retail prices are $2999, $3999, and $4699, respectively. For more information, contact TASCAM, 7733 Telegraph Rd., Montebello, CA 90640. Tel: 213-726-0303. Circle EQ free lit. #140.

ANTENNA POWER

The DAS401 antenna/power distribution system from Sennheiser is designed to be used with up to four EK4015-UHF frequency agile, diversity receivers. Sennheiser's latest effort is a compact, DC powered RF system for location film and broadcast. Compatible transmitters include the SK50-UHF and SK250-UHF body packs and the handheld SKM5000-UHF. The full-diversity antenna system distributes RF signal from a pair of antennas to each of the receivers. Selective amplification is used to distribute the signal at unity gain for desired frequencies and attenuates unwanted frequencies that could cause intermodulation. The DAS4015 uses the standard 4-pin Cannon plug for its required 12-18VDC powering, making it adaptable to standard rechargeable batteries. The DAS4015 in turn supplies power to each of the receivers and active antennas. For details, contact Sennheiser, 6 Vista Drive, P.O. Box 987, Old Lyme, CT 06371. Tel: 203-434-9190. Circle EQ free lit. #141.

HEAD UPTOWN

System One is the newest moving fader automation system from Uptown Automation. Designed for those on a budget, the System One encompasses features from Uptown's System 2000 and System 990. The self-contained package patches quickly and easily into any mixing console via the patchbay. For just under $10,000 you can get a 24-channel system with a computer. The automation is based on the Uptown 990 System software, which provides a complete set of mixing functions using a mouse-driven interface. Full access to grouping, MIDI functions, tape machine control, and off-line editing are just some of the available features from System One. This system is small enough to be placed on top of the fader section of the console for mixes and removed for tracking. For more information, contact Uptown Automation, 6205 Lookout Road, Unit G, Boulder, CO 80301. Tel: 303-581-0400. Circle EQ free lit. #142.

World Radio History

DON'T GET STUCK

If you're looking for a "master quality" CD recording medium, check out the latest product from 3M. Its CD-R disc contains a larger protective label marking area that provides maximum space for the user to safely mark the disc for title or application information without damaging the recording layer. The protective label marking area eliminates the need for adhesive labels, which can unbalance a disc or peel off in the CD-R drive. The 3M discs are available in 63- or 74-minute versions, and the packaging is environmentally responsible. The jewel case is made from recycled CD-ROM discs, the package is made of 50% recycled board, the jewel cases are reusable, and no adhesive labels are required. All 3M brand CD-R discs meet or exceed Orange Book part II specifications. For more information, contact 3M, 3M Bldg. 223-5N-01, St. Paul, MN 55125. Tel: 612-737-4218. Circle EQ free lit. #143.

DAWSOME

Studio Audio's latest unit is a digital editing multitrack system called OCTAVIA. OCTAVIA is modular and can be expanded as required in terms of storage, processing power, and the audio I/O channels. SADIE3 is the software that drives OCTAVIA. One OCTAVIA provides eight channels of audio input and output, incorporates 20-bit delta-sigma A-D and D-A converters, and full AES/EBU interfaces on all inputs and outputs. Up to ten OCTAVIA units can be linked together, providing 80 channels of full digital and analog input and output and 1.3 GFlops of processing power. OCTAVIA has a SCSI disk interface and an intelligent cache feature that reduces the overhead on the processors by automatically converting 20- and 24-bit data to and from suitable formats on the disk. OCTAVIA's Tentacle bus is a digital interchange highway that can provide up to 280 channels of audio transfer between OCTAVIA units, and audio is passed through the tentacle in 32-bit floating point format. Additional features include optional hardware control panels. Retail price for an eight in/out OCTAVIA is $24,995 and a 16 in/out is $39,000. For more information, contact Studio Audio, Stretham, Cambridge, UK CB6. Tel: 44-1353-648888. U.S. contact: 615-327-1140. Circle EQ free lit. #144.

MOBILE ANALYST

TEF's latest version of the TEF 20 and TEF 20 HI analyzers can be taken on the road. The new TEF 20 SHIP (Serial, Host Interface, Parallel) analyzer replaces the aforementioned models and provides both serial and parallel communications in conjunction with the previous TEF analyzers' functions. This means that you can take it with you, and hook up the SHIP to your notebook computer via its parallel port (LPT1 or LPT2). The parallel port also provides the necessary power to take advantage of the long sequences (up to 10.9 seconds) in Sound Labs' MLS (Maximum Length Sequence) software. Additionally, the host computer's serial port is left open for other uses such as connection to computer-controlled amps and processing equipment. Retail price for the TEF 20 SHIP is $4500, and includes all necessary cables. Parallel upgrades for the TEF 20 and TEF 20 HI systems are $500. TEF analyzers purchased prior to January 1992 can be returned to TEF Products' offices in Elkhart, IN for installation of the upgrade. For more information, contact TEF Products, Crown International, Inc., P.O. Box 1000, Elkhart, IN 46515-1000. Tel: 800-833-8575. Circle EQ free lit. #145.

Noise Reduction

Plug Into

Spectrum Analysis

SONIC FOUNDRY

CIRCLE 86 ON FREE INFO CARD

World Radio History

"Can I trust my masters to DAT?"

Over the years, Apogee has focused its efforts on one goal: making digital audio better. The **Apogee DAT** carries on the tradition. It addresses all your concerns about using the DAT format in the professional world. Consistency. Minimal errors. Reliability. And above all, longevity.

We collaborated with major Japanese surface technology specialists KAO to improve their already impressive DAT specification, adding features critical to the needs of the pro-audio industry. Every element has been re-engineered: from the tape surface to the shell itself.

Our tests indicate that the Apogee DAT has an archive life of over 30 years – the longest in the industry – thanks to proprietary passivated metal particles that, quite simply, won't rust away. The graded magnetic coating yields vanishingly small error rates, yet makes the tape more durable. Output levels are as much as 10% higher than other DAT tapes. The heat-resistant housing minimizes static electricity problems and significantly improves tape handling. The special hubs minimize end-of-tape damage. The Apogee DAT exceeds even the tough DDS (Digital Data Standard) criteria, which require less than one error in 360,000 flux transitions—five times better than required by the IEC60A audio standard.

The result is a truly professional DAT tape: a tape that sets a new standard in DAT mastering. Now you can sleep at nights, knowing your masters are safe – and not slowly rusting away.

Trust your masters to Apogee DAT and you'll be in good hands. Our tape will deliver when you need it... for a long, long time.

Apogee

Digital audio unveiled.

"Yes."

Apogee Electronics Corporation
Business & Engineering: *3435 Ocean Park Boulevard #211, Santa Monica, CA 90405. Tel: 310-314 1700. Fax: 310-452 4343*

CIRCLE 19 ON FREE INFO CARD

World Radio History

EQ 1996 PREVIEW

JUST A SEC

Studer Editech Corporation (SEC) announced the addition to the Dyaxis II range non-linear DAWs. It's called the CD Press CD premastering software. CD Press for Dyaxis combines Red Book-compatible audio CD recording with editing and signal processing tools. The CD Press feature is integrated into the MultiMix interface: a new pane in the Event Editor portion of the Edit Desk provides all the functionality required for CD premastering. CD Press is fully Red Book compliant and is compatible with pressing plant master media requirements for short runs or mass reproduction. Advanced features include seamless program fades across track and index starts. A Compact Disc emulator feature auditions tracks and indexes prior to mastering. The system supports full PQ-channel editing, emphasis and copy prohibit flags, ISRC and UPC coding, and pauses. CD Press combined with CD-DA Toast software enables the system to control a Yamaha CD writer. For more information, contact Studer Editech, 1370 Willow Rd., Suite #201, Menlo Park, CA 94025. Tel: 415-326-7030. Circle EQ free lit. #146.

SIT AT THIS DESK

Soundcraft's new K3 Series compact 8-bus mixing consoles are on the scene for your live-sound needs. K3 consoles are available in frame sizes for 16 to 48 inputs, with eight different modules available. A new MIDI Scene Set module provides instant recall of up to 128 different mute scenes covering inputs, groups and stereo effects returns. K3 is available in both Standard and Theater input versions. The Standard input module offers 4-band EQ, plus eight aux sends switchable pre/post in pairs. Solo-in-place, as well as Auto Cancel facility, which automatically removes other solos when any solo button is pressed, are both standard fare. The Standard module has paired routing to groups and four-segment LED input level indicators. The Theater input module offers four-swept bands, switchable Q on the midbands, and switchable bell/shelf characteristics on the HF and LF bands. Theater inputs also have individual routing to groups, and 8-segment LED level indication. For more info., contact Harman Pro North America, 8500 Balboa Blvd., Northridge, CA 91329. Tel: 818-895-3426. Circle EQ free lit. #147

ALL SYSTEMS GO

EAW's compact FL 03 Ultra-High Output Definition System is designed for reproduction of speech and music in high-level short-to-medium throw applications (i.e., multimedia presentations, video playback). This true three-way system incorporates a 15-inch woofer in a vented enclosure, a 6.5-inch midrange, and a 1-inch exit compression driver on a WGP waveguide. Also new from EAW is the UB80, a compact, two-way system with an 8-inch woofer and a 1-inch exit compression driver on a WGP waveguide. EAW has incorporated wide conical dispersion technology to ensure even coverage from ceiling-mount points. For more information, contact EAW, One Main St., Whitinsville, MA 01588. Tel: 800-992-5013. Circle EQ free lit. #148.

Sound Forge Plug-Ins

A great "app" just got better.

Sonic Foundry just made the premier sound editor for Windows™ more powerful with the release of two new plug-in modules.

Now there's no need to slave away filtering noisy recordings. Sonic Foundry's *Noise Reduction* plug-in is designed to automatically remove background noise such as tape hiss and electrical hum. Click Removal is also included, allowing you to eliminate clicks and pops automatically. ($249)

And if you need to identify that particular frequency component, you'll find the *Spectrum Analysis* plug-in a great addition. *Spectrum Analysis* includes FFT and Sonogram display for easy frequency (or pitch) identification. ($149)

For more information call Sonic Foundry at 1 800 57 SONIC (577 6642)

SONIC FOUNDRY

100 South Baldwin, Suite 206, Madison, WI 53703, Tel: (608) 256 3133 Fax: (608) 256 7300, CompuServe: 74774,1340 or GO SONIC, Internet: sales@sfoundry.com. Sound Forge and Sonic Foundry are trademarks of Sonic Foundry, Inc. Other products mentioned are trademarks of their respective manufacturers.

CIRCLE 86 ON FREE INFO CARD

SEE US AT AES BOOTH #1083

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EQ 1996 PREVIEW

FIRST LOOKS: NEW PRODUCTS THAT MIGHT JUST CHANGE YOUR LIVES

All right, so there may not be any life-altering experiences lurking in these pages, but these new pieces of gear might change the way you record

Alesis ADAT-XT

The company that changed recording forever is back with a second act

■ Four years ago, Alesis revolutionized the recording industry with the introduction of its ADAT 8-track digital audio recorder. And though improvements have been made since that introduction through software upgrades, the release of the Big Remote Control (BRC), and third-party supporters, Alesis has upped the ante with the AES debut of the ADAT-XT.

The machine's upgrades are reflected by a much more professional-looking chassis, something that looks more like the brushed aluminum veneer of a Studer multitrack then a reconfigured VHS videocassette machine. However, there's more than a cosmetic changeover going on with this Son of ADAT.

The ADAT-XT transport is also significantly faster than its predecessor. An intelligent, software-controlled transport control allows the unit to fast forward, rewind, and search up to four times as fast as the original ADAT. Also new are the advanced editing features that can be done right on the ADAT-XT. Theses features include track copy, track delay, and track offset between multiple machines.

I'm sure that there are many of you digging into your pockets right now, but wait...there's more. You also get an on-board 10-point autolocator with auto-play, auto-return, and auto-record subsystems. Even the display has been improved — the ADAT-XT has a vacuum fluorescent display that lets you monitor record/playback levels, absolute/relative tape counter time, and status information on many of the unit's functions. And all of these features are housed in a custom-designed solid die-cast aluminum chassis.

Those of you who already own ADATs (and that's a lot of you seeing as how more than 65,000 units have been sold worldwide) are probably wondering how the new ADAT will affect your current setup. The ADAT-XT includes both the ADAT Multichannel Optical Digital Interface and the ADAT Synchronization Interface, letting you link the XT to all existing ADATs as well as Fostex RD-8's and any other ADAT-compatible unit that is released. Word has it that several new manufacturers are ready to jump on the ADAT bandwagon with this new technology introduction — stay tuned for details.

The ADAT-XT also improves on the specifications of the original ADAT, including selectable 44.1 and 48 kHz sampling rates, 18-bit digital-to-analog converters, 20-bit analog-to-digital converters, a +4 dBu ELCO I/O, and unbalanced –10 dBV I/Os on RCA connectors.

Alesis is expected to begin initial shipments of the ADAT-XT this month. *For more information, contact Alesis 3630 Holdrege Ave., Los Angeles, CA 90016. Tel: 310-841-2277. E-mail: alecorp@alesis1.usa.com. Circle EQ free lit. #149.*

ADVANCED ADAT: Among the improvements that the Alesis ADAT-XT offers are faster and more accurate transport controls and on-board editing.

World Radio History

Vestax

HDR-6

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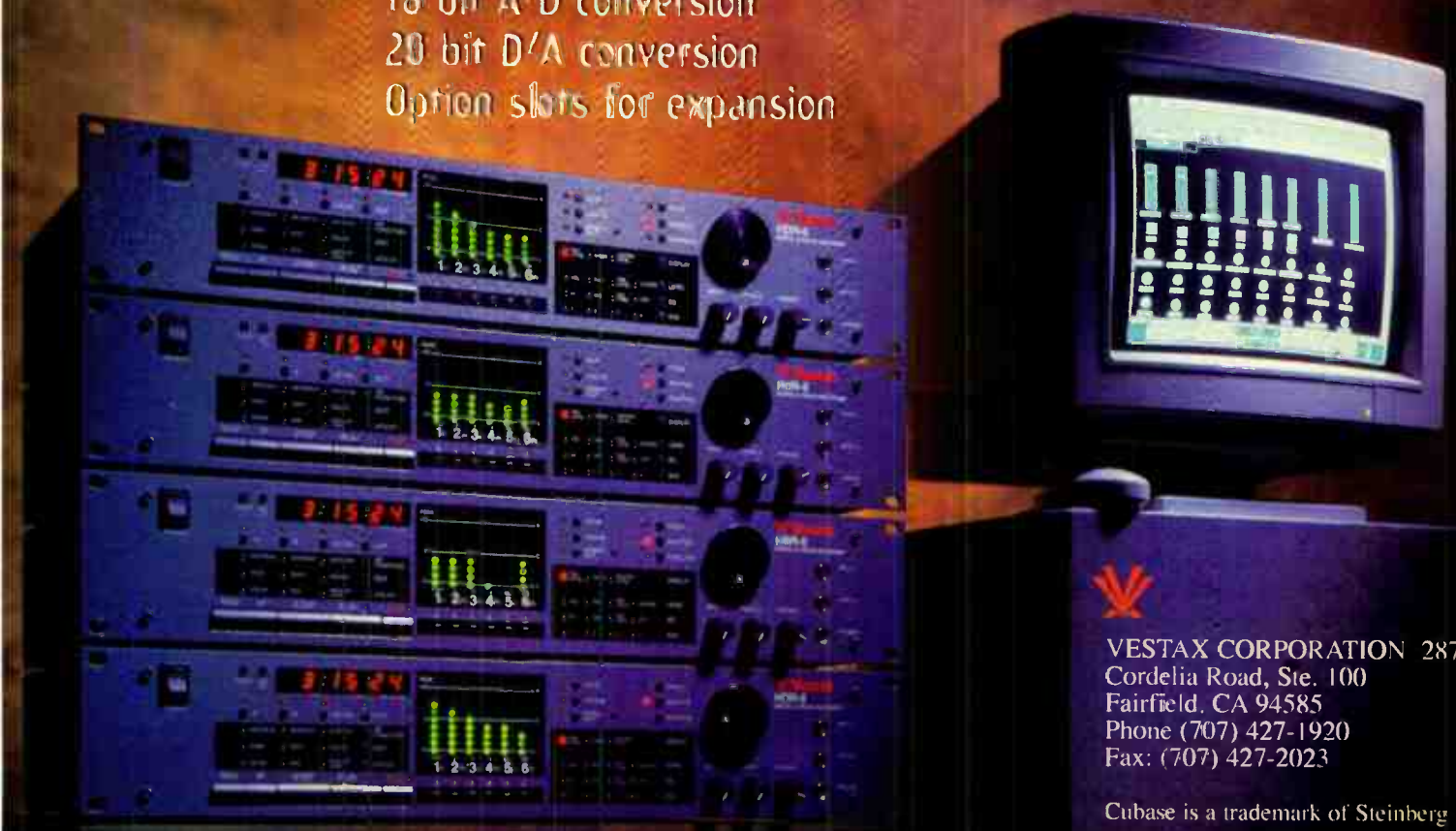

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CIRCLE 97 ON FREE INFO CARD

API'S LEGACY: The L200 continues API's reputation for quality.

for linking the sidechain of the compressors. (A standard Bantam patch cord makes the connection.)

Only the model 212L microphone preamplifier module ($579 list) is currently available. Future modules will include: 205 Hi-Z direct box ($529); 215 hi-pass/lo-pass sweepable filter ($495); 225 compressor (using the original 525 circuitry, $595); 235 noise gate/expander ($595); and the 245 variable frequency de-esser ($595).

The traditional black module face of the 212L preamp looks good framed in blue. A five-LED meter covers the –12 to +18 range. A gain pot, a 20-dB pad and a 48-volt phantom switch are provided. Behind the front panel is a Jensen input transformer, a single 2520 op amp, and an output transformer (not much has changed since the Model 512). Missing from the mic preamp's front panel is a direct input, a real estate problem solved by creating a dedicated Direct-Box module outfitted with a three-position Load switch to match the input impedance of Fender, Boogie, and Marshall amplifiers.

The Legacy Console also has a skinny version of the 4-band 550B equalizer. Despite the aspect ratio, this critter delivers full-bodied sound. The only downside is that it doesn't fit in the L200 rack. API does have plans to create a card cage for this powerful, long-legged beast.

With all of this really cool stuff from which to choose, just think of the sweet, custom rig you could make. Yes, net surfers, clear your ears of the cobwebs of hype and check out these native animals at AES or at a dealer near you. The big-boned sound of our ancestors might just carry you off to the future!

— Eddie Ciletti

For more information, contact API, 7765 G Fullerton Road, Springfield, VA 22153. Tel: 703-455-8188. Circle EQ free lit. #150.

Iomega Zip Drive

Inexpensive mega-storage that's easy to take along

■ Don't turn the page so fast — you haven't fallen into the PC sector of the *Twilight Zone.* Everyone in our industry is well aware of how computer technology and audio recording are becoming more entangled, and this relationship will only continue to grow more intimate. Storage of audio data is always a concern for studios regardless of what format (tape backup, removable hard disk, floppy) is used, so audio pros will be interested to learn that the Roland Corporation has announced it will be marketing the Iomega Zip and Jaz drives through its network of music and professional audio dealers.

Iomega is the company that brought you the Bernoulli line of drives and disks, one of the more reliable removable systems. Its Zip drive, which began shipping several months ago, is quite an important development in the computer industry because it is the first removable disk drive under $200 (the price includes one 100 MB disk). Additional 100 MB disks are available for about $20 (in small quantities) and the price of disks drops to around $15 each if you purchase them in bulk. The Zip drive can also accommodate 25 MB removable disks. Average access time for 100 MB and 25 MB disks is 29 and 16 milliseconds, respectively. Iomega offers two different models of Zip drives: one with a SCSI-II interface and the other with a parallel port interface.

The Zip drive is quite portable, weighing in at just over a pound in a case that's a little bigger than a portable CD player. Engineers will be happy to know that Iomega specs the Zip's operating noise at a level less than 32 dB (A-weighted) and that the life-expectancy-before-failure for the Zip is 100,000 hours (that's 24 hours per day for more than 11 years).

Zip drives are compatible with DOS-, Windows-, Mac-, and Windows '95-based computers, and come with switchable on-board SCSI termination. Zip disks rotate at a speed of 2945 rpm and are capable of transferring data at rates varying between 0.79 MB per second (minimum) and 1.40 MB per second (maximum). Formatting a blank Zip disk takes approximately ten minutes.

What the Zip drive (and the Jaz drive, which will soon be explored and reviewed in an issue of *EQ*) means for the average studio is that large audio files

PUT A LITTLE ZIP IN YOUR LIFE: The Iomega Zip drive gives you all the backup you need.

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World Radio History

CIRCLE 50 ON FREE INFO CARD

LIGHT MY FIRE: Warm up your digital recordings with TL Audio's VI-1.

can be stored in a much more cost-effective manner than previously possible.

Sampler owners have several reasons to rejoice for Zip. They won't have to worry about running out of hard-drive space, thus ending that ever-continuing hard drive trade-up process that occurs as sample libraries grow. They won't have stacks and stacks of floppy disks floating around the studio and falling behind the outboard rack. And since the Zip drive is portable, an entire sample library can be transported in a briefcase to another studio for loading into the "house" sampler. And here is the best part: The Zip drive knows what software it needs to transfer files and it takes that software with it wherever it goes. When you connect a Zip to your "home" computer, you'll have to load software for the drive to work, just like any other system. But when you connect the drive to a secondary computer, you won't have to sit around loading software into that machine just to transfer files. You won't be able to access all of the Zip's capabilities, but rudimentary tasks are supported. And because disks are so inexpensive, backing up an entire sample library is now an affordable reality to sample mavens that don't want to get caught with their floppies exposed.

At press time, the Zip drive was available only as an external drive, but Iomega is planning the Zip-Insider, an internal version of the Zip in a half-height, 5.25-inch format that should be available by the time you read this. In fact, Roland plans to make the Zip-Insider available in many of its digital audio products. Iomega is also planning a Zip "combo" drive that contains an integrated 3.5-inch floppy drive. This will provide the high capacity of the Zip disks while at the same time offering compatibility with floppies for loading in new software versions.

While Iomega may have intended the Zip and Jaz drives for more conventional data storage applications, they may become quite common in music production rooms.

— Steve LaCerra

For more information, contact Roland Corporation, US, 7200 Dominion Circle, Los Angeles, CA 90040. Tel: 213-685-5141. Or contact Iomega at 1821 West Iomega Way, Roy, Utah 84067. Tel: 800-MY-STUFF. Circle EQ free lit. #151.

TL Audio VI-1 Tube Interface

The latest product from TL Audio (Article courtesy of* Studio Sound *magazine)

■ Having single-handedly made tube outboard equipment affordable enough for the masses, TL Audio has been busy extrapolating the concept into other areas. The latest of these ideas is the VI-1 tube interface, which is essentially an audio thru box that simply inserts a tube into a signal chain. What you're getting is eight channels of tube circuitry operating at unity gain that runs internally on ECC83/12AX7 tubes with one tube stage per channel.

Aside from a power switch with LED on the front panel and a grille behind which the tubes glow, there is very little to say about the features of this unit. The eight inputs and outputs are on balanced jacks mounted on the rear panel, and while the unit is shipped for +4 dB operation, all inputs and outputs can be jumpered to –10 dB after taking the lid off. Given the lack of any other things to play with, panel-mounted switches would have been welcome as the jumpering procedure is hardly convenient — especially if you want to be able to use the box with a variety of different sources.

The premise for the VI-1 is that you'll insert it in-line to and from current modular digital 8-track recorders to counter what the information pamphlet describes as "that cold digital sound." Of course, its applications extend beyond DA-88's and ADATs and any similarly afflicted hard-disk system, DAT or CD can also benefit from a touch of tube. There's also the enormous scope for employing this box in analog set ups.

What you do with it is patch it onto anything and see if you like the result. It certainly sounds different than an equivalent unprocessed signal with a rounding off in the midrange, a smoothing out of the HF, and a tad more wallop in the low end, none of which are unpleasant. As to whether it sounds "tubey" depends to a great extent on what your experience and appreciation of tubes is like. Part of the charm of tubes in outboard for me is that they are usually found in devices that can be wound up or down, which makes them highly variable and allows you to graduate from the, "Is it on?" all the way up to, "Wind it back a bit."

Because this box is preset, you are stuck with what you are given, but I would say that TL Audio has designed the VI-1 to have a more pronounced tube sound — but then that is the purpose of the unit.

You can strap it over inserts, groups, mixes, and individual channels with good effect, and if you do master to analog and then transfer to DAT, then you could do worse than hang this in between. In all cases the signal isn't compromised — just subtlety processed — and the noise performance is excellent.

Tubes have got the public relations exercise sorted, and you'd be hard pushed to find anyone actually say anything bad about them. Doing so would imply that they're quite obviously aurally challenged and uncouth in their tastes. Indeed it's strange that not very long ago this moral high ground was occupied by individuals who could nod knowledgeably in appreciation of digital sources and swear by the crispness and clarity of the sound compared to the muddiness that we all man-

World Radio History

WHY BUY THREE RACK UNITS WHEN ONE WILL DO?

If you're not already considering buying a 410, you probably have an unlimited budget or roadies that are weightlifters. However, if you live in the real world you probably have a budget like the rest of us. The DOD 410 Series II packs the features of a graphic equalizer, a notch filter and a compressor/limiter into one box. It's affordable and convenient. Think about it... perfect monitor mixes every night with no feedback *plus* speaker protection, all from the same compact, one-rack spaced box.

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aged to live with for so many years.

The VI-1 does a good job of imparting a flavor that I would say is widely in line with the character people normally associate with tube gear. If you track with it and then mix through it, the cumulative reprocessing of processed signals causes the effect to add up and become more pronounced and you end up with a finished product that does sound milder and mellower than if all other things had been equal and you hadn't used it. Whether or not this effect is blatant enough for everyone after a single pass through the VI-1 is something that individuals will have to decide for themselves. However, you can hear a difference and it's dead easy to set up an A-B comparison and hear how some of the stridency of the original is restrained. As for its suitability for its intended use with digital multitracks, I would say that its greatest strength lies in using it selectively on certain tracks.

Above all else, the VI-1 is a good idea, and if you do use a lot of digital gear or don't have any tube gear already, then it would be wise to investigate it.

— Zenon Schoepe

For more information, contact the Sascom Marketing Group, 34 Nelson St., Oakville, ONT Canada, L6L 3H6. Tel: 905-469-8080. Circle EQ free lit. #152.

Akai DR 16 Disk Recorder

Akai adds another 8 tracks to its popular hard-disk recorder

■ Akai has been setting the digital hard-disk market on fire lately with its DR8 digital hard-disk recorder. Well, it looks like they are about to do it again. This time they have upped the ante to a 16-track digital hard-disk recorder. It will be known as the DR16, and preliminary information suggests that this could be the first hard-disk recorder to truly challenge stand-alone, tape-based units such as the Alesis ADAT and the TASCAM DA-88.

Akai is still putting the finishing touches on this unit, but it should include editing features such as Cut, Copy, Paste, Move, Delete, Trim, and Scrub. Recording can take place on any or all of the 16 available tracks (including Auto-Punch with rehearse).

The DR16 features 16 tracks of recording and digital mixing. It does not require a computer to operate (i.e., completely stand-alone), although Akai may release an optional Mac front-end to further facilitate maneuvering and complex editing. The built-in 16-channel digital mixer allows you to control the level and panning of all 16 tracks, the Master Outputs, two effects sends, and the L/R bus. Additionally, the level and pan settings can be controlled via MIDI or stored in one of 99 snapshots (very cool and useful). An optional digital EQ board will be available offering 4-band mid sweep digital EQ for either 8 or 16 channels.

The DR16 will feature a host of synchronization options, including support for MIDI Clock w/SPP, MTC, SMPTE, and Bi-phase. Eventually there will be support for MIDI Machine Control and a RS422 interface that will allow the DR16 to be controlled from video controllers that support the Sony protocol. It seems that this unit will sync with just about anything, therefore making it very useful in professional recording, film, and video postproduction environments. There will also be a second SCSI interface that will support communication to a computer for editing.

The ability to have a full-blown digital hard-disk recorder/editor that is portable is incredible. Based on the preliminary specs and Akai's past outings, it should sound excellent. Hopefully it will include a full complement of digital input/output options. This would complete the cycle of giving professionals most of what they will need in the field. I say, let's wait and see, but Akai seems to have a winner. Alesis ADATs and TASCAM DA-88's beware, the DR16 is almost here. Don't worry, *EQ* will keep you up-to-date on all the news as it happens.

—David Frangioni

For more information on the new DR16 or any of Akai's new or current products, contact Akai/IMC, 1316 E. Lancaster, Fort Worth, TX 76102. Tel: 817-336-5114. Circle EQ free lit. #153

Ensoniq 1682-fx Mixer

Ensoniq leaps into the mixer fray with a feature-rich model

■ A mixer is probably the last thing you were expecting sampler/synth specialists Ensoniq to introduce, but that's exactly what they've done with the AES debut of the 1682-fx mixer — and from what we can tell from the preliminary specs, it's going to be very slick.

We're talking about an 8-bus board with 16 channels, on-board effects, and four aux sends/effects returns (3 stereo sends, 1 mono send; all returns are stereo). There are eight mono channels with a 3-band EQ with sweepable mid and defeat, and four stereo channels with hi and lo shelving EQ. The 1682-fx will also feature eight tape returns, solo-in-place, a talkback mic, a headphone out, and a multiposition jack pod. It has all TRS balanced connectors and can be rack mounted or used on a tabletop. The best part about this board is that Ensoniq states its price as under $2500. Keep your eyes peeled to these pages — we'll keep you up to date.

—Tony Savona

For more info, contact Ensoniq at 155 Great Valley Pkwy, Malvern, PA 19355. Tel: 647-3930. Circle EQ free lit. #154.

REVELATION SR4100 DUPLICATOR

For recording facilities that require high-volume CD-R output, Revelation Products is now shipping the CD Producer RV-2200 CD-R duplicator. Revelation Products' new duplicator allows anywhere from 2 to 20 CDs to be copied simultaneously. And to put labels onto your newly duplicated CDs, Revelation has come out with the Rimage CDR Printer, which combines silk-screen thermal quality with on-demand performance to produce permanent high-quality labels directly onto CD-Rs. All products from Revelation Products Corporation come with a one year warranty. For further details, contact Revelation Products, 1220 Valley Forge Road, P.O. Box 2225, Valley Forge, PA 19482-2225. Tel: 800-836-1823. Circle EQ free lit. #161.

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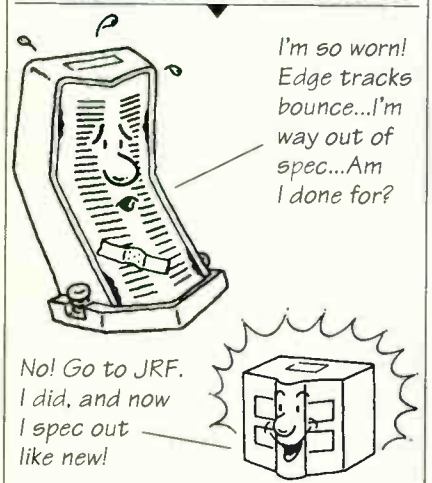

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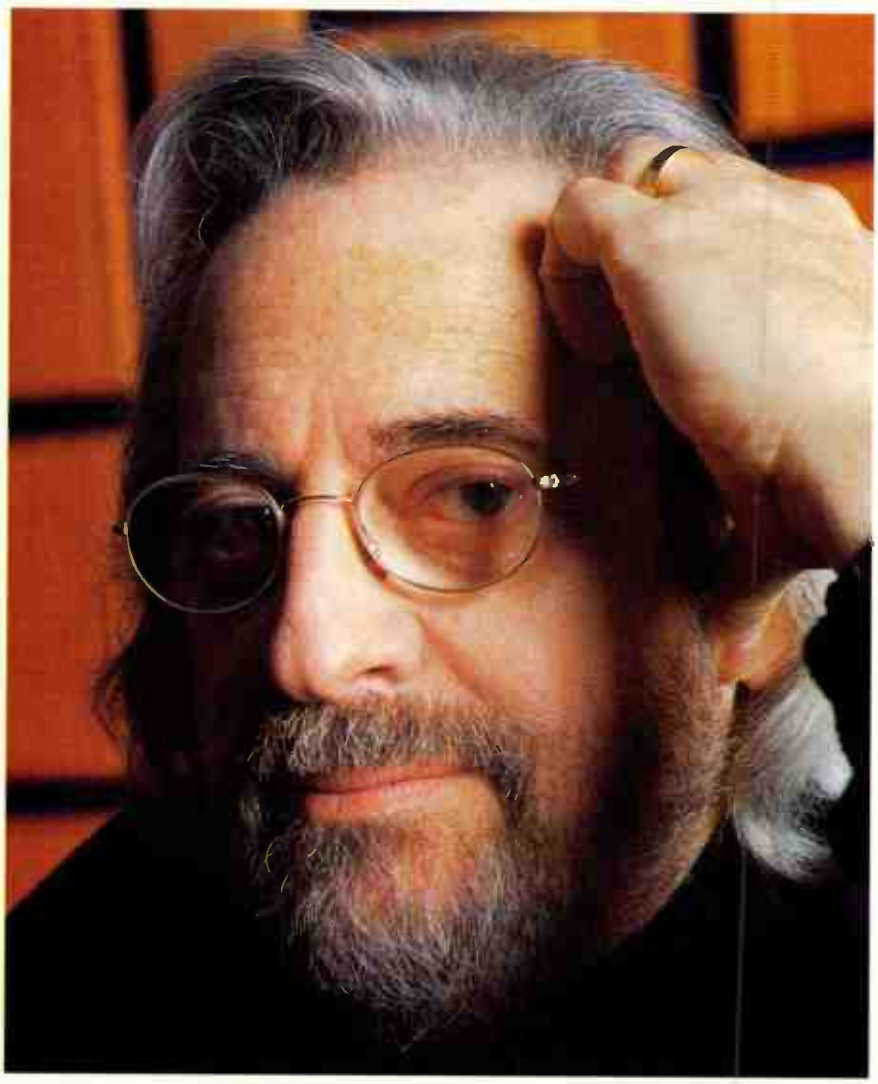
drums and house amps; there was no such thing as cartage. You'd see the same players running around town doing three sessions a day because we were pretty locked into a three-hour schedule with maybe a half-hour overtime.

The sound was characterized by the fact that these session musicians had such a diverse background and also, in order to make a living, worked at a rather fast pace. The group included such renowned players as Osie Johnson, Panama Francis, Buddy Saltzman, Gary Chester, and others, who, in the late '60s (and early '70s), became famous for the records they made. They were a "good luck-charm" for the New York producers of the period. If someone made a record with a certain drummer, guitarist, and bass player combination, they would tend to stick with them. These musicians built a reputation for becoming part of the starmaking machine and so more people would hire them to be a part of the process.

UNION DUES

If you listen to some of these records ("Walk on By," "There is a Rose in Spanish Harlem"), you will hear some of the most inspired session performances of all time. They are all even more amazing if you consider that everything was recorded live — there was very little room for overdubbing. The musician's union had rules stating that you weren't allowed to overdub one instrument without paying the whole orchestra. The only way you could overdub was an act of God or if a



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PHIL, THE CURRENT YEARS: The legendary producer today.

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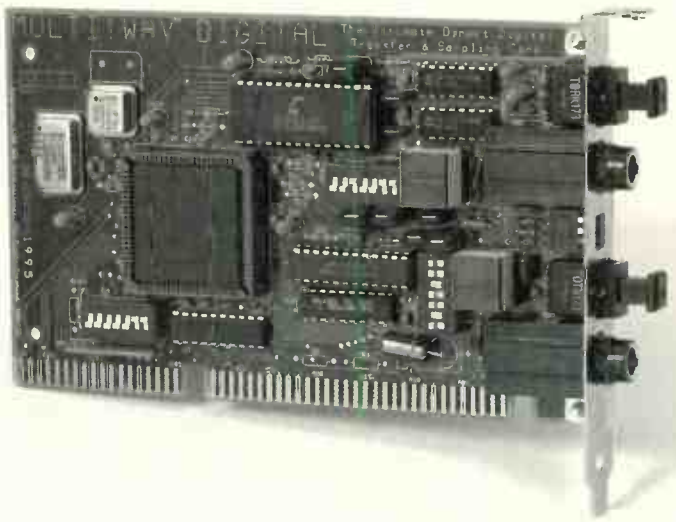

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➤ **Real-Time Digital Format Conversion**	Convert Optical to Coaxial, S/PDIF to AES/EBU, or vice versa, in REAL-TIME!	**YES**	No
➤ **Software Upgradable Hardware Design**	Add NEW HARDWARE features from software updates, such as 24 bit audio & more!	**YES**	No
➤ **1/4" Phone Jacks for Coaxial S/PDIF**	Multi!Wav uses pressure-contact 1/4" phone jacks. CardD uses single-ended RCA jacks.	**PHONE**	RCA
➤ **Shielded Digital Audio Transformers**	Reduce common-mode noise and clock phase jitter.	**YES**	No
➤ **Flexible Ground Strapping for Pros & Audiophiles**	Achieve optimal ground configuration. Reduce common-mode noise and clock phase jitter.	**YES**	No
➤ **I/O Overload Protection to 50 VDC**	Protect against accidental misconnection of inputs and outputs up to 50 Volts DC.	**YES**	No
➤ **256/512 Bit Upgradable RAM FIFO Buffer Option**	Improve performance by reducing sensitivity to hardware underruns & overruns.	**YES**	No
➤ **LC Filtered Analog Supply**	Improve receiver PLL performance by reducing noise.	**YES**	No
➤ **Multi-Layer PCB**	Improve performance by reducing "digital" noise.	**YES**	No
➤ **24mA Bus Drivers**	Meet all IBM PC Bus requirements.	**YES**	No
➤ **64 Selectable Addresses**	Eliminate hardware installation conflicts.	**64**	Just 2
➤ **Professional Sample Rates**	48kHz, 44.1kHz, 32kHz (software selectable)	**YES**	Yes
➤ **Life-Time Warranty**	Protection against manufacturing defects.	**LIFE-TIME**	1 Year

* Comparison performed May 1995 using Multi!Wav Digital PRO (rev A) from AdB International and Digital Only CardD (s/n 00009159 rev B) from Digital Audio Labs. Multi!Wav Digital PRO requires one 16-bit ISA bus slot; a computer that meets the hardware requirements specified by your Windows WAV editing software; and digital I/O cables. AdB and Multi!Wav are trademarks of AdB International. All other trademarks are the property of their respective owners. Made in USA.

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CIRCLE 02 ON FREE INFO CARD

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doctor's note was given to the producer to prove that the singer's voice was shot. You couldn't reschedule a date, so you had to get permission from the union to track. I'm sure there are people who remember the days when we had to lock the doors and do the vocal late at night when no one was around. It was many years later until the union and musicians agreed that you could do a rhythm date and then a sweetener like strings or horns.

INDEPENDENTS DAY

We were also witnessing the transition from the record-company-owned studio to the independent studio at that time. The scene was dominated by the house facilities at Columbia, RCA, and Decca. A Columbia artist or RCA artist was technically not allowed to record in any other facility but his or her own. Certainly Columbia and RCA had great sounds — RCA in Nashville and L.A. was extremely well known. Columbia had the Seventh Avenue and 30th Street studio, which was legendary. The independent studios survived on independent singles work and, gradually, several of the studios (Bell, Regent, and A&R) developed a reputation due to the hits they were starting to record.

The engineers at these facilities were also changing the way they were making records. Tom Dowd, Bill Schwartau, and Al Schmitt were pioneers in the relationship between studio and musician. We all had to understand the style of music and what producers were expecting us to do. A client would bring in a record and say, "Listen to this," and we were expected to figure it out immediately.

LISTEN TO THE MUSICIAN

I found the only way that I could have any success was to adopt the musician's point of view. We didn't have sophisticated headphones or cue systems at the time. I realized early on that my only strength, besides using my hearing, was to make the most out of the equipment. The respect and rapport I felt for the musicians made us overcome unnatural balances that occurred on many sessions. A successful engineer really had to know how to place his mics to get the right sounds. And then you had to deal with your nerves when there was some guy saying, "We've got four more minutes and we need another take." Many people have forgotten how the clock played such an important part in the way people judged you as an engineer — as well as how those recordings actually sounded.

Just as the music business has changed, so has the New York scene. Part of this is because New York has lost its various rhythm sections. We still have great players, but there isn't that same hanging out and running from one studio to another; every date seems to feature a different set of players and, as a result, the musicians aren't benefiting from the intimacy that only constant musical interaction develops. There was even a period of about five years where the rhythm sections consisted of a drum machine and a bass player, with maybe a guitar solo overdub.

With most analog distribution amps,

when you put this in, you get this, this, this, this, this, this and this out.

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STUDIO TECHNOLOGIES INC.

CIRCLE 168 ON FREE INFO CARD

World Radio History

MidiVerb® 4

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Alesis is the world leader in full custom VLSI design for audio applications, so MidiVerb 4's 20 Bit DSP engine is so advanced it eliminates massive quantities of discrete circuitry, making it a revolutionary blend of electronic design and functionality. And to insure state of the art performance, the input is sampled at the professional standard 48kHz sampling rate via 18 Bit,128 times oversampling A/D converters.

The Power of Great Sound

MidiVerb 4's superb reverb and effects algorithms are the direct result of our ten year mastery of the art and technology of sound. Dense, natural reverberation, and rich chorus, delay and pitch effects deliver unbeatable sonic performance. 20kHz bandwidth, 90dB signal to noise ratio, 18 Bit and 8 times oversampling D/A converters combine to make MidiVerb 4 perfect for even the most pristine digital recording.

Fast, Fun, Flexible

But great sound is only the beginning. You get 32 full Stereo configurations, as well as powerful independent Dual Channel Parallel Processing. Plus, a special Cascade mode allows the output of channel 1 to feed the input of channel 2 in any of 7 dual channel configurations. A large custom backlit LCD, data entry wheel and clearly labeled buttons comprise the front end of MidiVerb 4's fast, intuitive user interface. Four parameters are shown simultaneously and there's even screen help prompts to put you at ease if there's ever a programming question. You can tweak one of the superb 128 preset or 128 user programs, or start from scratch and get the sound you need in no time.

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It's a MidiVerb

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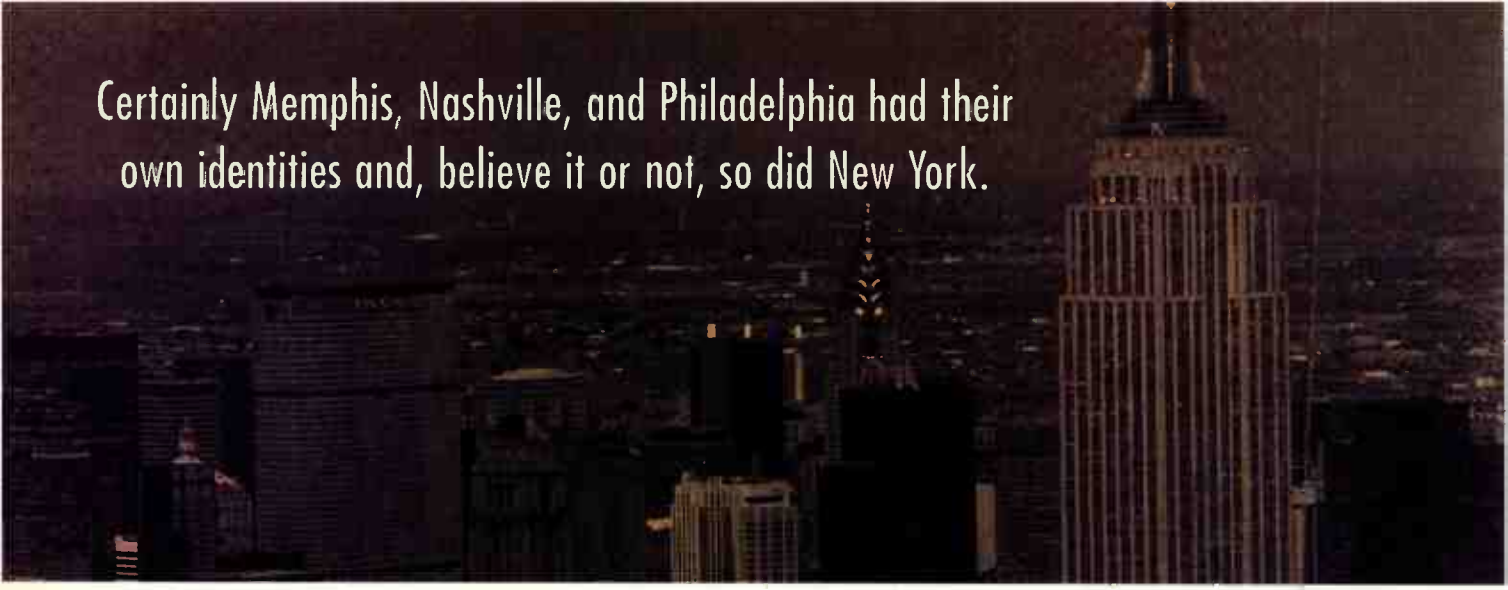
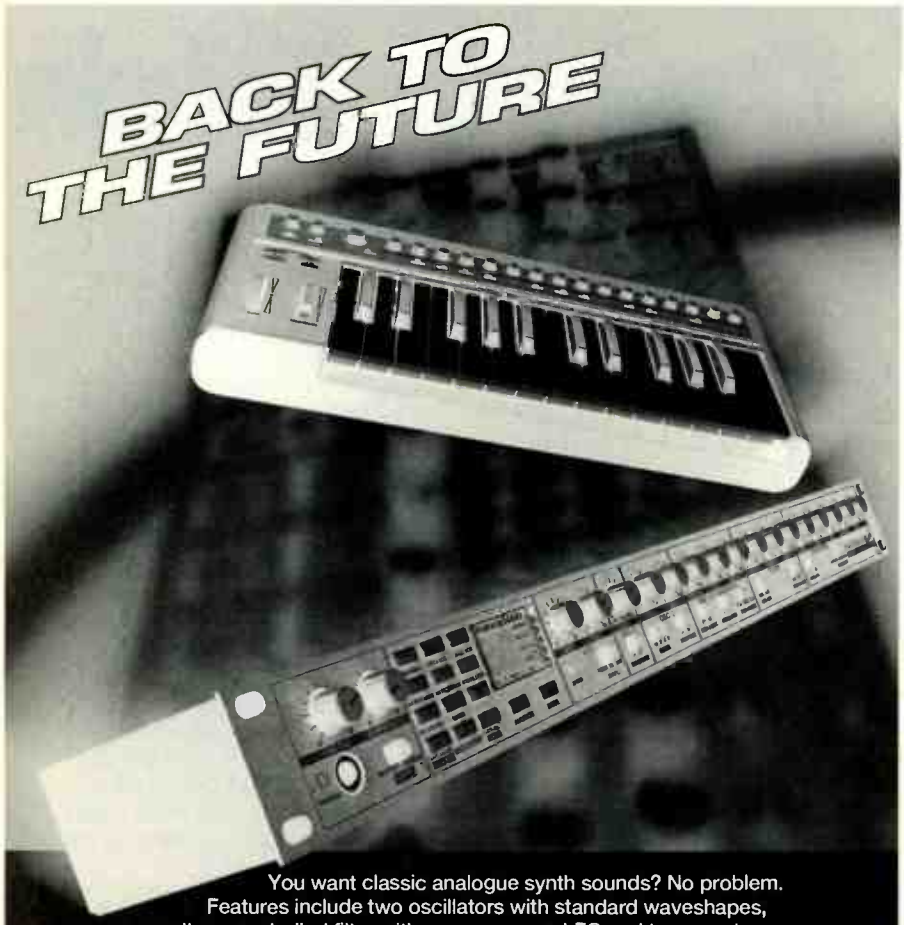
ALESIS STUDIO ELECTRONICS

CIRCLE 07 ON FREE INFO CARD

World Radio History





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novation

ALL MY LIFE'S A CIRCLE

However, everything we do is cyclical, so there is no reason to believe that there won't be an onslaught of records in the coming years done with different kinds of live rhythm sections. One of my sons recently said to me, "Hey, did you ever think about making a rock and roll record where everybody is in the studio together?" and I told him, "Yeah, it's here again." In today's scene, there is a big surge toward good rock and roll — which always sounds great when it is recorded live. There are also some really talented musicians out there who are working together regularly and coming back into the arena. The advantage they have is that these musicians can look back 30 years and learn, whereas the pioneers who moved from jazz to bebop to the beginnings of rock and roll were the pacesetters. They had to go out and figure it out by themselves without having a starting point.

I feel this difference in today's technology as well. Even though many engineers don't have the same experience of recording everything live, they have a chance to listen to the way it has been successfully done and learn from past recordings. I think that the joy I experienced learning and growing through those decades only makes it more exciting in 1995. It is the music that drives the recording business, not just radio or MTV. When an artist walks into the office of an A&R person and plays a great tape, that's when that company actually comes to life, and this will always be the case. This is also how producers, engineers and commercial music studios all survive. We are all dedicated to the process of capturing the magic of the performance on tape. EQ

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World Radio History

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One of the most amazing things about the Powerstation is that we've managed to package all of this performance for less than $1600. See your nearest Spirit dealer today for a demo and you'll understand why British Sound is *back in the U.S. . . . back in the U.S. . . .*

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World Radio History

EQ 1996 PREVIEW

1995 READER SURVEY

Here is your chance to be heard. We want to know what you think is the best and worst in the world of recording. Simply answer the following questions and either e-mail your answers to EQMagazine@aol.com or mail them to EQ Magazine, Reader Survey, 939 Port Washington Blvd., Port Washington, NY 11050. Results will be published in a future issue.

Answer Yes or No to the following questions:

☐ Yes ☐ No *Will you buy stock in Mackie and/or Euphonix?*

☐ Yes ☐ No *Have you ever voted in Mix Magazine's TEC Awards?*

☐ Yes ☐ No *Do you spend too much time on the Internet?*

☐ Yes ☐ No *Do you think trade shows are a waste of time?*

☐ Yes ☐ No *Do you think reader surveys are a waste of time?*

☐ Yes ☐ No *Do you regularly use a World Wide Web browser?*

Please write in your picks for the following categories:

Best New Product (released in '95) _____

Best Product Under $500 _____

Best Product Over $500 _____

Favorite Recording Engineers _____

Favorite Producers _____

Favorite Live Sound Engineers _____

Favorite Product Wish List _____

Best Commercial Studio _____

Favorite Live Sound Venue _____

Favorite Snack During Long Sessions _____

Accessory You Couldn't Live Without _____

Best Engineered Album This Year _____

Worst Engineered Album of The Year _____

Best Engineered Album of All Time _____

Answer the following questions:

The worst thing about working in audio is...

_____.

The best thing about working in audio is...

_____.

What is your favorite advertisment that has appeared in *EQ*?

_____

If you could participate in any recording session throughout history, which would it be?

_____

Whose memoirs of the recording industry would you most like to read?

_____

What is the one new product you've been dying to try?

_____

What is the strangest thing you've ever found stuffed into a speaker cabinet?

_____

Create your dream product.

_____

Who would you most like to work with: ☐ *Phil Ramone* ☐ *Phil Spector* ☐ *Quincy Jones* ☐ *Shaq*

In the ongoing analog/digital debate, do you favor: ☐ *Analog* ☐ *Digital* ☐ *Both work* ☐ *Waiting for another choice*

What is your favorite medium to record *to:* ☐ *ADAT/D8* ☐ *Analog Tape* ☐ *DAT* ☐ *CD-R* ☐ *DCC/MiniDisc*

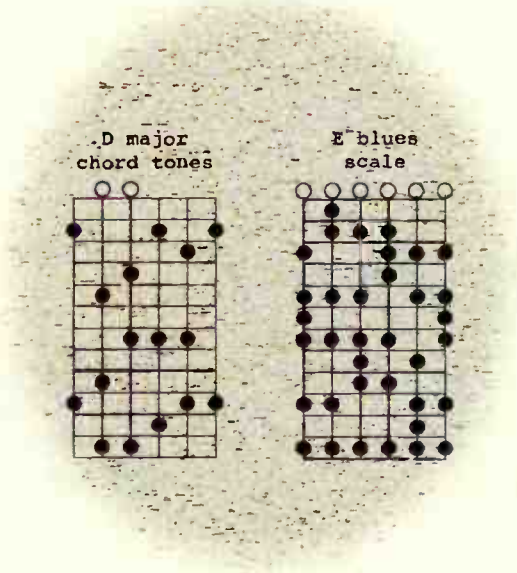
I use my computer mostly for: ☐ *Recording* ☐ *Editing* ☐ *Tweaking* ☐ *Business Records* ☐ *Online Access* ☐ *EQ CD-ROM*

Who would you rather have your son/daughter date: ☐ *Producer* ☐ *Engineer* ☐ *Technician* ☐ *Groupie* ☐ *Drummer*

World Radio History

DIAGRAMS ON PAPER...

(confusing, tedious, obsolete, slow, frustrating, prehistoric, BORING)



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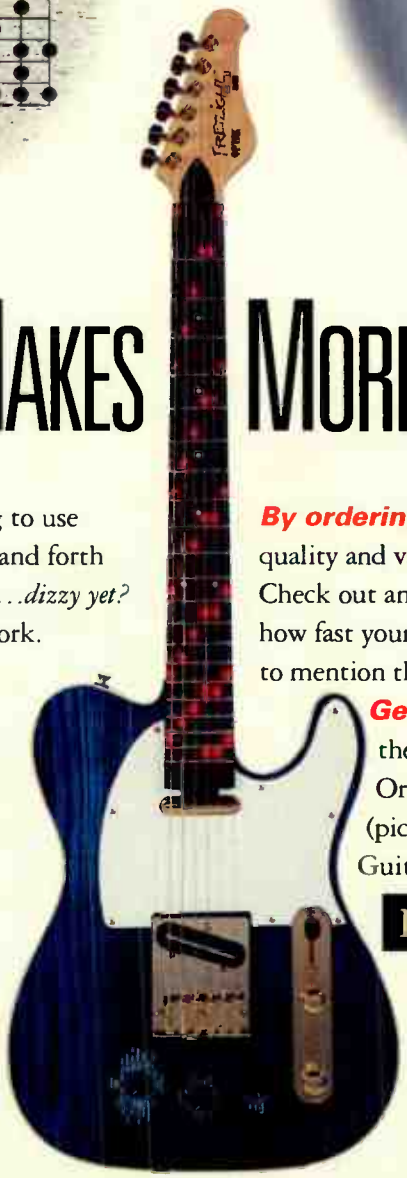

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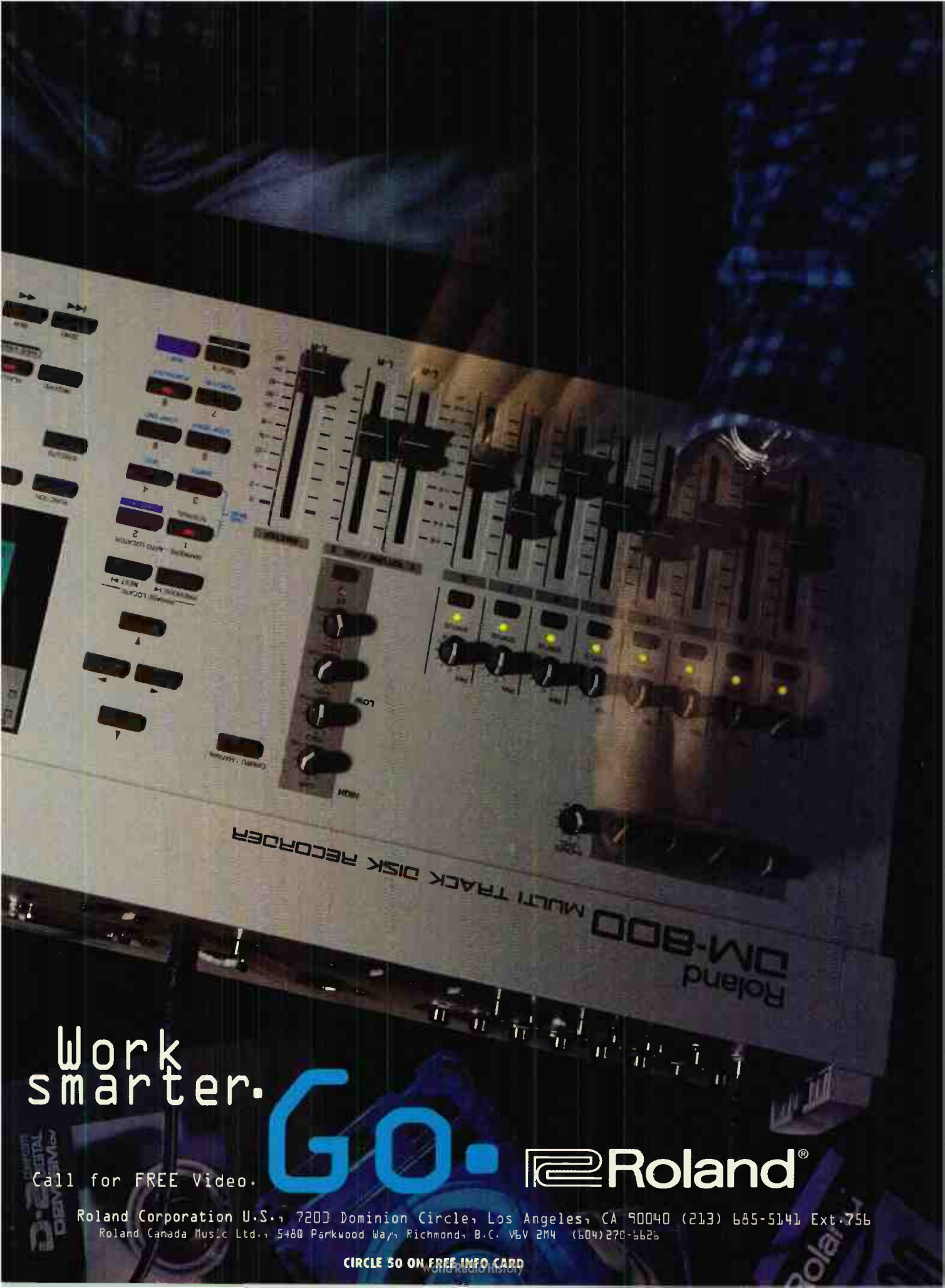

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World Radio History

EQ 1996 PREVIEW

PROJECT STUDIO OWNER OF 1995

HANS ZIMMER

The busiest music man in Hollywood tells EQ how he gets it all done

BY STEVE LA CERRA

Project Studio Owner of the Year is a title barely adequate for the man who composed and recorded the soundtrack to *The Lion King*. As of this writing, Hans Zimmer's score for that film has sold 12 million copies worldwide, making it the most successful soundtrack in the history of Walt Disney Records. But the score for *The Lion King* is only part of the story for Zimmer, who in the past year has also scored *Beyond Rangoon, Crimson Tide, Nine Months,* and *Something to Talk About.* Currently at work on music for *Treasure Island* (the next Muppet feature) and John Woo's *Broken Arrow,* the German-born composer took some time to talk to *EQ* about his audio home, Media Ventures.

World Radio History

EQ: What made you decide to build a studio in the first place?
Hans Zimmer: My partner [engineer/producer] Jay Rifkin and I had a ground rule which was, "We're not in the construction business. We'll never build a studio." Then we bought a mixer and it didn't fit into the little room that we had. Then we went to an architect and were going to build a little writing room for me somewhere. Then all of our friends like Mark Mancina and Jeff Rona came along and said, "We'd like to be there, too," and the next thing we knew we built this place and we have outgrown it. We just bought another 15,000 square feet next door. You buy your first keyboard and you can kiss any common sense goodbye.

Do you record final tracks at Media Ventures?
Oh sure, and we do all of our mixing here as well.

Do you have a sound stage there also?
No. When we do orchestral recording we go to an outside room, but we actually have a studio of about 750 square feet with two control rooms facing the live area. You can mix and record in either one of them. There are tie lines to the control rooms from my room, which has a Euphonix CS2000 console. Everything I write comes straight through the tie lines onto the tape machines from my Euphonix. We basically have three Otari DTR-900II 32-track digital machines floating around, and whoever needs to record can either use those or any of the plethora of DA-88s around the building.

Do you use Digidesign's Pro Tools at present?
Every room has Pro Tools in it. We all run Cubase Audio with Pro Tools and mix directly to eight tracks of Pro Tools now. Then the hard disk just wanders over to the dubbing stage and they dub the whole film from Pro Tools.

Do you mix pairs of tracks onto the eight tracks of the Pro Tools?
Crimson Tide, *Nine Months*, and *Something To Talk About* were mixed entirely on Pro Tools. We usually mix the orchestra and the surround separately to the first four tracks and the "dangerous things" — things that might really kill the dialog — onto separate tracks. All the percussion instruments are separated. On *The Lion King* we mixed back onto one of the 32-track machines. The first eight tracks were the mix and the remaining 24 tracks were literally all the elements that comprised that mix. If they wanted to change things radically they could just push up all the other faders. It seemed like a great concept at the time, but nobody ever used it that way so we gave up on it.

When you begin scoring a film, do you get a video tape from the director?
Absolutely. I have never been known to write a note without the video tape. When the video tape arrives, that means I am working.

Do you begin by recording MIDI instruments?
Every note that you hear in a film at one point or another has been played by me into a sequencer with the samplers and the synths. If it is an orchestral thing, I will have it transcribed for the orchestra. Very often we use the orchestra and the fake stuff at the same time.

And you are composing as you record.
Yes. There is not a lot of difference anymore between the recording, composing and mixing. It is closely tied together. I use the bottom [monitor] faders as if I was listening through a tape machine whether I have one or not. They are all set in a straight line [*Editor's note: set to the same nominal level*] and I actually get all my dynamics in my mix as I write. It is sort of an ass-backwards way of working, but at least I know that whenever I come back to a mix, if I just put the faders in a straight

World Radio History

line — it doesn't matter where in the world I am — that is what I intended when I wrote it.

The first piece of video you get would be a rough cut. Do you get timecode on that tape?
Yes, everything is synced to timecode, 30 frames per second, non-drop but pulled down to 59.97 Hz.

If your composition is written to video at 30 fps...
Yes, but the film is projected at 24.

Does this present a problem?
Not at all. If I want to hit a cut I might not hit it absolutely on that frame but I will hit it within that frame, and a second is still a second. I know it can be very confusing at first, and after a while you just accept it. If I really want to hit something bang on, I'll do it with sub frames.

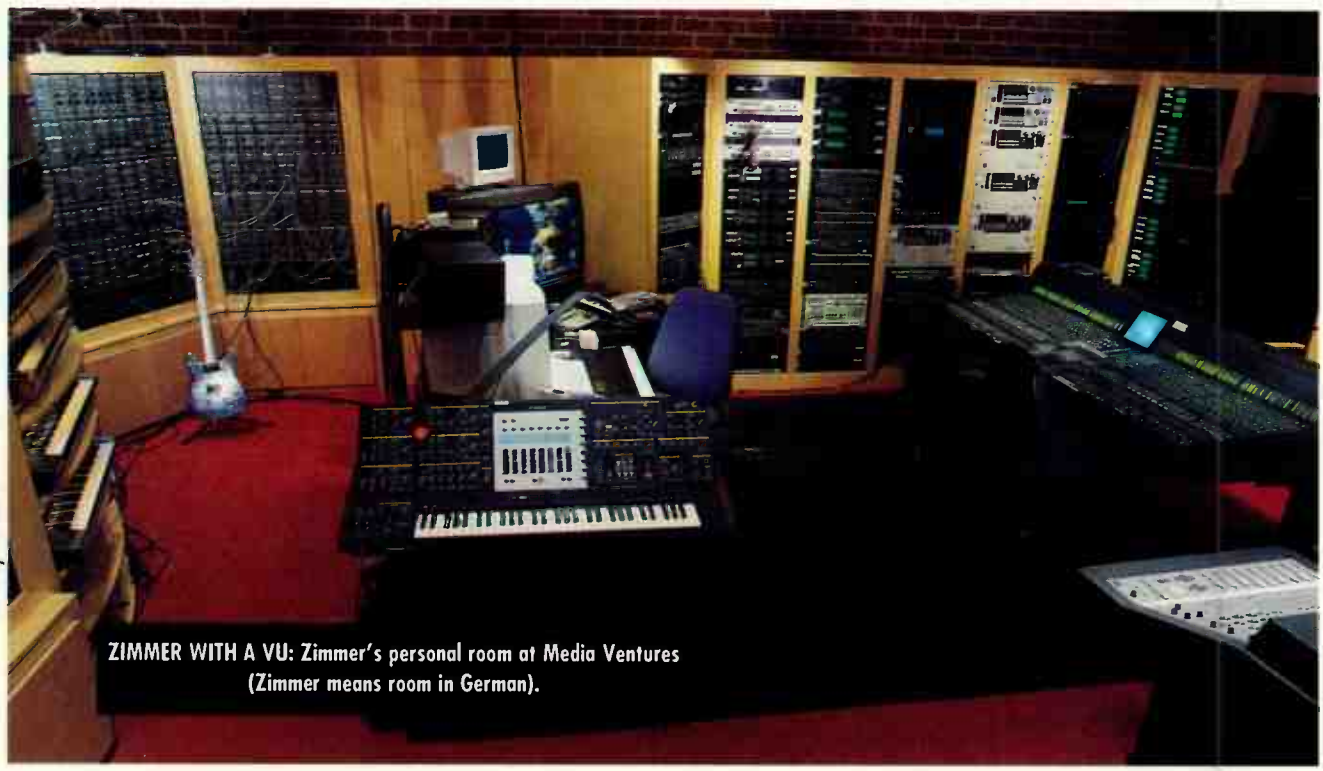
What do you use to lock to video?
I lock Cubase directly to the video via an Opcode Studio 5. Basically, from the video tape, the SMPTE is distributed across the room to all the machines: to the Studio 5, the CS2000, and the Yamaha DMC1000's. From Cubase I generate MIDI clock data, which goes to all of the different effect units because I like having my delays in time. My orchestral setup, which lives in 24 samplers, hasn't changed for a year now, but it has taken us about a year to get it to sound as good as it sounds now. With every film I do I tweak something a little bit here or there. All the console settings are stored so I can always improve a little bit and I never have to start from scratch again.

Can the Euphonix CS2000 also store the EQ settings?
Yes, it can store everything. I always run it in snapshot mode. I do a lot of my fader moves actually in MIDI, in the sequencer, because it's the most immediate thing for me. When I play I am forever pushing the MIDI volume up and down.

As if you were performing an instrument with the correct dynamics.
Absolutely.

Thus bringing the faders to a straight line gives you the dynamics you intended when you were writing.
Exactly. We first literally sampled the whole symphony orchestra with the musicians all sitting in the right places. So actually bringing the faders into the straight line and panning everything correctly gives me the picture of the way the orchestra sat when they were recording it.

When you sampled each instrument, the entire orchestra was present?
Yes. It seemed like a crazy thing to do and it actually became a huge problem. When we first did it we thought we could fit it into eight Roland samplers. Well, that wasn't quite the case, so it fits into 24. I didn't really need to spend all this money buying this equipment, but I wanted it to sound good. I hear something in my head and I want to get as close to that as possible. Nobody tells me I can't just write it on a piece of paper. It is I who want to make all these impossible noises. I never use just the fake orchestra by itself. I use it as a writing tool and to play director's cues so that they can tell what it is going to be like when it's finished. Then I use the real players. It's great fun because I can play the cue for the orchestra before we actually take it and they have an idea what this thing is about. They don't just have to read the lines on paper without knowing how the whole thing is put together.



Photos by Ed Colver

ZIMMER WITH A VU: Zimmer's personal room at Media Ventures (Zimmer means room in German).

World Radio History

Worth its weight in gold–*and platinum.*

Tony Brown discovers the AT4050 studio microphone.

With 8 gold and 14 platinum records, 41 number-one singles, and 4 Grammy Award winning titles, record producer Tony Brown has a reputation for knowing excellence when he hears it. So it's no surprise that once Tony tried an AT4050 multi-pattern capacitor microphone, he's been using it ever since.

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CIRCLE 42 ON FREE INFO CARD

It enhances the quality of your work? And it makes communication with the director a lot easier.

How different will the real orchestral performance be from the MIDI production?
The notes will be identical but the emotion will be there. It's not just one guy emoting away on his sequencer. It's 90-odd guys playing their little hearts out. That is a big difference.

Where do you record the orchestral tracks?
Right now I'm ready to go to Air Lyndhurst in London, but my two favorite places in town [Los Angeles] are Todd-AO and Sony. For smaller things we record at Ocean Way. I just did something at their Studio A where they have their Focusrite and the recording from that desk was one of the best I've ever heard. The difference from a Focusrite is just remarkable. This session was acoustic guitars and you really did have the feeling that you were in the room.

If you were recording a solo acoustic guitar, would you record it at your place?
Absolutely. The thing that we never wanted to get into was where you'd have to provide 100 chairs, 100 sets of headphones, 100 cups of coffee, and 100 people wanting to make phone calls, plus the parking. We always thought that should be someone else's problem.

INSIDE MEDIA VENTURES

Media Ventures is more than just a place for Hans Zimmer and producer/engineer Jay Rifkin to hang their patch cables. Over the past 20 years, Media Ventures has evolved into a recording complex that is now home to some of the most noted composers in the film music industry, such as Mark Mancina, Jeff Rona, John Van Tongeren, Roy Hay, and Steven Stern. Each of these composers has his own suite in which to write, and all have access to the two main control rooms, studio, and support staff provided by the facility.

Zimmer notes that Media Ventures has become "one-stop shopping" for some of Hollywood's most influential producers and at one point, the Walt Disney Company simultaneously had seven rooms at MV filled with various projects. Among the major film releases that have been worked on at Media Ventures are *Bad Boys*, *Dangerous Minds*, *Nine Months*, and (currently in production) *Pterodactyl Woman of Beverly Hills*. But movie soundtracks are not the only thing being created at Media Ventures. John Van Tongeren recently scored ten episodes for Showtime/MGM's *Outer Limits*, and Jeff Rona (whose room is shown at left, Studio B is shown above) is slated to score the second season of *Chicago Hope*. With its high-caliber pool of composers and musicians, Media Ventures has become a model for project studio complexes that really want a more collaborative environment to work in.

—Steve La Cerra

World Radio History

Where have all the features gone? - Same place as the audio quality! In order to make consoles more price competitive something had to give. But try telling that to Soundtracs. They've used their years of experience in console design to create a range of cost effective mixers that lack for nothing in terms of features and performance.

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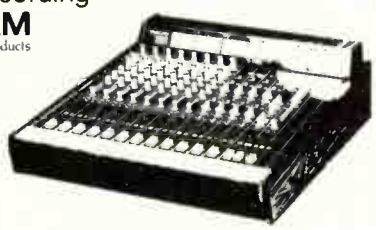

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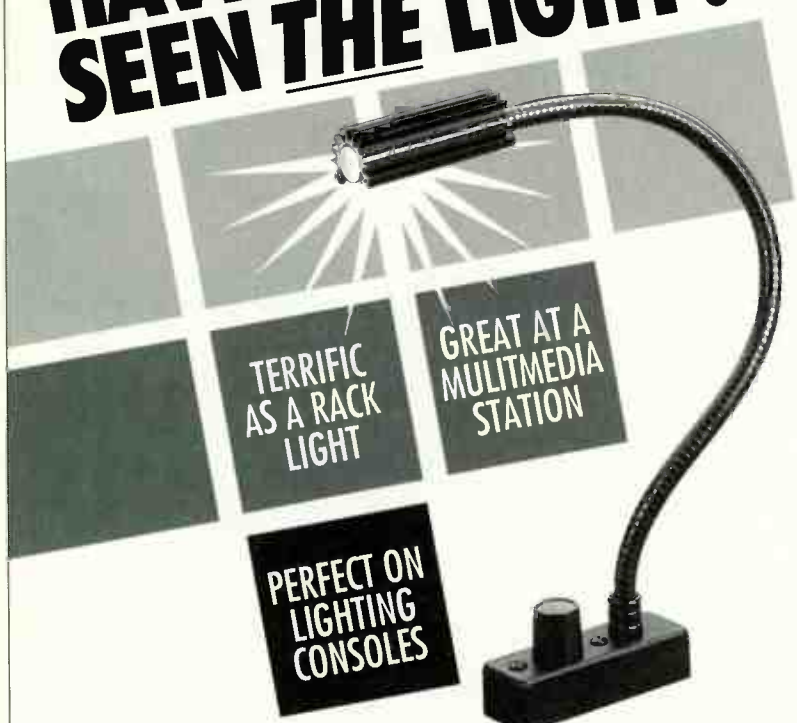

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Do you find that you have any recurring nightmares with synchronization?
No, because we have it down to such a fine art. We will only have our videos made at certain places. When we start a new film, we send out a spec sheet that says what we want on the video tape. And if it doesn't work, it is going straight back. I like the timecode level to be where the needle just touches the red on the Sony U-Matic. I don't mind if I have crosstalk into the dialog tracks because I can live with that, but I cannot live with things dropping out all the time.

When you receive an updated edit, do you have to work out new offset times?
Yes.

How much of a pain in the neck is that?
A complete and utter pain, but I am sort of resigned to it now. I just don't get angry about it anymore. In the film I am working on at the moment, every day things are changing. I am not making the changes right now. I am just writing forward into the film and I know that there will two very boring days where I sit there and go through all of the cues and make those little changes.

How often do you receive a new edit?
It depends on the film. On one film I got about 36 different versions.

What happens when you write a three-minute cue and they move the scene to another section of the film?
That literally just happened. You split it in half and write a new end to one part and a new intro to the incoming one. That's the life.

Do you ever present the director with several different cues for the same scene?
No. I present several different cues of one scene to myself and then throw them all away except for the one that I think is appropriate. If I have too much choice, I go crazy. One of the problems in my room is that I really can make a fantastic noise, so I have to be the harshest critic about whether it just sounds magnificent or if the notes have some value and meaning. I think that it's the deadline that helps keep me moderately objective. EQ

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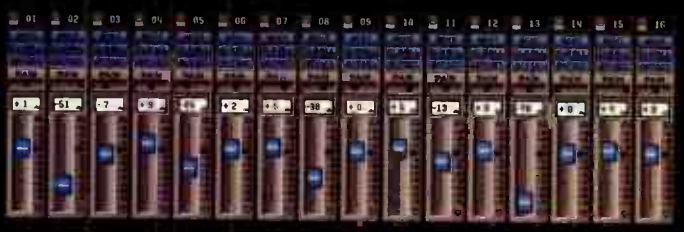

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EQ EXCLUSIVE REVIEW:

THE SON OF PROMIX 0
BY PRO MIXER ROGER

THIS REVIEW HAD TO BE TURNED in so fast that as you read this, I am probably still typing the end. Quantum leaps in technology seem to be occurring at an ever-increasing pace. As a result, yesterday's $500,000 piece of technology can now sit on your desk at a cost of a few thousand dollars. This brings me to the subject at hand, the big brother to the Yamaha ProMix 01, the Yamaha 02R.

A year ago I was invited to Yamaha in Buena Park, California, to see the prototype of the 02R and, along with a few other engineers and producers, was asked to offer suggestions on its operational features. Three days ago I went into Emerald Studios in Nashville to actually mix a record on the first preproduction version of the Yamaha 02R. In a box that would fit in the back seat of your car was a console that performs rings around any other 8-bus board I have ever worked on.

SOUND QUALITY

The 02R is a digital console with digital inputs and digital outputs. Using my PC-based SIM program, I compared the signal going into the console with the signal that came out of the console. They were identical. I mean *identical!* If you digitally reversed the phase of the output and mixed it with the input, you'd end up with absolutely nothing. That means the input and output are exactly the same. You can't get any better than that.

The console I used was fitted for digital interface to four TASCAM DA-88 machines. I did not have the analog I/O cards, so I could only test the analog output to the stereo bus. My monitor speakers were the Meyer HD-1 self-powered monitors. The performance of the 20-bit D/A converters on the stereo bus was more than just acceptable. The audio quality did improve slightly when I connected the digital output to my Apogee 20-bit D/A converter. I would compare sound quality of the analog output to most high-end DAT machines. The analog output from the 02R did sound better than the analog output from the DA-88 converters.

Internally, the 02R processes

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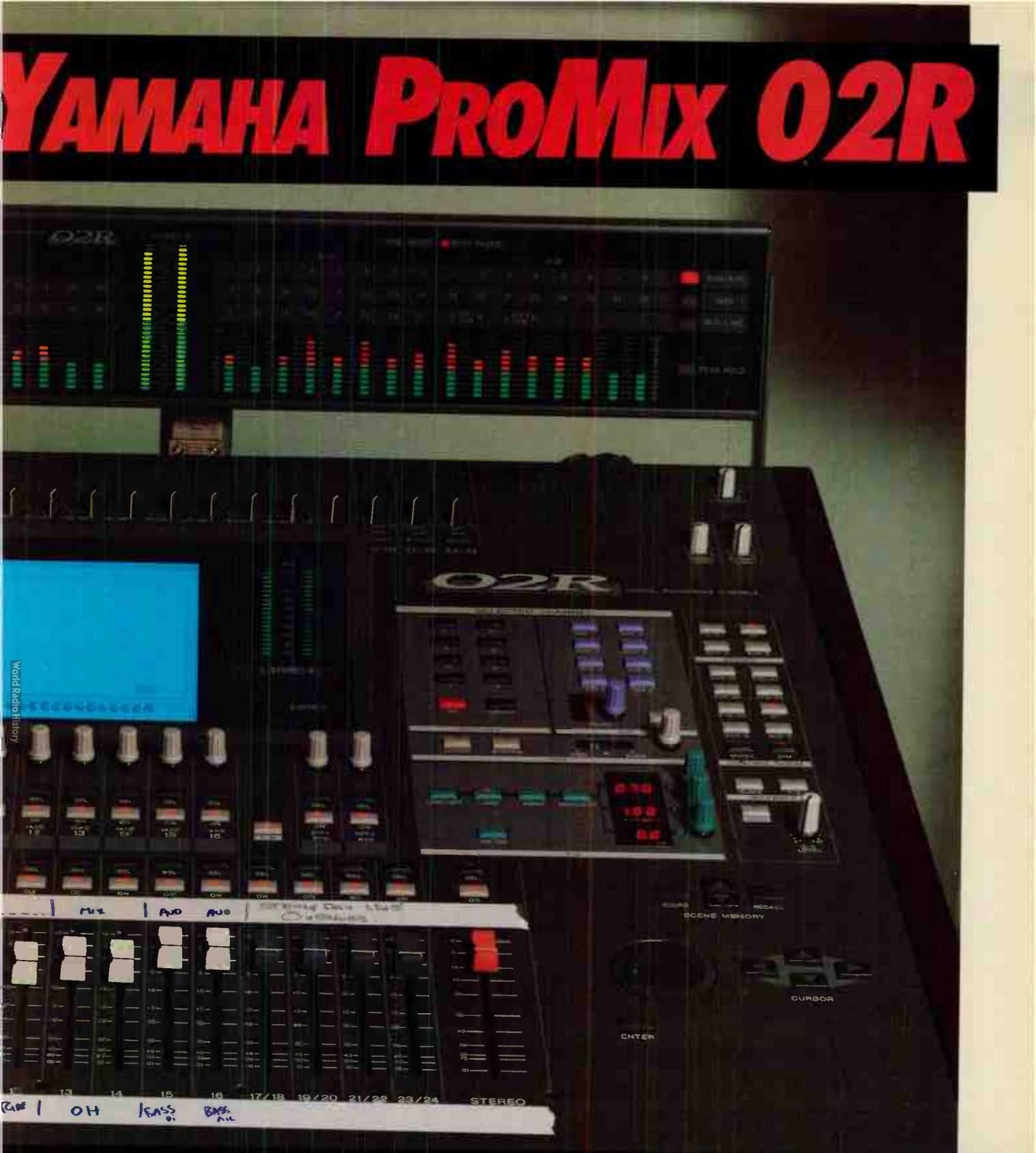
YAMAHA PROMIX 02R



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STRIKES. WILL IT HAVE AS MUCH IMPACT?

CHOLS

information using a 32-bit word length, while all digital I/O employ a maximum word length of 24-bit. Each of the 40 inputs, reverb returns, and stereo bus, has a 4-band parametric EQ, limiter, compressor, expander, ducker, and gate. Each band of the EQ is full range, 20 Hz to 20 kHz. The EQ was very musical and reminded me of the EQ in the Harrison Series 12 analog console. The 02R is more than $300,000 cheaper.

There are eight aux sends. The first six appear as analog outputs and returns on the rear panel. There are two built-in effects units that are assigned to aux busses 7 and 8. They are both mono in and stereo out. They sound pretty good, but are no replacement for the Yamaha SPX-990, Lexicon 480, t.c. electronics M-5000, or other high-end effects. I would compare them to the Yamaha REV-7. They are a good starting point and work well for rough mixes or song demo work. If you have additional external effects connected to aux busses 1 thru 6, then the built-in effects can be welcome additions for the many occasions when "you just need one more effect."

TOTAL RESET

Everything in the console, except the line trims, is controlled by the internal computer. Every EQ setting, dynamics setting, digital signal routing, aux send level, effects return, pan, and channel mute is memorized by the computer just like "Total Recall" on a Neve VR or SSL console. Every setting can be automatically reset to what is stored in memory like a Euphonix, SSL 9000, Tactile Technology, or Harrison Series 10 &12 console. (There are a few other big digital consoles with "Total Reset," but you get the point.)

As I have said in the past, if every aspect of the console can be recalled and reset, then you don't need as large a console. On a normal console, if you have two or more instruments on a single track of the tape, then you would usually make it appear on more than one module. Set one module for the trumpet, set another for the harmonica, and the third for the scat vocal in the fade. If every aspect of each input could be automated, then set the parameters for the trumpet, store them in memory, set everything for the harmonica, store it, set everything for the scat vocal, and store that, too. At the proper times during the mix, just recall the new settings. Everything changes instantly with no zipper noise or other unwanted artifacts.

The 02R has 64 memory locations for "snapshots" of the entire console. You could set the board for the verse, store it in snapshot memory, set your mix for the chorus, store it in another snapshot memory location, and then just recall them at the proper moments.

You can "pair" faders together. When you pair two faders together, whatever you do to one fader will also be done to its pair partner. This saves redundant setting of EQ and echo sends when you want the same thing to happen to both channels.

LIBRARIES

The memory location where the snapshots are stored is called the Scene Memory. The Scene Memory is one of the many "Libraries" where parameters are stored. When you recall effects for the onboard effects processors, they come from preset memory locations in the "Effects Library." You can modify effects parameters and store them in empty memory locations. There are also library pages for EQ and dynamics. If you are new to engineering, you can recall preset EQs to brighten the vocal or recall a preset for the proper kick-drum compression. After you have recalled a preset, you can modify it and store it in a user-memory location.

FULL AUTOMATION

O.K., we talked about the snapshot memory, but there are plenty of consoles with snapshot memory, so what is the big deal about the 02R? Well, real-time SMPTE-based automation with moving faders is the big deal. The 02R will let you ride vocals in real time, pan an instrument from side to side and back again, change reverb send levels during a solo, even change EQ for a vocal line that doesn't quite match the rest of the song.

The faders are not touch sensitive, so you must press the fader select button in order to disengage the motor that moves the fader. The fader can then be in either absolute or relative mode. In absolute, any previous changes that were made to the fader will be replaced by the new fader position. If relative mode is selected, then the fader becomes an offset trim to the moves previously written. This means that after you have ridden a vocal track, for instance, you can select relative mode, select the fader, and trim the moves as they go by. If "Auto Return" mode is active, when the fader is deselected, the fader returns to its

REVIEWER AT WORK: Roger checks to see if all of his ProMix 01 suggestions were placed on the 02R.

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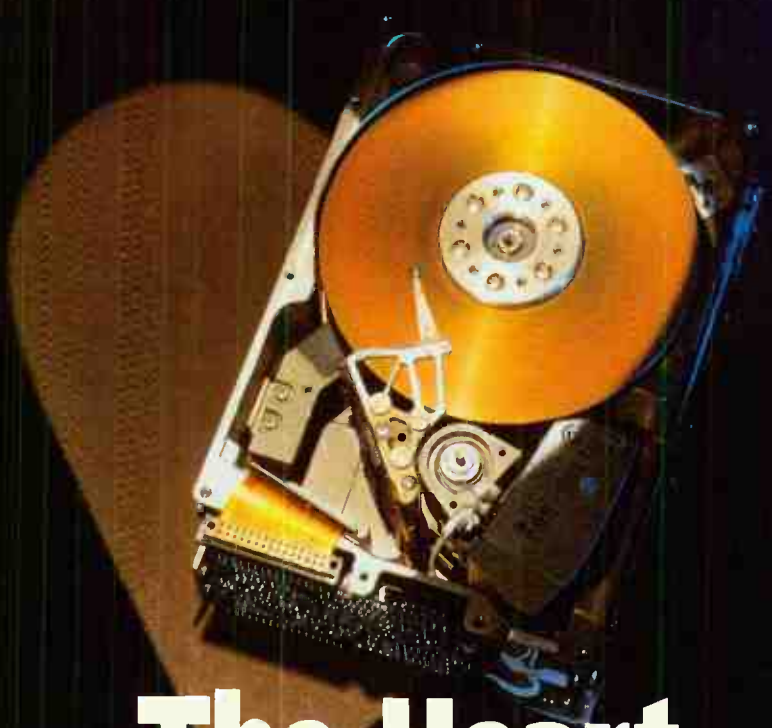

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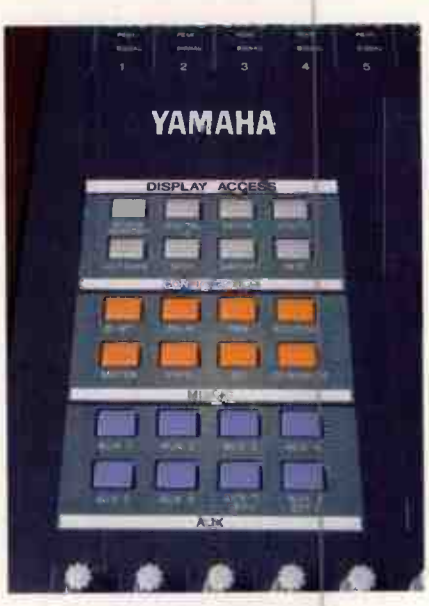


GET IN CONTROL: The 02R's EQ/Pan/Routing controls (left) and Display controls.

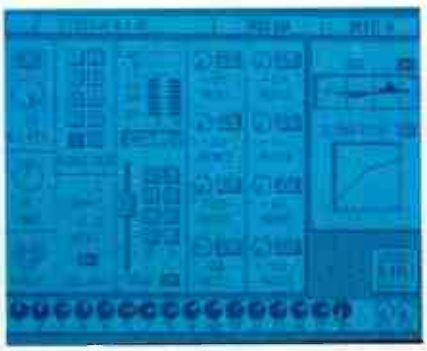
previous value. You can also set how fast or slow the fader returns.

During an automation pass you can also recall any snapshot memory and it will be included at that point in the automated mix. This means that you can set your snapshot levels for a chorus, and automatically recall them at the start of each chorus. Then you can recall the original snapshot at the end of each chorus to get back where you started. After that pass, you can use relative mode to touch up any ragged transitions.

You can select which console functions to include in the real-time automation passes. For instance, you can leave EQ automation off, which will allow you to change EQ during the automated mix without the changes being recorded as part of the mix. This EQ change can then be stored in the Scene Memory if you want to use the new EQ for your mix.

Off-line editing capability is limited in the initial release. You can remove events from the automation sequence so that all of the fader moves, mutes, or EQ changes are erased. You can set a start and end timecode for this operation. You can also enter Scene Changes off-line and define the timecode where the scene will change. I spoke with Yamaha about additional features that they are now considering for a future software upgrade. One of the additions would be a feature similar to the "Safety Net" feature of Flying Faders that protects all areas of the tune except an area between two timecode spots. This will allow you to change levels and trim fader moves in one area of a song without affecting any other part of the song.

At the present time you must play the mix to the end of the song if you have made any changes to the fader level that you want to keep to the end of the song. If you stop the tape, the



LCD WITH A VIEW: The 02R's "View" and "EQ" screen displays.

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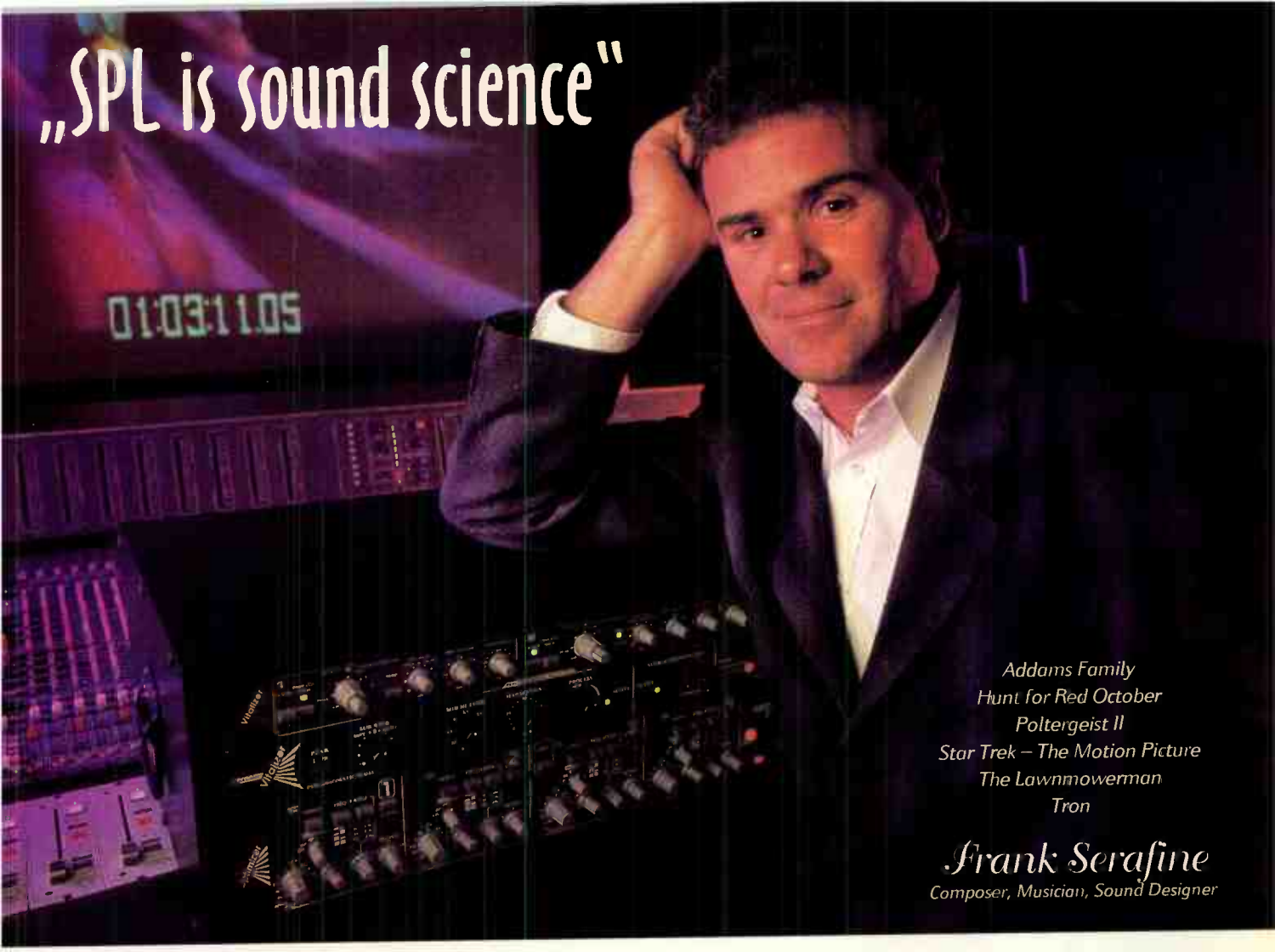
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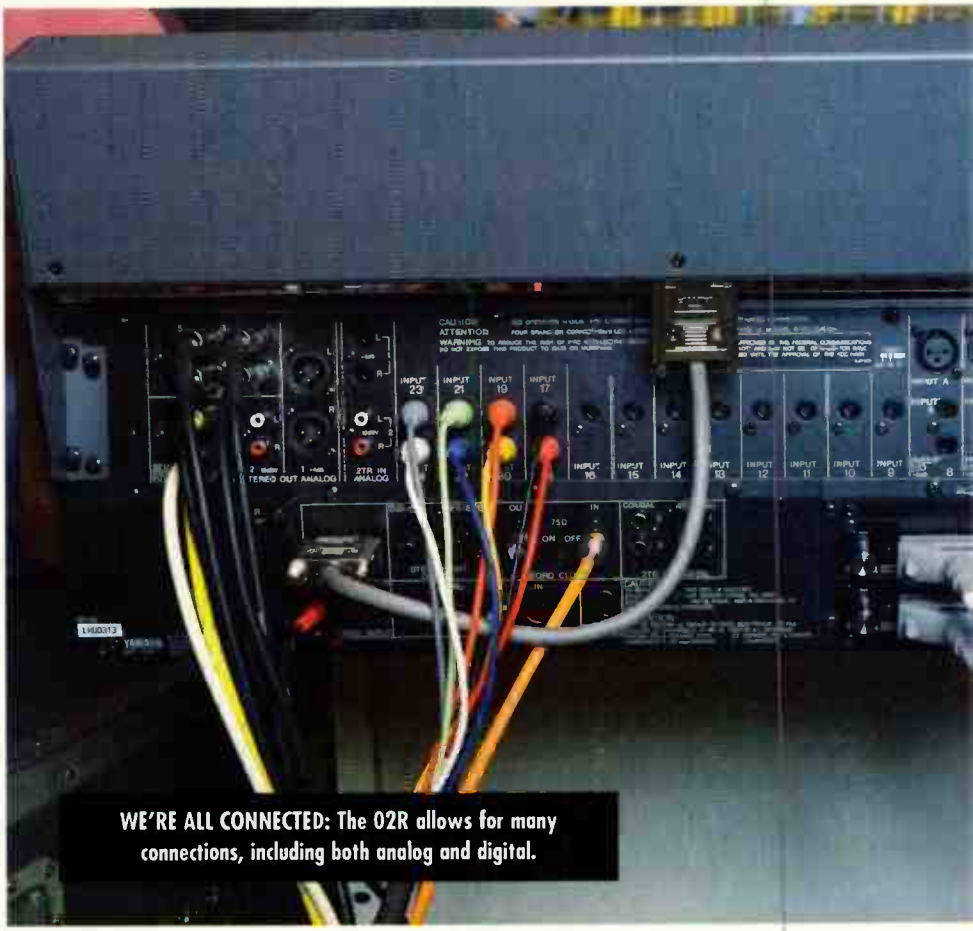

WE'RE ALL CONNECTED: The 02R allows for many connections, including both analog and digital.

fader levels will return to the previously stored setting. Yamaha is considering adding a trim feature that will let you trim a fader level up or down incrementally, affecting the entire song. This would work like the real-time trim feature in Flying Faders. With this feature you can ride everything and then sit back and trim the overall level of a fader while the mix is running. When you keep the trim setting, it writes the trim to the entire song. This is my normal mix mode and the biggest reason I prefer Flying Faders. On the SSL, you can trim fader moves, but it is an off-line change, meaning that you must stop the mix, type in the change, and then start the mix playing again to determine whether or not you like the changes. I am not sure whether this feature will make it into the initial release or will be relegated to the next software upgrade.

I almost forgot about grouping faders. There are four groups. This means that you can have four separate sets of faders grouped together. If you move one of the faders, all others in the group will move. There is no group master for the group. And there are four mute groups to which any combination of inputs can be assigned.

MISCELLANEOUS STUFF

The 02R comes with 512 k of automation system real-time memory. Separate dedicated memory is provided for snapshot storage. You can add an additional 2 MB of memory if you desire, but I think that for all but the most demanding mixes the standard memory should be enough. You can also dump all internal settings via MIDI system exclusive dump to any MIDI storage device to make room for more mixes.

I am told that there will be Macintosh software that will enable you to run many 02R's from a single Mac. It is also possible to control many 02R's from one screen through the 02R RS422 port or MIDI. Each console would store its own automation data, but starting a mix, updating mixes, playing back mixes, and whatever else you want to be commonly controlled is easy to do.

Many (no limit) 02R's can be cascaded together digitally to build a larger system. In the cascade process, you can attenuate the level of the incoming console if you wish. You can also decide which aux busses you want to cascade or keep separate.

If you don't like toggling between screens to see what is going on, there

World Radio History

is a View page on the display that will show you every parameter of a selected channel. You can see EQ, dynamics, aux send levels, and fader levels all at the same time.

There is a dedicated area of the console for EQ and pan so that you can adjust these values the way you are used to with an old-style manual console (Like how I am already moving my old console toward the obsolete pile?), by just reaching out and grabbing a knob. You don't have to cursor or mouse around to change EQ settings. The current settings for the EQ you are changing are displayed numerically on the LED display next to the EQ knobs and graphically on the screen display so you can actually see what the curve looks like that you are dialing in. I find that I prefer the graphic display because it more closely represents the visualization I have in my head of what should be done to the sound. Instead of thinking, "Maybe 1.5 dB at around 342 Hz with a Q of 3.2," I can think, "How about some of this kind of stuff, maybe a little of this, move it around to here, make this hole a little deeper here..." The dynamics display also shows you the shape of the compressor/gate curve as you change parame-

continued on page 158

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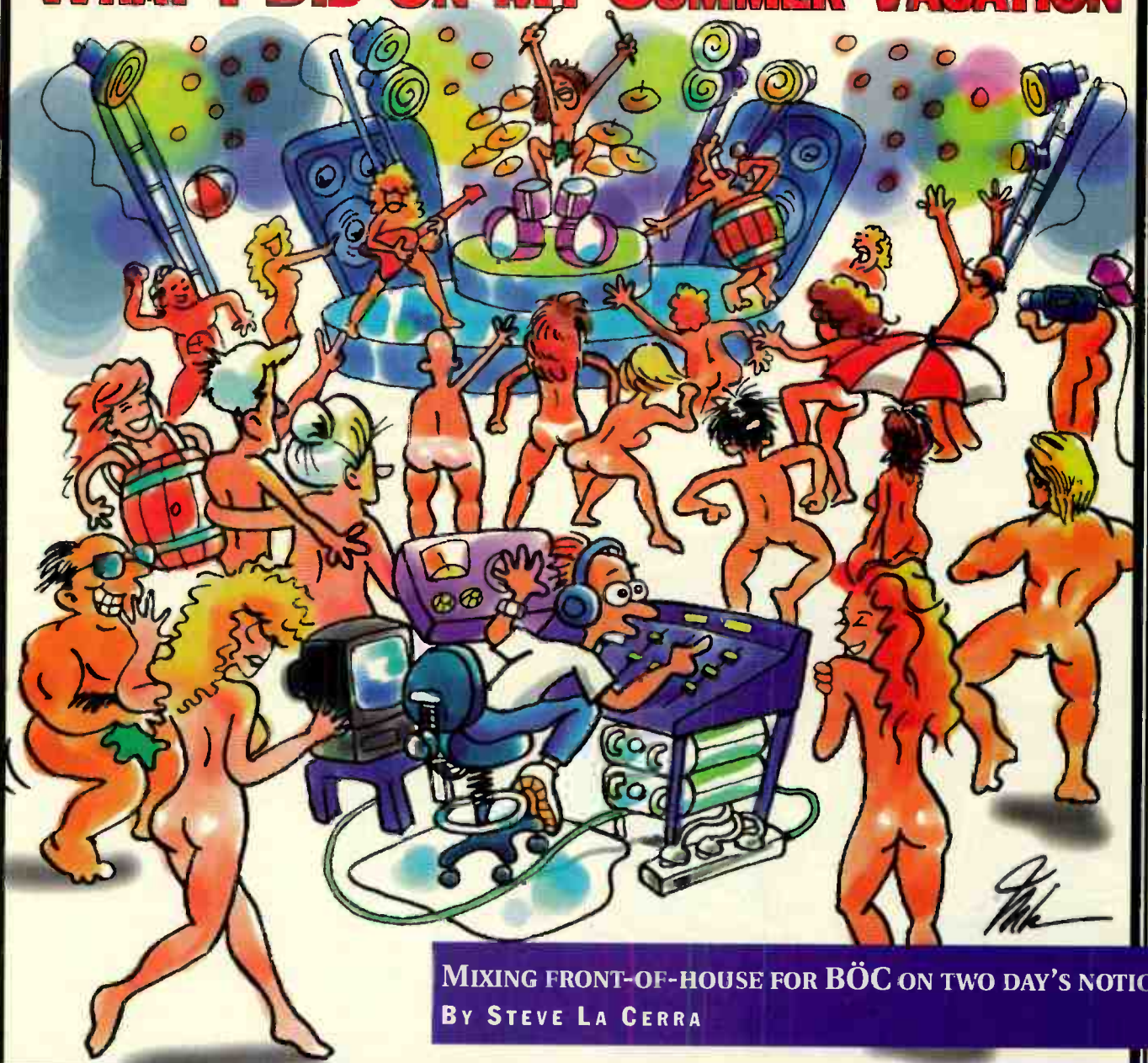
EQ LIVE

ROB COLBY REVIEWS THE MACKIE 24•4
PAGE 130

WHAT I DID ON MY SUMMER VACATION



MIXING FRONT-OF-HOUSE FOR BÖC ON TWO DAY'S NOTICE
BY STEVE LA CERRA

Illustration by Mike Browne

World Radio History

My Summer Adventures on the Road with Blue Öyster Cult

ON THE FIRST day of my summer vacation, I woke up and thought of all those great things I could do on my time off: surf and sand, volleyball, a hike down the Grand Canyon, catch up on some sleep...Hey wait a minute, this is not my bed. In fact, I don't even know where I am. I'm sure it was only yesterday that I woke up in New York City and cruised out to the *EQ* editorial offices. And today it's...it's...oh yeah — Chicago. I remember now. I remember how it all started.

It was that message on my answering machine from Chris Fenn, crew chief for Blue Öyster Cult: "How would you like to mix front-of-house for BÖC? We're leaving for Indianapolis on Thursday morning and we need someone. Let me know if you can do it." Of course I can do it, I have wanted to mix FOH for these guys ever since I first worked with them in 1993. But Thursday??!!! It's already midnight Monday, which gives me two days to tie up all my loose ends in town, meet an *EQ* deadline, speak to the band's regular FOH engineer to get the stage plot and figure out the cues, learn the set, pack, do the day gigs I have arranged for someone to take care of the cat. Ordinarily this is not a problem. I have left for longer tours on shorter notice. But this is not a band of mere mortals: This is the amazing Blue Öyster Cult.

If you're not familiar with BÖC, picture this: a double kick-drum set with five toms, a set of octobans and lots of cymbals, three guitar rigs, one bass rig, a multiple keyboard setup, tape cues that must be delivered on time (or else you're Godzilla food), plenty of effects, and five vocal mics. We run the input list backwards: the drum overheads come first, then low toms, high toms, kicks, snare, and hat. The reason for this arrangement, designed by BÖC's longtime engineer George Geranios, is that it puts the more crucial elements of the drum kit towards the center of the console where they can be easily reached during the heat of battle. Wimpy sound companies shudder at the thought of a Blue Öyster Cult show.

BACK TO DROOL: The crowds at Nudestock prove to be a distraction for our intrepid engineer.

IT BEGINS

We arrive in Indianapolis. on Thursday, August 3 for the first show: an outdoor festival with Cheap Trick and .38 Special. The band isn't really planning a soundcheck, and even if we were, there isn't enough time anyway. I was hoping for a thorough line check, but things are running late due to the usual preshow mayhem. Complicating matters further, there are two FOH consoles (both Yamaha PM3000's) that will be switched into the PA with alternate bands. I resolve myself to mixing my first show on the fly.

Since I have a couple of hours to kill before show time, I decide to program the effect units (all gear is promoter-provided; BÖC does not carry production). The reverbs are no big deal: a couple of hall and plate programs from Yamaha SPX90's and Rev 7's. The Cult's previous engineer was kind enough to brief me on the specific delays I need for various songs, so I have a list of about 15 programs that need to be written into the SPX units. No big deal except for the fact that I need some *loooong* delay times — like eight- or nine-hundred milliseconds. The original version of the SPX90 does not reach that high. So I get as close as possible and learn lesson #1: Carry an effects unit that is capable of performing all of the special effects I need and preprogram those effects while at home, in a reasonably calm studio, without 5000 screaming kids present. Where I can test these programs. And the temperature might be below, say, 102° F.

Equally important are the tape cues. Of course, it would be easier if I had a working cassette deck near my console, but that is not the case. The working cassette deck is 30-feet away, underneath the other PM3000. So one of the systems engineers and I agree to do a variation of that Foster's "Australian for remote control" thing: I'll cue him and he'll start the

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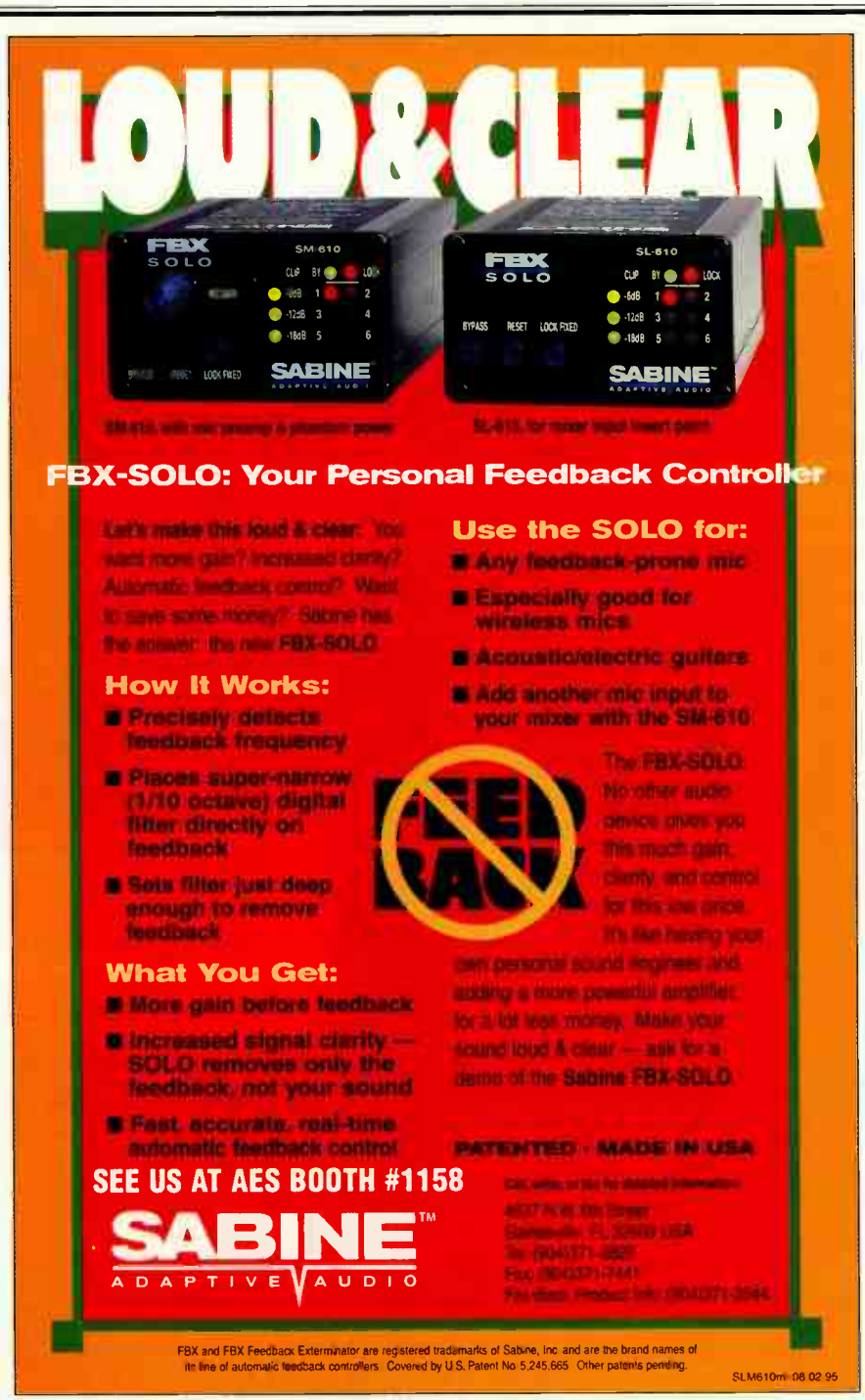
tape. Lesson #2: Carry a Walkman at all times.

I have done countless gigs with barely a line check before the show, but this is different. Blue Öyster Cult has a lot of gear and I have a total of about 40 inputs on the board. I roll the intro tape (the official "point of no return") and the band takes the stage, slamming drums and guitars with the usual preshow noodling. Not much happens before the intro tape ends and the first song starts. As I expect it's a pretty rough mix, and I'm having a hard time keeping up with all the inputs, the tape cues and the effect changes, but I'm on it.

Then just as I'm getting in the groove some strange things are happening. I'm hearing this weird wash of sound, almost like there is an open mic on the stage which is cranked in the PA. It almost sounds like the mains are feeding back. Not the monitors, the mains. I have never done an outdoor show where the mains fed back. I start soloing instruments trying to find out what is going on. Finally, a look at the compression rack shows that one of my dbx 160x units is compressing big time. But I have set all of my compressors for only a moderate amount of gain reduction. I check the patch. It was supposed to have been patched at the insert of one of my vocal channels, but was actually patched on the mic for Allen Lanier's guitar cabinet. So every time Allen stopped playing guitar — which was quite often since he spends half of his time playing keys — the compressor opened up, giving me that beautiful stage wash and near-feedback. Lesson #3: Confirm that all patches have been made correctly regardless of who has made them. Switching the insert (and thus the compressor) out of circuit quickly solved the problem.

Now that things are under control, it's the part of the show where drummer extraordinaire Chuck Burgi takes a solo — I finally get my drum check. Boy am I happy! And then...the left half of the PA goes dead. It probably has something to do with the two FOH consoles and the way they are alternately switched into and out of the PA. We had to finish the show like this. Lesson #4: Be prepared to mix on any type of PA conceivable or inconceivable. The rest of that show was relatively uneventful but there are some pretty interesting highlights from other tour dates. Names have been changed to protect the innocent.

August 5: Chicago, IL. The house console has a problem in channel one. The systems engineer makes the mistake of moving the entire snake over one channel (i.e., channel one on the snake is connected to channel two on the console). He should



CIRCLE 83 ON FREE INFO CARD

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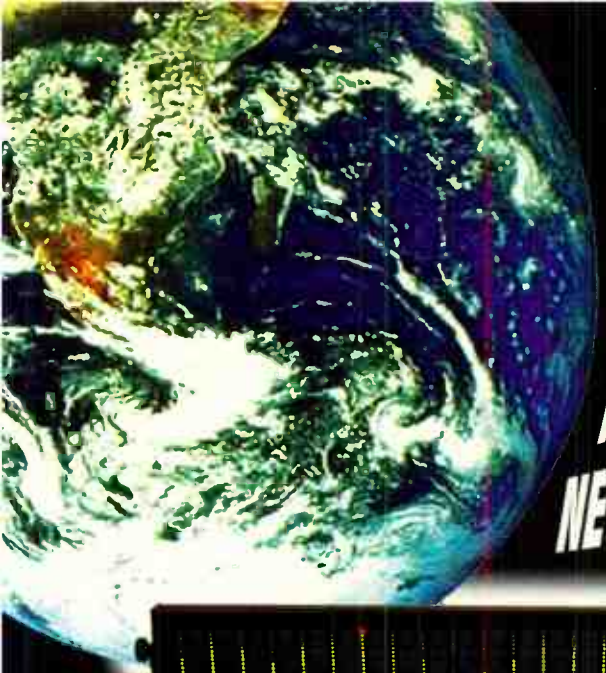
MIXDOWN CLASSIC 8



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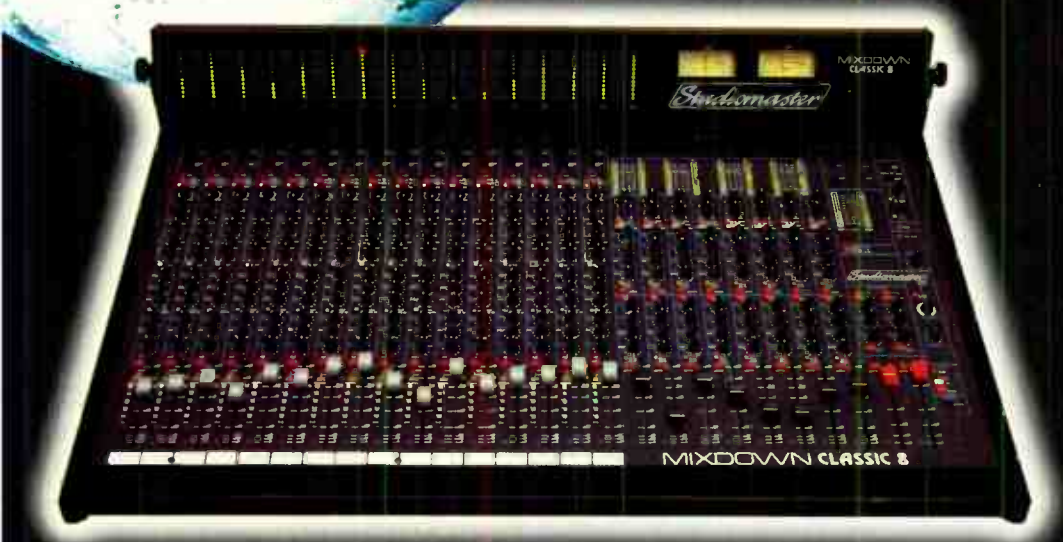

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have just taped off channel one on the stage box. Tracking down a misconnected cable literally took hours because the stage hands did not know about the cross-patch.

August 11: St. Louis, MO. I have my ART SGE Mach II for effects, so I am carrying my own programs and living large. After a big hurry-up-and-wait preshow, a bunch of stray frogs hanging out near FOH and an audience of 15,000 got more than their money's worth.

NUDESTOCK

August 12: Union City, MI. This will go down in history as the single live sound gig that I will never forget. The venue was the Turtle Lake Music Festival where we were on the bill with Starship and Eric Burden. I walk out to the FOH platform and as I am moving through the crowd, something odd strikes me: these people have no clothes on! Turtle Lake is a nudist resort and this is Nudestock 1995! Oh my God, now my mother will really want me to quit this business. At least everyone in catering is clothed. The systems engineer is kind enough to point out that his Soundcraft console has recently been *rained* on so I should be careful about losing a channel. I should also be careful about staring too much. The crowd is urging the band to take their clothes off. If they urge production to do the same, I'm in trouble. No cassette deck? No problem, I have my Walkman.

August 18: Pasadena, MD. This particular night was quite interesting. Bassist Danny Miranda had a new stage rig and I was getting this really loud buzz from it that sounded like a ground loop. We tried everything — new cables, lifting grounds on direct boxes, lifting ground on the entire bass rig, different basses. I even sliced open a cable and severed the ground conductor to the DI to see if that would help. It didn't. It turned out that Danny's bass was being run through a multichannel snake that also carried MIDI data from Donald "Buck Dharma" Roeser's guitar rack. Hmmm...could it be? Yes it was. The MIDI lines from Donald's rig were inducing noise on Danny's bass. Rerouting the bass signal with a separate cable cured the noise.

At about 7:00 PM (after soundcheck) the building next door caught fire and I was wondering if there was even going to be a gig. Rick Downey (the tour manager) and I decided it was a good time to go back to the hotel for dinner (and hopefully a preshow nap for me). When we returned to the club at about 11:00 PM, we found one of the crew talking to the local police near the band's truck. No big deal, he probably just wants to come to the show or something. No such luck. As we

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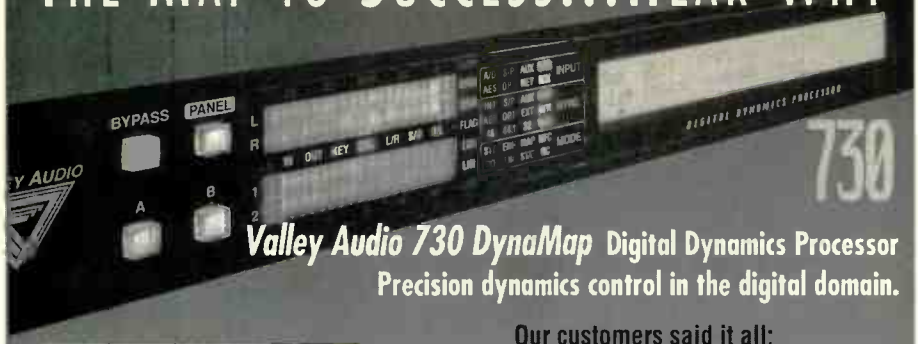

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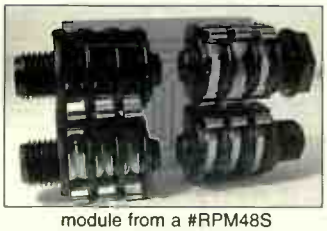

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approached the truck, the police officer asked the tour manager: "Are you Rick Downey?" "Yes I am." "Mr. Downey, this man is under arrest for possession of narcotics." Busted in the band truck for smoking a joint. And there are people asking me for tour dates while I am busy mixing the show! Where is the justice in this world?

August 19: Wilmington, DE. Ah yes, the night the SPL Police came to get me for breaking the speed limit. But officer — I was only doing 110 dB at 90 feet. OK, OK — I'll keep it down to 105.

August 25: Toad's Place, New Haven, CT. No wonder this is one of the premiere clubs in the country. Great house crew, lunch, and even prompt, accurate messages from the front office.

August 26: Milton, PA. The venue shall remain nameless. It used to be a health club. Imagine me mixing poolside. I am the lifeguard and the band is at the diving board. Plenty of concrete, mirrors and a steel ceiling — a beautiful acoustic environment. The VUs on the boards never made it past –10. They didn't have to because the room was so reflective that it was painful and I could barely keep the SPL tolerable. Good thing the SPL police were still looking for me in Wilmington.

AUTUMN 1995...

More adventures are heading my way even as I write this. At the end of this week we have three shows in three days: Iowa, North Carolina, and Tennessee. As Chris Fenn always says, "It's not the gig, it's the commute." I hope I make it back to New York in time for the AES convention. EQ

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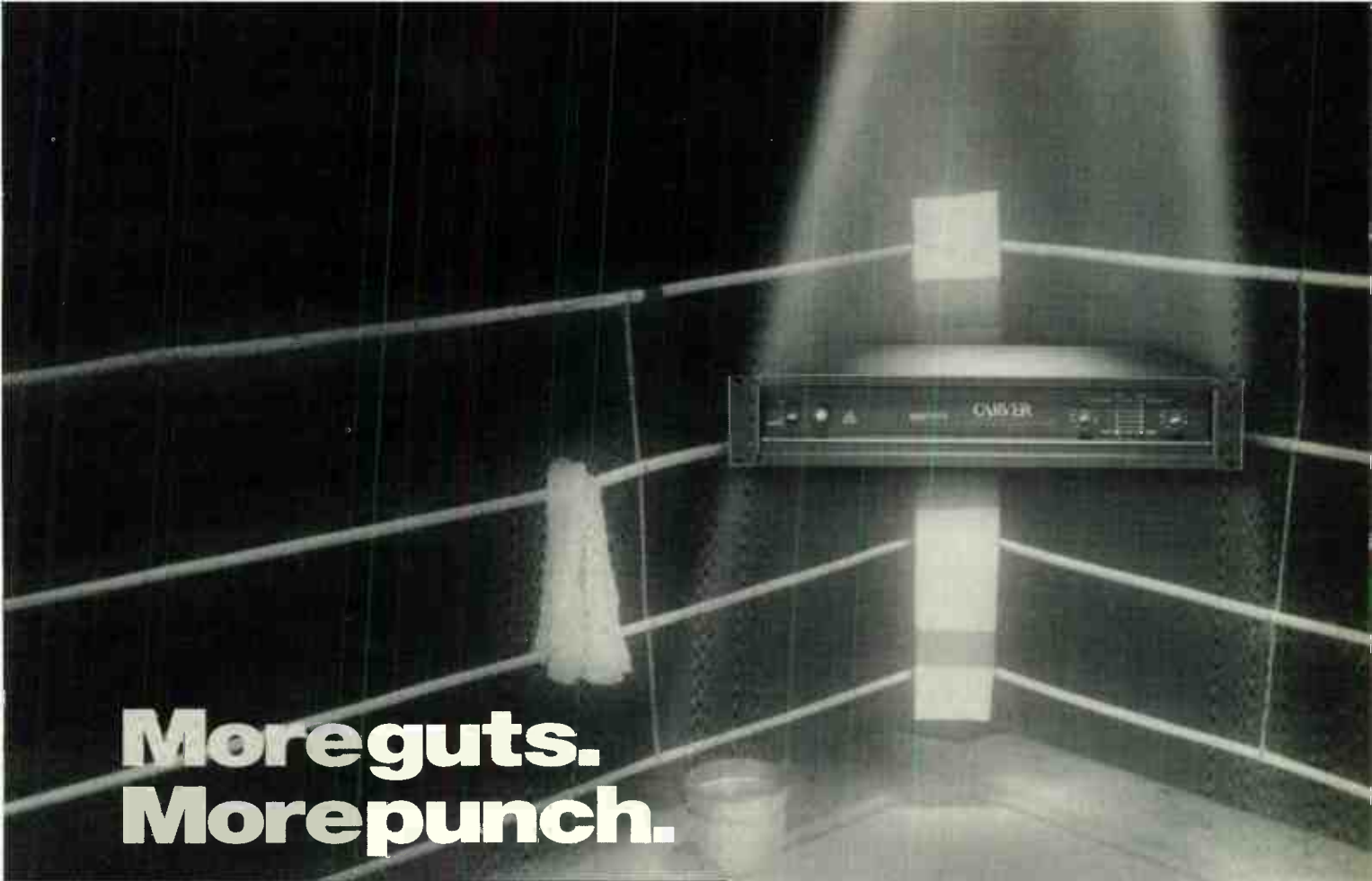

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A Month in the Life at Tramps

A look at the life of a very busy board at New York's popular hot spot

By Baker Lee

WHEN AN ACT plays Tramps, the music business shows up. Aside from assorted managers, agents, and label execs, each act must contend with the New York press, which includes TV, radio, and print. On any given night, the *New York Times* might be reviewing a show while ABC-TV and MTV are filming for upcoming segments.

It's not unusual for an act to be a little more particular about their performance when they play Tramps (45 W. 21st between 5th and 6th Avenues). Each show is important, not only for the band, but for the venue as well. If a club becomes known for good sound, then the labels, agents, and artists themselves are more likely to book the room.

From Elastica to Toots and the Maytals, John Cale to The Meters: a wide variety of acts passes through Tramps each month, and every one has its own different and unique audio requirements. As production manager and front-of-house engineer, it's my job to provide the best possible sound for each act — and that means having equipment that inspires confidence in a visiting engineer or artist.

Recently I upgraded the FOH console from a Crest Consoles Century Series GT to a GTx. Although they are both 40 x 8 x 2 boards, the new features of the GTx assure me an even greater control of my mixes, which means better sound for all involved — artist, audience, and engineer.

At the monitor position, I also upgraded the console from that reliable old workhorse, a Yamaha 2408, to a Crest LM20, a 40-channel board with 20 discrete mixes — or, if you need it, 8 stereo and 4 mono mixes. Again, I have more options and control over the on-stage mixes, which makes a better sounding show overall.

Over a one-month period, Tramps hosted its typically eclectic lineup of talent, each group with its own particular sound needs. A closer look at a few nights over that period of time illustrates a point or two about what it takes to sustain a certain level of confidence in a sound system, a level of confidence that Tramps' guest artists and engineers deserve.

MAY 25: ELASTICA

Elastica, on tour with an extremely successful album, came into Tramps with a basic rock 'n' roll set-up. The group's front-of-house engineer, Michael Brennan, had only one special need: he wanted to record the show onto an ADAT machine that he had just acquired.

Using the XLR outputs from the subgroups, I was able to send the 8 discrete subgroup channels to the ADAT, allowing the engineer to take the tape and mix it down in the studio at a later date. The sends were clean and controlled by the subgroup faders. Without depressing the Left and Right send on the subgroups while assigning each individual channel to both a subgroup and the Left and Right masters, we were able to keep the house mix completely separate from the mix to the ADAT.

JUNE 28: AFGHAN WHIGS

The engineer for the Afghan Whigs, Steve Girton, had a different recording need. He wanted to make a cassette of the show using the matrix sends from the subgroups. Each subgroup has feeds to matrix A and B outputs. This gives the engineer either two separate eight channel mono mixes or, as in this instance, one 8-channel stereo mix.

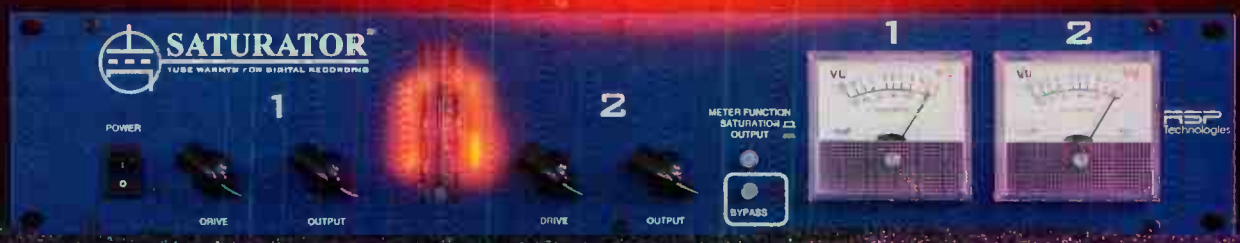
I used the XLR outputs from matrix Left and Right and sent them to the cassette machine. Listening on the headphones, the Whig's engineer was able to do a separate stereo mix to tape using the matrix from the subgroups without affecting his subgroup mix to the front-of-house. This use of the matrix for recording comes in very handy in a room such as Tramps, which is quite wide and set up in a way so that too much stereo imaging can deny listeners parts of the music. At the same time, by using the matrix outputs, you can make a great stereo tape.

In recording situations, I have used the left and right matrix outputs as well as recorded directly from my house mix. If I find, for example, that I don't need a certain instrument in the

BOARD MEMBERS: Rance Caldwell and Paul Okin, engineers for Stephen Stills, at Tramps.

World Radio History

GLOBAL WARMING



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CIRCLE 57 ON FREE INFO CARD

WHIG OUT: Steve Girton works Tramps' Crest Century GTx console at the Afghan Whigs show.

house mix, I can then assign that individual channel to a subgroup and use its matrix send to get to tape without compromising my tape or the live sound.

I can also use the direct outputs from each individual channel for multitrack recording. Depressing the channel direct-out button transforms the Aux 8 send knob into a direct-out level control. This method allows precise level control to tape without affecting my live mix.

I should also mention the mono output on the GTx at this point. Each channel can be configured for conventional left/right panning or left/center/right (LCR) panning. The mono output can be used to feed a "zone" or as the center output when used in LCR mode.

At Tramps, I use the mono output as a send to the back of the house, which is on a 42-millisecond delay. Although each channel can be sent individually to the mono bus, I choose instead to send the Left and Right master, therefore getting my whole mix to the back of the house.

JUNE 10: SOLOMON BURKE

One of the greatest soul singers and a creator of the genre, the legendary Solomon Burke, would be arriving on time at Tramps for the show. But he definitely wouldn't make it to the club in time for a soundcheck, having just played in Central Park during the afternoon, backed by the famous Uptown Horns.

Having worked with Solomon and the Uptown Horns before, neither Paul Okin (the monitor engineer) or I was worried. The only difference between this show and any other Solomon show would be the addition of five more horns, for a total of nine horns altogether.

Given the size of the stage (approx. 25' x 15'), I decided to double up the horn microphones. Therefore, I had drums, bass, two guitars, Hammond organ, three vocals, and five horn microphones. Since I didn't need any overhead microphones for the drums, I was

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CIRCLE 41 ON FREE INFO CARD

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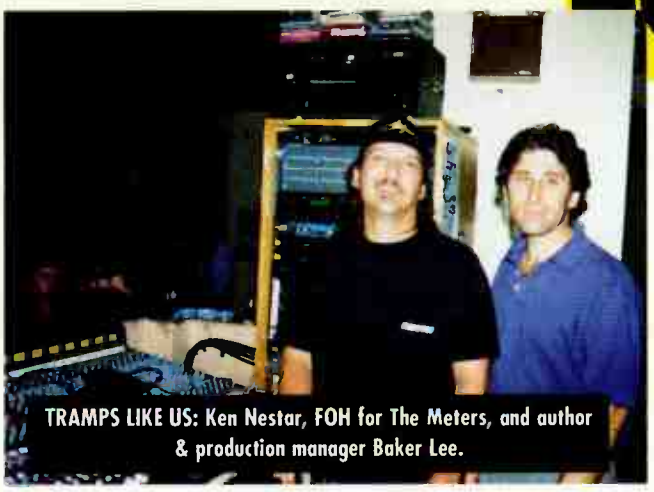

TRAMPS LIKE US: Ken Nestar, FOH for The Meters, and author & production manager Baker Lee.

left with a total of 18 channels. I bussed everything to my left and right stereo mix except for the horns, which I sent to my first three subgroups. The two sax mics were number one, the trombones were in the second, and the trumpets were in the third.

Because I only have a total of seven in-house comp/limiters, I was able to insert a comp/limiter into each of the three subgroups in use and still have one for each of my three vocals and one for the bass. I depressed the left/right assign on each subgroup, and I was ready to go.

As with a lot of the older soul groups, Solomon stays in the dressing room and sends the band out to do a few tunes as warm up. Considering that we were doing the show without a soundcheck, this was the opportune time to get my mix. Using headphones, I began to equalize each channel as the band played.

The PFL signal LED lights on each channel of the GTx made it easy to monitor the input signal. Setting up the drum gates is simplified by having the insert on/off button on each channel, so I don't have to jump back and forth from my rack to hear post and pre insert.

JUNE 13: STEPHEN STILLS

Rance Caldwell, road manager for Stephen and also Crosby, Stills and Nash, seemed quite pleased to see the GTx and LM20 in house. Most big-name acts come into Tramps trailing a bit of an attitude, and understandably so. Playing arenas and coliseums on state-of-the-art equipment can make any room under 5000 seats seem small and inadequate (Tramps seats 900). So it makes a tremendous difference to an artist and crew when they find a well-stocked and maintained room. Everyone seems to relax, and the attitude changes from, "This gig is below us," to, "You know, this actually looks pretty good."

Stephen Stills, in my opinion, does the right thing by using his engineer, who also happens to be Rance Caldwell, in the monitor position instead of at

continued on page 158

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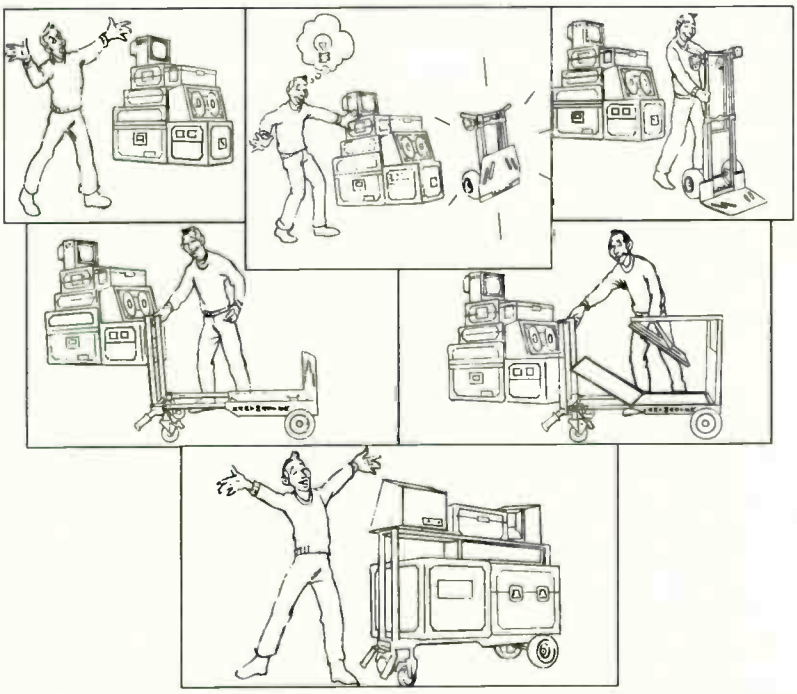

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CIRCLE 55 ON FREE INFO CARD

World Radio History

HOOTIE GROWS UP AT SUMMER CAMP

Photo by Roger K. Darnell

FISH GAZING: How Fulton sees the show.

ON A BREEZY September eve, a record-breaking, sell-out crowd of over 9000 people thronged to the Daytona Beach Ocean Center to witness Hootie & the Blowfish in-person. In the dusk of a week where the band played the David Letterman show and performed at the MTV Music Video Awards (claiming the Best New Artist prize), this show is the last on-the-road for the surprisingly stellar "Summer Camp with Trucks" tour that's helped record sales of their chart-resident *Cracked Rear View* release roar past seven million.

Jim Brammer is Hootie and the Blowfish's production manager and president of the Winston-Salem, NC-based Special Event Services (SES). "On this tour," Brammer explains during soundcheck, "The band wanted to do something simple. They just wanted to play their music with decent sound, decent lights, and give the people a good show."

Brammer described the whirlwind preproduction romance that began in January with plans for one-off production and finally exploded into full production with over 80 boxes of PA for sell-out crowds at sheds across the country. "The fans just started gathering momentum in the early spring and it's still continuing," says Brammer. "Who knows where it's going to top out; eleven, twelve million records?"

All that's clear come show-time is that the music and humble-yet-musically explosive stage personas of lead vocalist Darius Rucker, lead guitarist Mark Bryan, drummer Jim 'Soni' Sonefeld, and bassist Dean Felber paint them as down-to-earth guys whose hearts show up in their performances and their upbeat, bluesy, popular rock tunes.

WHAT ABOUT SONI?: A crew member with drummer Jim Sonefeld's EAW LA325 monitor.

GROWING UP HOOTIE

For three years Billy Huelin, the band's house engineer, has been shaping the live Hootie sound. "If you'd heard the band three years ago, you'd be amazed at how different everything is," he explains. "We had less than 20 inputs for two-and-a-half years. On the first leg of this tour, we went from trying to make a four-piece band sound a little bigger in clubs to suddenly adding new musicians and instruments and trying to find room for them."

Peter Holsapple of the Continental Drifters joined the band for the tour, adding his Hammond, piano, mandolin, accordion, electric guitar, and vocal talents. An electric guitar was added for Darius, who plays acoustic as well. And Gary Green — the tour's drum tech — plays congas, bongos, shakers, and tambourines and sings. Huelin defers much of the credit for making the current 37-input mix meet the band's "real-live'" standards to monitor engineer Mark Fulton.

MONITOR MASTER

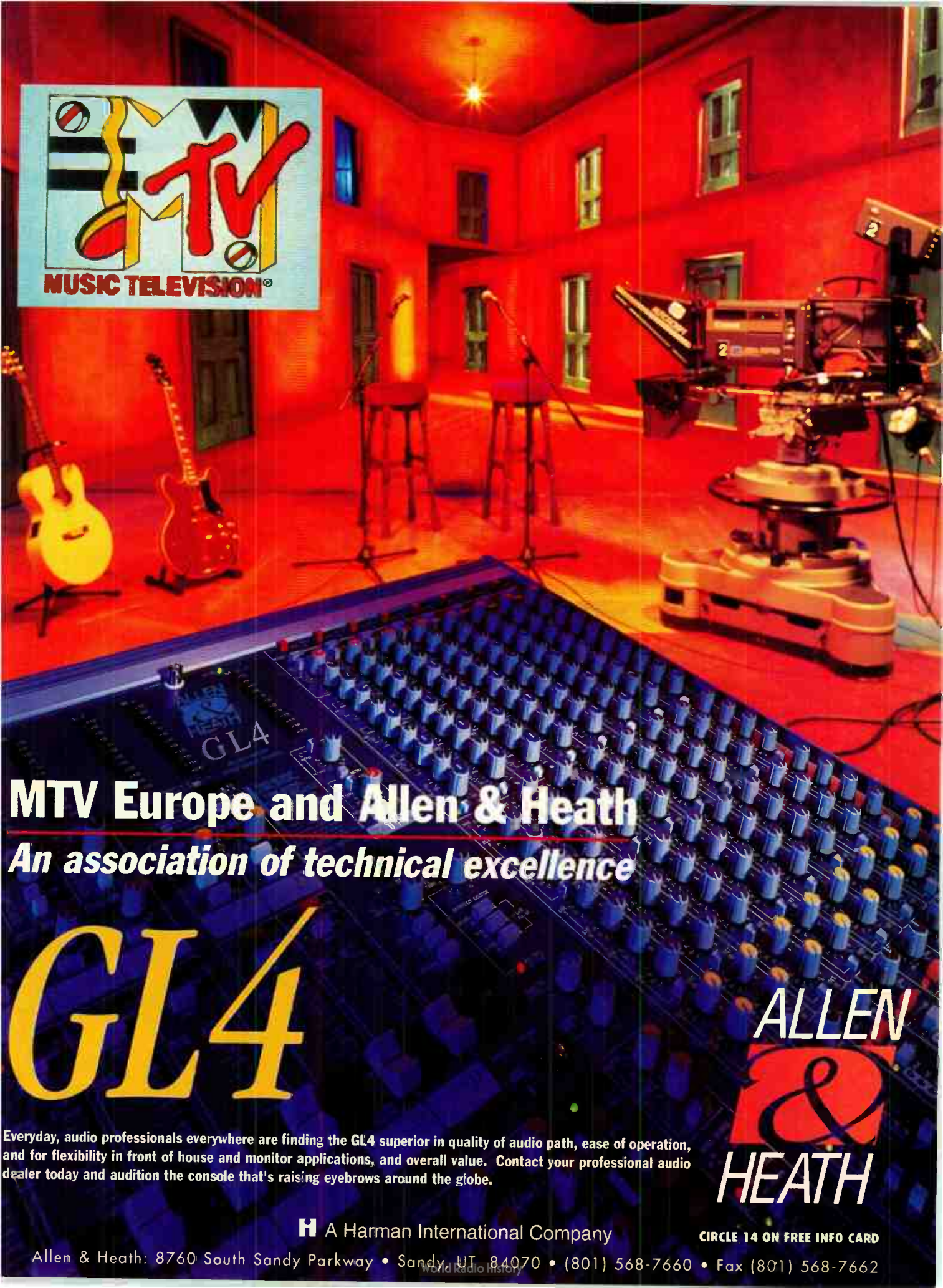
Fulton mixes the Carver-powered monitor system on a Ramsa 840 console and regards its performance as "flawless. It's very user-friendly. I also like that you can run pink noise through a monitor and stand right at your console with a cue wedge on and tell if it's working."

Fulton explains that

HOOTIE & THE BLOWFISH HITS THE SHED TOUR TRAIL WITH A FULL TEAM OF AUDIO EXPERTS

BY ROGER DARNELL

World Radio History



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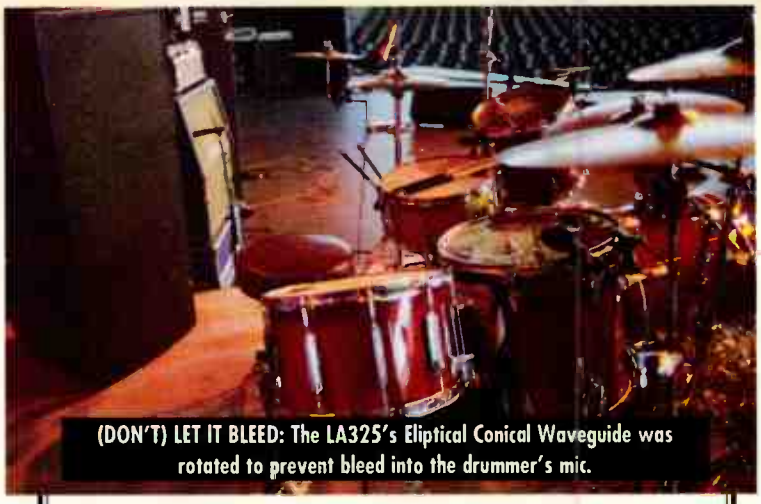
CIRCLE 24 ON FREE INFO CARD



(DON'T) LET IT BLEED: The LA325's Eliptical Conical Waveguide was rotated to prevent bleed into the drummer's mic.

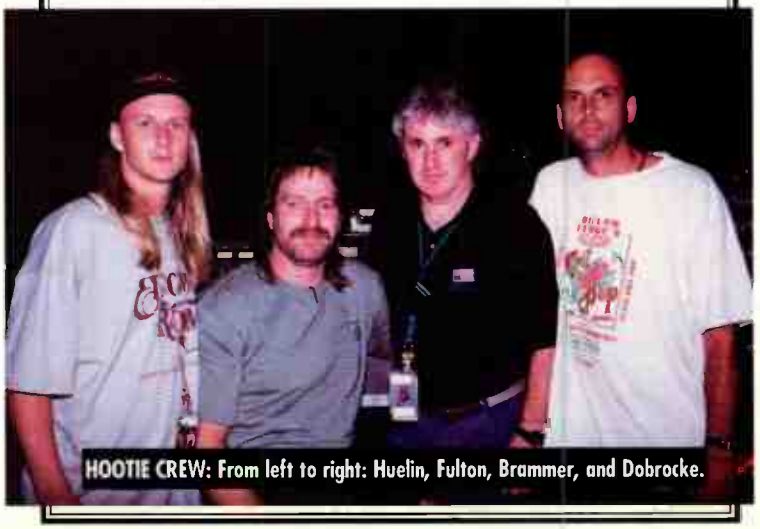
each of the ten mixes he sends to stage is unique. For example, "Darius likes more of a fidelity mix — more of the bottom and very little midrange. But he likes the top-end to cut him pretty hard to cut through the stage volume. Using the SES proprietary wedges for backfill, I have a complement of two more horns, and he likes that more upper-register sound. We use the Eastern Acoustic Works (EAW) LA325's for Soni's drum monitor, and the EAW SM222's for Mark and Dean's sidefills. The only processing I use are three dbx 166's and five Ashley EQs to make up my ten mixes."

Fulton rigs Sennheiser 421's, SM57's, and SM81's for the drums, with a Beyer M88 on the kick. Darius's vocal mic is a Beyer 480TG. "I really like the mic's very warm sound; but since he almost always wants his sound on the edge, with him wearing a hat and a lot of times sunglasses, too...hey, it might even feedback tonight."

ROCKING THE FOH

Throughout the excitement of the live show, including times when members of opening acts Cravin' Melon and Edwin McCain join-in the partying fray, none of the thousands of singing-along, appendage-waving, aisle-dancing fans are subjected to any such glitch. All are lost in the music....

House systems engineer Fletcher Dobrocke discussed the band's Carver-powered EAW gear: "The new Stadium Array Series KF850's — the KF853 long throw boxes — made a huge difference in this show, mostly because of the drivers and the way they've aligned the waveguides. Also, I believe we're the only band touring with the new EAW MX8000 processors, and from the day we added those it also made an amazing difference — smoothing the high-end out even more."



HOOTIE CREW: From left to right: Huelin, Fulton, Brammer, and Dobrocke.

Photo by Roger K. Darnell

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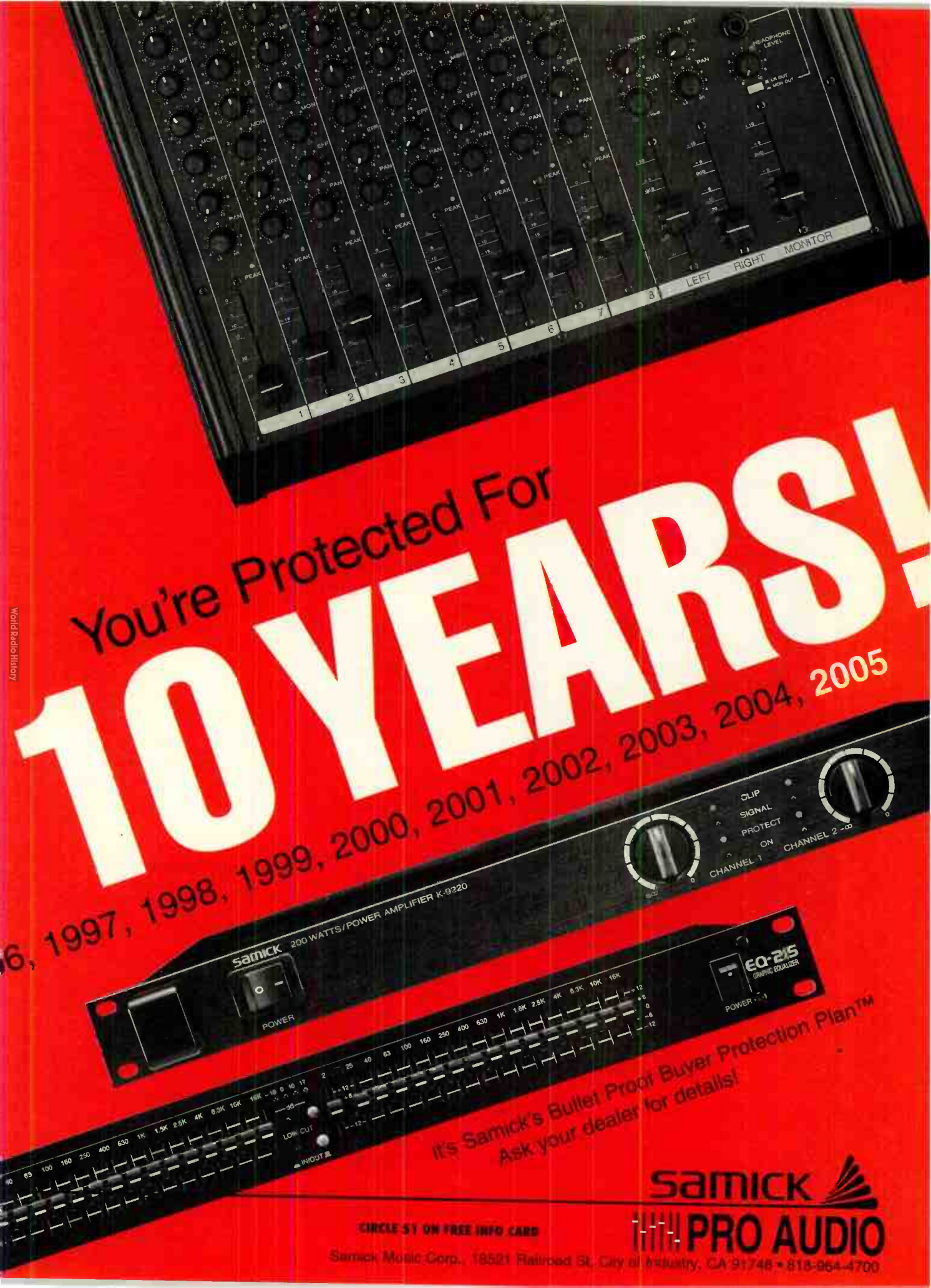
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CIRCLE 56 ON FREE INFO CARD

EQ LIVE

Huelin cites the Soundcraft Series 4 as another big plus: "Since every song gets mixed, I wanted a console that was really comfortable to mix on. It's really been a definite improvement in terms of trying to get a lot of warmth out of it, too."

A t.c. electronics 2290 is along for delay effects, plus two Yamaha SPX900 reverbs and another SPX990 for its pitch program. The FOH team uses plate reverbs for the drums and the vocals, and "no really long delay times," Huelin points out. "Darius said if he ever heard himself delayed in the house, he'd kill me." The philosophy for processing is to use just enough to enhance certain elements and help them stand-out. "We've got up to six people singing up there," says Huelin. "It's live and it's real, and we want everyone in the audience to know that."

Compression-wise, the band employs old and new: dbx 165's are used for the mandolin "because they really squash it and punch it right out there." Same with the 160 for the bass. Behringer gates and compressors serve vocal applications.

NEXT SUMMER?

Though Brammer estimates the band could profitably stay out at least another year, everyone involved with Hootie and the Blowfish is looking toward a little R&R: Rest and Recording. The next Hootie album is in the wings. From there?

"We've been asked to come out again in '96 with the band," says Brammer. "We don't know how big it will be yet."

Dobrocke and Huelin have their own ideas for the foreseeable future. Says Dobrocke, "As far as next

continued on page 158

World Radio History

THIS TIME IT'S PERSONAL

In-ear monitoring. Everyone's talking about it. But what do you really need to know?

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CIRCLE 44 ON FREE INFO CARD

ROB COLBY REVIEWS THE MACKIE 24•4

I WAS REALLY happy to hear from *EQ* magazine about doing an equipment review. So, even though I was chest deep in mixing the live tracks from the recent Phil Collins tour [*Far Sides for B-Sides*/Phil Collins Live Tour, 1995], I said, "Let's do it!" What we did was the newest offspring from the Mackie Designs farm.

The Mackie 24•4•2 mixing console is the latest effort from the wacky-Mackie folks in Woodinville, Washington. The 24-input board is designed for sound reinforcement and project studios.

This is a perfect console for a band just starting out, as well as a band doing small tours and traveling around in their van. In addition, the 24•4 is right for project studios, houses of worship, small music clubs, high schools and college audio classes, and industrials. For the price, you can't go wrong. There's a lot of bang for the buck in this board. The real question is where was this console when I needed it ten years ago?!

FIRST IMPRESSIONS

This console is so compact I can take it anywhere under my arm. The board is 19"D (480 mm) x 31"W (785 mm) x 6"H (152 mm) and weighs 31 lb. (14 kg.) It has enough insert/patch points to make it right for just about any application. Great ergonomics, right down to making it very easy to identify the different sections. Even the silk screening (or however they got the details on the board) is very good. Smooth pots and faders, decent metering (except for the rather unlikely indication of +28 dB) and useful, flexible inputs/outputs. The first 20 inputs offer mic/line switching, while inputs 21–24 offer line only. In truth, this mixer can provide 34 inputs if you count the 4 stereo returns for the auxes, plus tape inputs L+R (8+2).

The Mackie 24•4 is very well laid out, has a very musical sound, and provides great headroom and versatility. There are six aux sends and four mono or four stereo aux return inputs intelligently designed in how they get back into the board. The

ROAD TEST

MANUFACTURER: Mackie Designs, 16220 Wood-Red Road NE, Woodinville, WA 98072. Tel: 1-800-898-3211.

APPLICATIONS: Numerous applications, but especially perfect for the Band-in-a-Van, small clubs, church sound, and project studios.

SUMMARY: Extremely flexible and portable 24-input mixing console for sound reinforcement and recording projects.

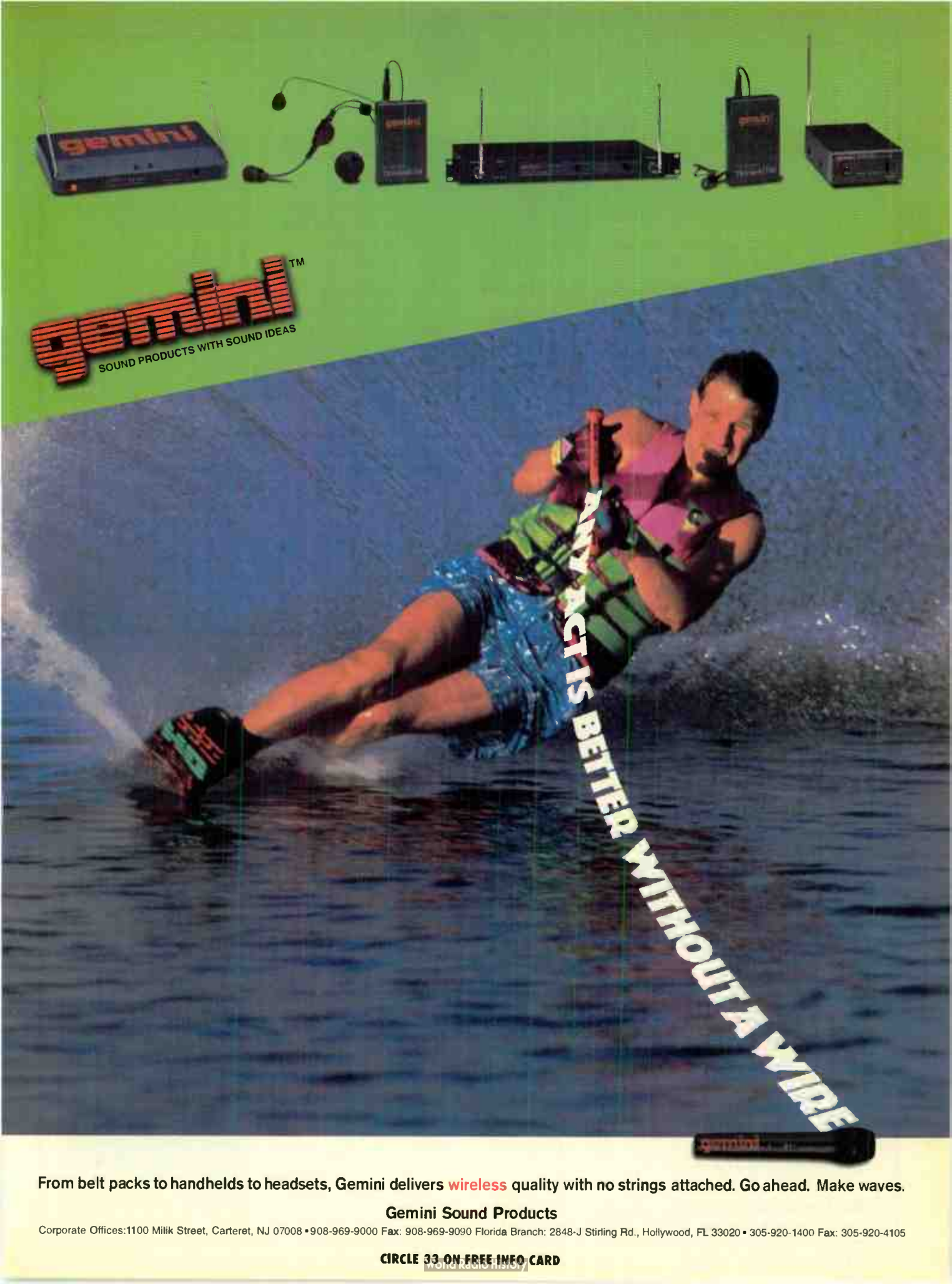
STRENGTHS: Big bang for the buck; ergonomic, clever design; smooth operation.

WEAKNESSES: Lacks provisions for linking two or more together; not user serviceable; mute button disables overload indicator on input.

PRICE: $1599 **EQ FREE LIT. #:** 155

BY ROB COLBY WITH FIGURES BY WADE MCGREGOR

World Radio History



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CIRCLE 33 ON FREE INFO CARD

World Radio History

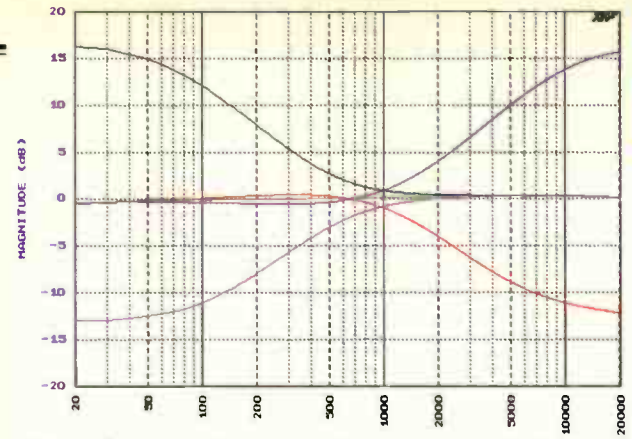

FIGURE 1: The range of low- and high-frequency controls (±15 dB) on the Mackie Designs SR24•4 input EQ.

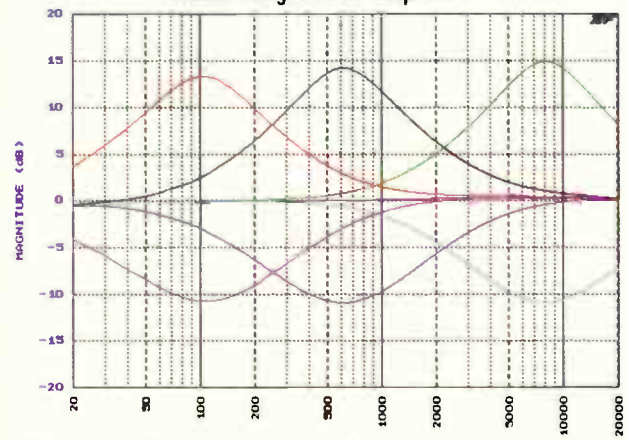

FIGURE 2: Input EQ range of variable mid-freq controls shown at extremes of boost/cut at mid-point and extreme ends of sweepable freq range.

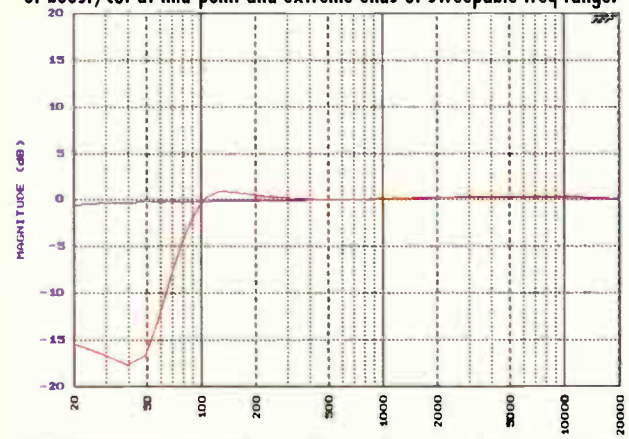

FIGURE 3: Input strip high-pass filter (red) compared to nominal flat response (blue).

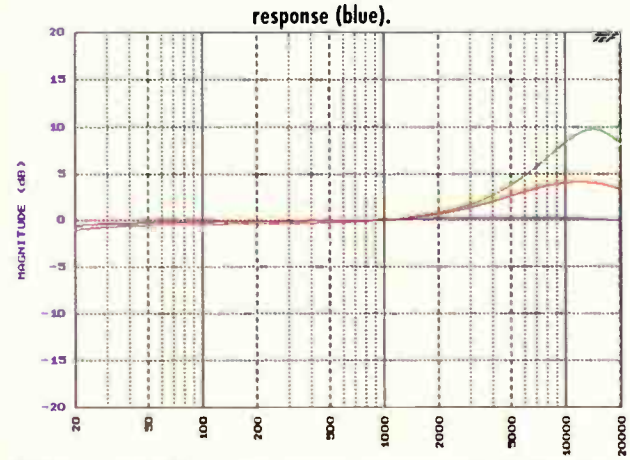

FIGURE 4: The Air EQ on group masters. Comparison of the Air control at maximum — +10 dB (green), detent — +5 dB (red) and 0 (blue).

Tape Out bus will always be handy in a pinch, because no special routing has to take place to record. Just patch right into Tape Out. The inserts, subs, and main outs all feature insert points. One feature, the "rude" flashing LEDs on the Solo function, tells you what is soloed — input, aux or subs. I wish more consoles gave you this feature.

Two stereo inputs, 21–22 and 23–24, are very useful for effects returns, stereo keyboards, or any stereo device that may need additional EQ. Under the heading "Useful and Clever," comes the knob called "Factory Air." This control delivers "air control," or sweetening. Essentially, it's there should you need to add slight high-end sweetening (above 12 kHz) to any of the four subgroups [see fig. 4].

Oh yeah, check out the Global Aux Return Solo, which permits you to hear a desired effect on your dry channel. For example, suppose you're soloing your input track and you want to hear an effect applied to that track as well. Push the Global Aux Return Solo switch. You'll now hear that track with its effect. Unfortunately, Solo does not work on muted channels, making it difficult to cue up effects or tracks for which you have preset fader positions.

THE MACKIE 24•4 IS VERY WELL LAID OUT, HAS A VERY MUSICAL SOUND, AND PROVIDES GREAT HEADROOM AND VERSATILITY.

ARE WE HAVING FUN YET?

After using the 24•4 and, I confess, even comparing it to consoles costing lots more, the only weaknesses I could find are that the Mute button disables the overload indicator on input (presenting surprise overloads in some situations); the board is not user serviceable; and that, should you need more inputs, there are no provisions for linking together two or more boards while maintaining full use of aux sends, groups, main outputs, and solo functions. Of course, adding linking capabilities would raise the price, as would having all outputs balanced — the main outputs are actively balanced XLRs; all other outputs are "quasi-balanced" (resistively-coupled to ground) 1/4-inch phone jacks.

Just so no one thinks Mackie has lost its joie de vivre, a note about the owner's manual. It's fun. It keeps your attention and is amusing to read. Before you know it, you've actually learned how to properly use the console. Brilliant.

The new Mackie 24•4•2 is a great, all-around little board for all sorts of audio uses. (I hear there's a 32-input model coming in the near future.) It's an outstanding design at a very affordable price. Well done, Mackie Designs.

Rob Colby has been the front-of-house engineer for Phil Collins, Genesis, Prince, Janet Jackson, Paula Abdul, and Cyndi Lauper, among others. He is currently coproducing, engineering and mixing the latest Phil Collins live album.

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Fostex RD-8 Digital Multitrack

EQ LAB REPORT

MANUFACTURER: Fostex, 15431 Blackburn Avenue, Norwalk, CA 90650. Tel: 310-921-1112.

APPLICATION: Affordable digital audio multitrack recording.

SUMMARY: Expanded operating system software and hardware interface greatly enhance what is essentially an Alesis ADAT.

STRENGTHS: RS-422, SMPTE, and MIDI I/O ports, plus an error-rate indicator and multipoint search-to-cue provide options not available to single ADAT-only users; Opcode's AV Control combined with Studio Vision Pro creates, in software, more physical space by eliminating the need for the BRC (a sizable piece of hardware).

WEAKNESSES: Lack of individual digital audio I/O.

PRICE: $4395 (chase/lock sync to timecode, Sony P2, and MIDI control); RMC-8 full-function Remote Control Unit (controls up to four RD-8's), $899

EQ FREE LIT. #: 156

NOT SO LONG ago, there was only one affordable digital multitrack. Now four models exist, with two pairs actually offering a compatible format. One of the compatible pairs includes the Fostex RD-8 and the Alesis ADAT. The RD-8 costs more, but it comes with more features out-of-the box — features that Alesis users have to buy a Big Remote Control (BRC; $1495 list) to access.

The most important additional features — the LCD display (which includes the Error Rate, setup menus, and more), built-in SMPTE synchronizer, and MIDI I/O — justify the extra cost. Beyond that, this is not a question of which machine is better, because mechanically, these two critters are the same. (More on that later.)

When I first received the RD-8, my multimedia production facility, "Chez Dog," had been under slow and methodical reconstruction. During that downtime, I found a willing client, NY producer-guitarist Jon Gordon (who subsequently purchased an RD-8), to put the RD-8 through several real-world tests. Here's Jonny...

DOCUMENTATION

The manual is fairly comprehensive and accurate, although the procedure for formatting tape while simultaneously striping LTC was a bit vague. After a few bad starts, the mistake was caught by monitoring the RD-8's timecode output. Otherwise, I found the documentation better than most.

CHASE/LOCK

For an upcoming project, it was necessary to make slave reels from analog tracks already recorded onto a TASCAM ATR 60-16, 1-inch 16-track. The 30 frame/sec nondrop frame (NDF), linear timecode (LTC) was patched directly to the RD-8's timecode input. The two machines locked flawlessly, albeit slowly. (Performance is much improved when locking an ADAT to an RD-8 — or vice versa — via the 9-pin "ADAT Sync" connector.) A three-way lockup, between the RD-8, Studio Vision Pro (on a Mac IIci with an Opcode Studio 3 interface), and the ATR 60-16, gave similarly positive results.

MIDI MACHINE CONTROL (MMC)

Opcode's AV Controls (v1.02/$15) creates a sophisticated remote control for the RD-8 on the computer. Studio Vision Pro (v2.08/$995) software integrates these remote control functions into a MIDI sequencing environment that links the RD-8 to the sequencer. It is possible to autolocate, loop, arm tracks, and even automate punches using MMC. The RD-8's MMC implementation plus this software duplicates the BRC's most commonly used functions and creates a rather cool setup. (Opcode expects versions 1.03 and 3.0 of AV Controls and Studio Vision Pro, respectively, out by October.)

One bug was discovered while attempting to locally record-enable an audio track while the AV Controls software was in record-disabled mode. The RD-8's timecode track also became record-enabled, which, had I not been watching the RD-8, could have damaged the timecode track. I don't know whether the bug is in the Fostex or the Opcode MMC implementation. It may well have been fixed by the time this review hits the streets.

USING ADAT SYNC

At Dubway Studio (NYC) the RD-8 was slaved to an Alesis machine via the DB-9 "ADAT SYNC" connector. A drummer and bass player overdubbed their parts on an Alesis ADAT (running system 4.0), while the RD-8, which happily chased and locked to the ADAT, sup-

World Radio History

plied the reference tracks. Care had to be taken, however, not to set locate points on the ADAT while the RD-8 was still chasing, as this would cause the latter to become disoriented.

Incidentally, when I returned to my studio and used the RD-8 to lay the Dubway rhythm tracks back to my analog master, the RD-8 required an offset of about –1 frame to sync the digital tracks to the analog master. This was easily accomplished using the RD-8's Machine Offset function and was no more than a minor inconvenience.

LOCATE AND RECORD FUNCTIONS

The RD-8's various built-in locate and record functions, plus the rehearsal mode for automatic punches, are quite useful features. Manual punch in/out, via either footswitches or the record-enable buttons, felt solid, accurate, and sounded smooth. However, due to the two-button protocol required — hold Record then hit Play to punch in (or simultaneously hit both buttons); then hit Play to punch out — the procedure felt a bit cumbersome, as did setting the Mark-In and Mark-Out points (used in automatic punches). Perhaps, in this instance, safety supercedes convenience.

Though it was possible to mark points on the fly, this is a two-button operation and usually required two tape passes. Reducing this to a one-button operation would be faster, especially during a session where time can dull the talent's edge. Similarly, manual entry of locate points is also cumbersome. An optional numeric keypad, or at least a reset-to-zero button, would be most useful. Track slipping and vari speed both proved quite helpful. The Absolute and Relative time displays worked as expected.

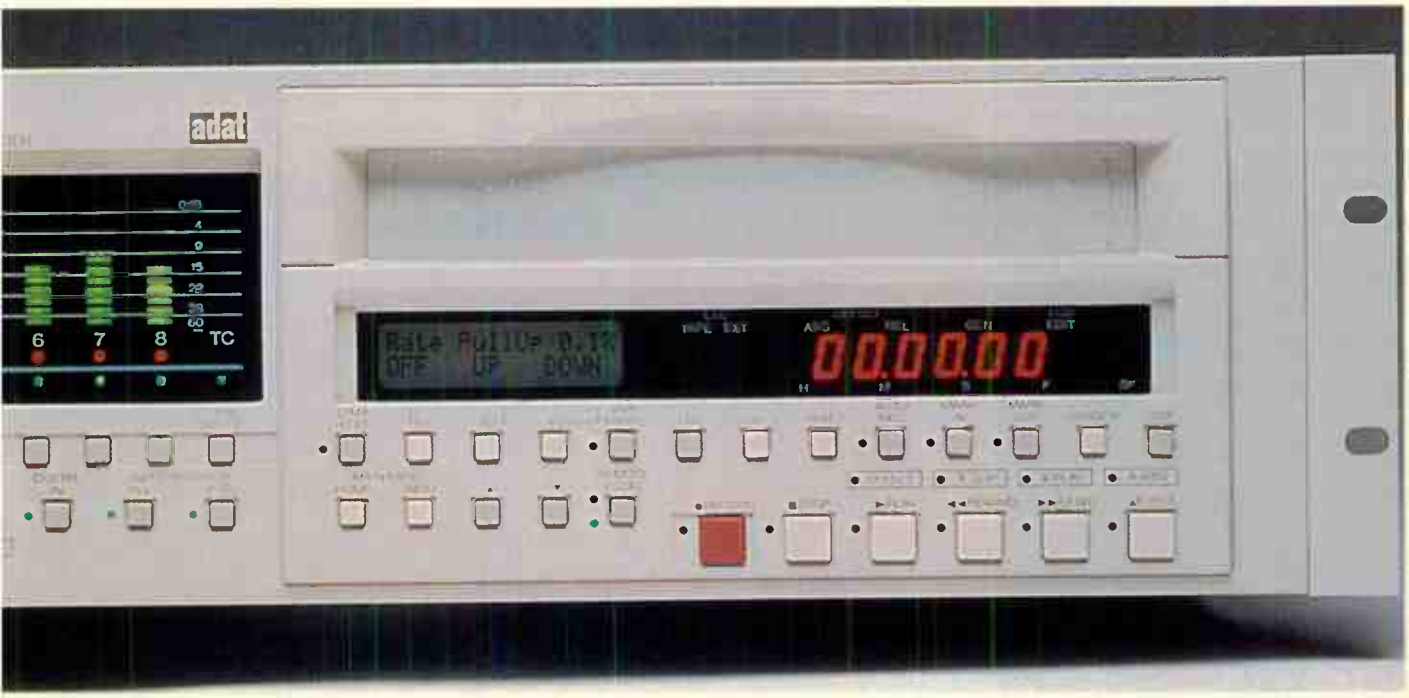
THE POISON TAPE CASE

One of the main advantages of owning an RD-8 is ADAT compatibility. One experience taught me plenty about the Table of Contents. It all started when a client brought in an ADAT tape, source unknown, that required a guitar overdub. Timecode had been recorded on audio track 8 so that MIDI tracks could be synced for reference. The session went smoothly. When an engineer from another ADAT-equipped studio called to ask if the timecode on the master might accidentally have been set to 25 fps, I had my first inkling that something was amiss. (My computer had read it as 30 fps non-drop frame.)

I thought no more of this conversation until preparing slave reels on the RD-8 using my analog multitrack and computer. Now my computer would not read code from the RD-8. Each time it attempted to lock up, it flashed a message that it was receiving code at 25 fps, even though the RD-8 was replicating 30 fps code from the analog multitrack.

I took great care to restripe and reformat my S-VHS tapes at 30 fps — to no avail. The RD-8 kept stopping and bouncing out of record at the wrong time. My deadline was approaching and the machines would not lock. Finally, by more or less dumb luck, I reloaded the Table Of Contents (TOC) data from an old tape, and that instantly cured all the synchronization problems! (The TOC is at the head of the S-VHS tape that holds the RD-8's setup data. It can be saved to tape or loaded back into the RD-8.) Evidently, that strange tape had somehow corrupted the internal parameters of the RD-8.

If you expect to be swapping a lot of in-house masters with those made elsewhere, it would be wise to keep one or two tapes nearby that have a known good TOC, so that the RD-8 can be reinitialized.



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LONG VIEW FARM STUDIOS

We recorded an album for Avalon Arts artist, singer Tatiana Matejas, who is well known in her native Croatia and has a growing following among Croatian-Americans. As arranger, musical director, programmer and guitarist for the project, I transferred a number of analog preproduction tapes and sequences to the RD-8 which, unlike my one-inch analog deck, is infinitely more portable. Transfers were then made from RD-8 to Massachusetts-based Long View Farm Studio's two-inch Otari machine.

Producer Kelly Wohlford, engineer Danny Bernini and I spent the last session cutting a large number of guitar parts and printing a comparable number of sequenced parts to tape. Some of the sequences were percussion parts created by Nona Hendryx for a rented sampler that none of us knew how to use. The rest of the sequences came from my keyboard rig, but needed to be evaluated and assigned to tape tracks. It was, needless to say, a huge job that turned into an all-nighter.

Four hours before my equipment and I were scheduled to depart, everything on our list was completed except for one primarily sequenced track that needed to have drum machine and synth parts committed to tape. Live bass and guitar had already been cut and the engineer had just gotten a great mix of the drum machine when my computer started to have trouble reading the timecode. We tried everything — except check the patch cord — which only later did I discover to be faulty! About one hour before my scheduled departure, and after many futile attempts, the engineer had a brainstorm. He recorded the keeper bass and guitar from the 2-inch master onto a DAT and handed it to me.

Once back in NYC, I ported the bass and guitar digitally from the DAT into Studio Vision Pro (where the sequences also dwell and where it was possible to realign the bass and guitar with the sequence, tweaking the tempo .02 bpm to adjust for inconsistencies.) With the computer slaved to RD-8 timecode, I then transferred bass, guitar, and the sequenced parts to the RD-8 tracks using two separate S-VHS tapes in two passes. When the FedEx'd tapes arrived at Long View, the engineer bounced the parts to the 2-inch master in time to record a children's choir that had been booked way in advance. Phew!

JON'S CONCLUSIONS

In addition to the high audio quality and a relatively large user-base, the above scenarios are excellent examples of the increased flexibility the RD-8 — and the affordable digital multitrack format — has to offer. Without the RD-8, Studio Vision Pro, and Danny (the engineer who was thinking despite the hours), the track would have been a disaster and I would have been dead meat. The RD-8 delivered the goods under pressure. It is some-

THE FOSTEX RD-8 AND THE ALESIS ADAT

FEATURES	ADAT CONNECTOR	RD-8 CONNECTOR
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+ 4 Analog I/O	EDAC/ELCO	DB-25
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Footswitch	Punch In/Out	Punch In/Out
ADAT sync I/O	DB-9	DB-9
Meter Bridge	DB-9	DB-9
Optical I/O	TOSLINK	TOSLINK
RS-422	—	DB-9
Video/VITC IN	—	BNC
Word Sync I/O	—	BNC
MIDI I/O	—	DIN
Timecode I/O	—	XLR
Auto Punch In/Out	Only with BRC	Built-in

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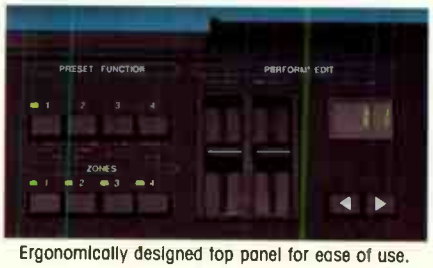

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what mechanically noisy, but the various remote control options allow the machine to be placed away from critical listening sites.

EDDIE'S PERSPECTIVE

The Alesis ADAT has been around long enough for many users to know its benefits as well as its problems — the latter, if they occur, being largely mechanical. Likewise, the RD-8, TASCAM DA-88, and Sony PCM-800 are all mechanical devices that will inevitably have mechanical failures. Your choice will primarily be based on the need for compatibility and price.

If you are one of those who is down on the ADAT because of the supposed mechanical problems, let me remind everyone that the technology that makes digital audio stick to video tape is far more advanced than that of an analog 1/2-inch or even a 2-inch multitrack. Regardless of the manufacturer or the product, expect post-warranty expenses to be about $200 per visit for labor plus another $500 for parts when it's time for a head change. This is a fact of life for all who buy into technology — old or new — and one of the reasons Bennet Spielvogel's ADAT maintenance article appeared in the August *EQ*. (Knowing a little can save you a lot.) Even software users must pay for a periodic "maintenance upgrade," a service that can range from as little as $15 to beyond $500.

That said, you would buy an RD-8 for its additional features — SMPTE, MIDI, and RS-422 — especially if it's to be used either stand-alone with a traditional MIDI rig or in an audio-for-video system where its RS-422 port makes it appear as "just another video deck." With its dedicated SMPTE track and synchronizer, the RD-8 will chase or be chased without wasting an audio track. All of these built-in features require less from an optional Remote Machine Control (RMC-8), which is just that and little more. It is not a repackaged BRC. The advantage of either hardware interface is the buttons, of course. The RD-8's strengths come from the options it provides to a user base that keeps growing and expanding.

—Eddie Ciletti and Jon Gordon

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DigiTech Studio Vocalist

EQ LAB REPORT

MANUFACTURER: DigiTech, 8760 S Sandy Parkway, Sandy, UT 84070. Tel: 801-566-8919.

APPLICATION: Synthesizes up to four natural-sounding harmonies from a monophonic voice input.

SUMMARY: The Studio Vocalist is dedicated to solo voice processing and does that one application extremely well. It also adds a number of features not present in previous boxes of this series.

STRENGTHS: Clean sound quality; big-time fun; excellent MIDI implementation.

WEAKNESSES: Works only with voice; mastery requires some understanding of music theory.

PRICE: $1049 **EQ FREE LIT. #:** 157

WE LOOKED at the first member of the Vocalist line in January 1992; the original Vocalist was a breakthrough product that dramatically increased the quality of sound associated with pitch-shifted vocals. Since then DigiTech has introduced the Vocalist II, and now the Studio Vocalist (SV for short). This is similar to the earlier Vocalists, but adds high-end features and superior specs (lower noise, 18-bit converters, 48 kHz sampling rate) for a better fit in the pro studio environment.

BASIC TRACKS

To recap, the Vocalist series produces up to four harmony lines from a solo voice input, and has both line and XLR mic inputs. The Studio Vocalist adds switchable +48 V phantom power, and some other nice touches: front- and back-panel XLR inputs, XLR and 1/4-inch phone line ins, and individual XLR and 1/4-inch phone outputs for each harmony line and the dry output. Two outputs can be used for stereo if you choose stereo mode instead of individual out mode.

Other jacks and switches include a footswitch jack for bypass and program/song selection, +4/–10 level switch, effects loop, and MIDI in/out/thru for controlling and triggering harmonies as well as handling program changes (the SV offers 99 factory ROM programs and 99 user programs). And there's an intriguing cutout on the back, covered with a small metal plate and four screws; inside are expansion slots for two boards. DigiTech plans to release one board for AES/EBU and S/PDIF digital I/O, and another for additional DSP features.

The front panel has a smooth, velocity-sensitive data wheel — spin the sucker and the numbers change fast, or slow down and adjust values one digit at a time. I also like the cute little mini-keyboard for selecting notes, but they should have made the black keys gray for better contrast with the black front panel. Other than that, there are switches for programming, editing, etc., and input and output controls. The Studio Vocalist takes up two rack spaces.

FUN TIME

In addition to creating harmonies (see sidebar), the Studio Vocalist offers a "vocoder" mode (well, not really, but that's close enough) where you simply play the harmony notes you want on a keyboard. For example, sing C and play C, F, G, and Bb to hear a C major with flatted seventh (extra points for including attack and release parameters for the vocoder). This mode allows the four-channel option, so you can control pitch bend, modulation, and

VOICES CARRY: The Studio Vocalist, the third in the Vocalist Series from DigiTech, offers more features and better specs.

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PARALLEL VS. INTELLIGENT HARMONIES

Many multieffects include pitch shifting, but these are generally "parallel" harmonies. For example, if you set a harmony of four semitones, any note will have a harmony added four semitones above. However, with most musical harmonies, the interval between the tonic and harmony changes at different points in the composition, depending on the key and mode. For example, in the key of C major, to create a harmony you'd have an interval of four semitones above when playing C, but only three semitones above when playing E.

Although you can send in MIDI program change or continuous controller messages to alter the amount of pitch shift in real time (this allows parallel harmonies to fit rules of harmony), the SV uses "intelligent" pitch shifting. This recognizes the note, key, and mode being played, and creates harmonically-correct intervals.

You can either use a scalar mode (specify key and scale at the beginning of the song and the SV takes it from there), or chordal mode where you tell the SV every chord in your song and it generates harmonies that work with those chords for any input signal (parallel harmonies are possible too). The SV has a large database of scales and chords, but you can program your own variations if needed. —CA

pan position of each voice independently. There's also a pitch-correct mode that "quantizes" the input to the note you select — or use a synth's pitch bend wheel to slide the voice around.

To use the Vocalist, you start by selecting a program, which provides a particular style of harmony. You can then select any one of eight variations on a theme, such as different modes or special functions like pitch correction.

At this point, if you sing into the mic in the selected key, you'll hear harmonies (yes, it is that simple). However, you needn't stop there, as there are multiple ways to liven up the sound. These conform to the standard DigiTech operating system: scroll until you find the parameter you want to change, then change the value. You can add random detuning (gee, I've always tried to get rid of that in my vocals!), inject vibrato with delay and randomization of depth and speed, create delay for each voice, and "scoop" — bend the pitch up to concert. This can happen on every note, or only according to certain constraints. Perhaps the most unusual option is the gender bender, which can overlay male vocal characteristics on female vocals, and vice-versa. It sounds hard to believe, but it works surprisingly well.

TWEAKING IT

When MIDI gets into the act, you can select key and harmony simultaneously with program changes, and use continuous controllers to affect volume, detune, vibrato depth/rate, and harmony hold (this freezes the current harmony even if you change the input note). Using the Studio Vocalist with a sequencer is a revelation — you can really get those harmonies moving along in a highly animated way by programming control changes. Best of all, the controllers are reset when the Studio Vocalist receives a program change.

The MIDI implementation also responds to song select and program change messages. Note that the Studio Vocalist can accept individual program dumps from the Vocalist and Vocalist II, so if you're trading up, you don't have to lose your cool patches.

Audio-wise, you can reduce the sensitivity to "S" sounds to improve tracking, apply a low cut to help minimize wind and breath noise, set a threshold so that leakage from other instruments isn't strong enough to trigger harmonies, and adjust highs to reduce feedback.

USING AND ABUSING

This box also shines live when you want to wrap convincing harmonies around a solo voice; add an acoustic guitar and an SV, and you'll have a remarkably full sound.

In the studio, you can save tracks by feeding the lead vocal through the Studio Vocalist on mixdown to create harmonies rather than print on extra tracks. And if you're working with MIDI and sync, I've found that feeding in the bass line is usually all you need to do to tell the Studio Vocalist what harmonies to apply.

Furthermore, the SV is a cool vocal processor anyway. Granted there's no compression or EQ, but you can get some good delay and chorus effects. And since you can use MIDI to vary levels and panning for each harmony, you have a bunch of automated mixdown functions built in for free.

It does take some time to figure out how to exploit the harmony-related features, but a little experimentation does the job. This is definitely a "two thumbs up" kind of box; it may not have the jawdrop factor of the original Vocalist (we're spoiled by now), but the refinements, additions, and cleaner sounds make this the best Vocalist yet.

—Craig Anderton

Craig Anderton is hopelessly addicted to music and audio. Check out his latest books, "Multieffects for Musicians" (AMSCO) and "Do It Yourself Projects for Guitarists" (Miller-Freeman Books), as well as his cyberspace home on AOL, "Craig Anderton's Sound, Studio, and Stage" (keyword: SSS).

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Korg X5D Synth & X5DR Module

EQ LAB REPORT

MANUFACTURER: Korg USA, 89 Frost Street, Westbury, NY 11590. Tel: 516-333-9100.

APPLICATION: A great addition to any project or multimedia production studio. Even for those looking for their first soundbox, the built-in MIDI interface and General MIDI capabilities make it the perfect synth box to get started with.

SUMMARY: A keyboard and synth module with tons of cool, high-quality sounds, fully General-MIDI compatible. They can generate up to 64 polyphonic voices and have internal multieffects processing.

STRENGTHS: So many useful sounds, perc samples, and split-keyboard layers that I can't begin to keep track of them. Natural high-quality samples; even the General MIDI section sounds great. Easy-to-edit single and layered patches (especially with the included computer-based edit software).

WEAKNESSES: I couldn't find any, honest.

PRICE: X5D, $1399; X5DR, $959 **EQ FREE LIT. #:** 158

FOR SOME TIME now, but especially since its entry onto the music scene with the M1, Korg has had a major impact on the modern keyboard scene. Major to the point of often being considered synonymous with innovative design and high-quality sounds. Korg's latest foray into synthesis, the X5D, continues the trend. So much so that I, in fact, consider it a major breakthrough.

The X5D keyboard and X5DR half-size module have a 64-note polyphonic structure, with an internal waveform memory of 8 MB that features an impressive 430 multisounds and 215 drum/percussion samples. They both use the same Advanced Integrated (AI) sample playback technology that fuels the 01/W, 05R/W, i, and x series synthesizers, but at a substantially reduced cost and with quite a few new features thrown in. Both products are fully General MIDI compatible. For those who don't currently have a MIDI interface, they include a special serial port that allows for direct connection to a host IBM or Mac PC. For those who would like to beef up to full 32-MIDI channel support, this can easily be done by simultaneously making use of the serial and standard MIDI interface ports.

MODES OF OPERATION

Both the X5 and X5DR respond to MIDI channels and generate sounds using three basic operating modes: Combi, Program, and Multi.

Combi: In this mode, up to eight patches can be reproduced at any one time. These patches can be assigned to the same MIDI channel (thereby allowing for the layering of patches into a new, more diverse texture), or up to eight individual patches can be assigned to their own MIDI channel at any one time. Once a combi has been programmed using either of these methods, it can be saved to memory under a given name. Sending Program Change messages 0–99 will select combinations 00–99.

Program: When in the Program mode, a single, selected instrument patch will respond to data that is being transmitted on the system's selected Global MIDI channel. The X5D has two Program banks: Bank A has 100 patches (A00-99); Bank G contains 136 patches (G01-136; conforming to the General MIDI spec with a few percussion setups being thrown in for good measure), yielding a total of 236 Program patches.

Multi: Upon entering the Multi mode the system will respond in a multitimbral manner to all 16 channels according to the General MIDI channel/patch specification.

GETTING DOWN TO BASICS

The X5D is a 61-note, 35-1/2" x 9-1/2" x 3" keyboard that weighs less than 10 lb. Its playing surface layout includes, full-sized, nonweighted keys (w/o

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FEEL THE BEAT: The Korg X5DR synth module has some exceptionally cool floor toms in its library (yes, we said floor toms).

aftertouch); pitch-bend and assignable modulation wheels; 16 x 2-character, backlit LCD display; and a control/parameter button section. The X5DR comes in a surprisingly small (8-1/2" x 9" x 1-3/4") sturdy black case. It's straightforward front-panel layout includes: a volume control; mini-headphone jack; 16 x 2- character, backlit LCD display; control/parameter buttons; and power. At the rear of both systems is a 12 V DC input (from a wall wart); mini DIN host connector (for connecting the X5 to a PC without using a MIDI interface); MIDI ports (in, out & thru); and a single set of 1/4-inch stereo output jacks.

Straight out of the box, I was surprised to find that the X5D/DR comes bundled with a computer editing program (for Mac and PC) that's specifically programmed for the X5, X5D, 05R/W, and X5DR. It also comes with a fully functional Mac/Windows version of UNISYN/K — Mark of the Unicorn's patch editing/librarian software that works with all of Korg's synth products. In addition, a special coupon promotion lets you purchase the full version of UNISYN (a $395 universal editor/librarian that supports over 200 devices) for only $99.95. Not bad for starters. (No dates are given for how long the promotion is available.) Although no rack-ears were supplied out-of-the-box, ears designed to fit either one or two modules into a single-rack space can be readily purchased from Korg.

After plugging-in the X5, my first mission was to check out the demos (almost always a shaky start). Surprisingly, the slapstick extravaganza "Around the World" by Steven Kay was one of the most impressive and funniest demos I've ever heard. Demos aside though, the most important question is: "How does it sound?" In a word: Excellent. I especially appreciate the fact that the sounds aren't overly bright, as with many GM-type modules. As anticipated, most of the standard Korg food groups — pianos, strings, basses, etc. — are present and sound very good. For example, the attack and realism of Rock Piano is convincing enough to be used for both live and session work.

AFTER HELL, TRY THE RAINFOREST

Both the X5D and X5DR have two, separate sets of preload program and combination patch data. Preload A is the standard X5D voicing, while Preload B contains all the patch data that can be found in the X5 and 05R/W. The factory-programmed sounds and splits in both program banks are superb in either the Combi or Program mode. In addition to the expected patch styles, there are a number of diverse patches that caught me off guard. For example, "Hell" is an amalgamation of devilish sounds that ranges from owls, goblins, big cats, and thunder (just to mention a few) all the way to a wildly evolving aboriginal wavedance...and that's just one patch! "Rainforest" is a totally wet, animal-laden spectacular, while "Rock-on!" contains at least four different guitar samples that have been mapped across the keyboard for maximum playing versatility. "New Worlds" offers heavenly harp glissandos for days. Make it a point to check the rest out for yourself, because there are simply too many to list here. Each of these program combinations or multi-setups can be assigned its own set of effects (internal multieffects), which can then be dynamically controlled from a variety of MIDI control sources.

The drum kits and percussion sounds are high-quality and in-your-face — as they should be. Korg, however, have outdone themselves with the X5DR. I know it sounds strange to single out floor toms for honorary mention, but they're simply the best sampled toms I've ever heard. They take the blue ribbon. There's also plenty of alternative percussion. For example, the "Down Low" kit is a totally wild collection of kick-ass low perc sounds...trés different! As for playing back General MIDI scores, the overall sound is by far the most natural, balanced sound I've heard from a GM-compatible box.

I usually don't gush like this about a new product. Quite simply, this small box packs a major punch. Suffice it to say, the Korg X5D and X5DR would be a real plus on stage, in the studio, or for film/TV/multimedia scoring. O.K., so don't take my word for it, test drive it for yourself. But you won't be testing mine, because I'm not sending this one back to the company. It's mine...all mine!

—David Miles Huber

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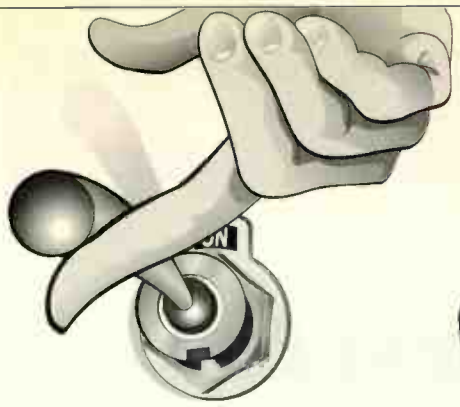

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Hafler P3000 Trans•nova Amp

EQ LAB REPORT

MANUFACTURER: Hafler Professional, 546 South Rockford Drive, Tempe, AZ 85281. Tel: 602-967-3565.

APPLICATIONS: A 200 w/ch (4 ohms) power amplifier suited to both live sound and studio monitoring.

SUMMARY: Clarity and simplicity of Trans•nova design offers users a clean and quiet power amp for medium power requirements.

STRENGTHS: Versatile connectors and convection cooling allow use in nearly any situation; high-quality audio; modest weight and small size for a convection-cooled amp.

WEAKNESSES: Input level controls do not have enough range; no parallel mono-mode switch; needs to be ventilated even when idle.

PRICE: $799 **EQ FREE LIT. #:** 159

I WAS LOOKING forward to reviewing the latest in Hafler's Trans•nova series of amplifiers. My experience with a previous model [the Hafler 9500, reviewed in *EQ*'s June '93 issue] had raised my expectations. Although the P3000 is slightly lower in power and is missing a bit of the more esoteric circuitry in its high-powered kin, the 9505 (the professional version of the 9500), I was expecting to hear the same level of clarity and transparency as in the original. Hafler did not let me down.

I used the P3000 to drive both high-efficiency sound-reinforcement loudspeakers and studio monitors. No one could find fault with the sound of the unit in either application. A ground-lift switch allows the amp to quickly fit into any rack without buzzing. The signal-presence and clipping indicators proved to be handy in setting up the unit to operate in its optimum range. Thankfully, clipping indication occurred before the effects were audible — allowing time to adjust levels before any nasty HF problems occurred.

The P3000 provides a sharpness that reveals the subtle details of live or recorded sound. The unit's exceptional bandwidth [see sidebar for specifications] allows it to function well in any range of a multiway loudspeaker system. The punchy, well-controlled subbass possible from this unit (I used it in bridged-mono mode for subs) can be attributed to its very low output impedance. The P3000 is quiet, with hum and other tonal artifacts buried in the –100 dB broadband noise floor. Mechanically, the unit produces a very faint buzz from the single large power transformer.

Considerable effort was taken to maintain a simple audio path when adding the actively balanced input and level controls demanded in professional applications. The Trans•nova design reduces the components typically required to drive MOSFET output devices and offers a short-loop negative feedback path. This approach is credited with providing the exceptional slew-rate response and transparency of this amp. Hafler designer Jim Strickland uses the patented Trans•nova circuitry to overcome the drive limitations of MOSFET output devices. This creates an amplifier capable of making use of the positive traits of this power transistor (predomination of 2nd-order harmonics, resistance to thermal runaway, etc.), while providing an amplifier suitable for both sound-reinforcement applications and critical studio-monitoring systems.

The P3000 features front-panel level controls and status indicators for signal presence (greater than 30 mV) and clipping. There are also LEDs to indicate when the thermal-protection and short-protection modes have been engaged. These are all mirrored for each channel. The power switch also engages instant muting on power down and ramps up the power supply and audio on power up.

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*Mike Lethby, *Audio Media Magazine*

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MANUFACTURER'S SPECIFICATIONS

Full Power Bandwidth: 0.15 Hz to 300 kHz
Signal-to-Noise Ratio: Greater than 100 dB "A" Weighted
Distortion: Greater than 0.1% 20–20 kHz, typically 0.01% at rated power into 8 ohms
Slew Rate: 100 V/microsecond
Common-Mode Rejection Ratio: 75 dB at 1 kHz
Input Impedance: 47k ohms per phase
Gain: + 14 dB minimum; + 29 dB maximum
Power Rating: 150 W/ch into 8 ohms; 200 W/ch into 4 ohms; 400 Watts into 8 ohms in bridged-mono mode
Damping Factor: 400 to 1 kHz; 200 to 10 kHz; 18 to 100 kHz
Input Sensitivity Range: 1.2 V to 6.9 V for 150 W into 8 ohms; 1.0 V to 5.6 V for 200 W into 4 ohms

Strangely, the input attenuation only ranges between –15 dB and 0 dB. This doesn't allow the user to accommodate high levels of drive from previous components or to slowly bring up the level from off. I never like to bring up the power to a new or unknown system abruptly (even with –15 dB of attenuation) — just in case there is some unexpected signal reaching the amp input. Users should always be aware that input attenuation does not limit the amount of power an amplifier will provide, merely the input signal level required to reach full power. There is, however, good matching between the channels when setting the knobs to a specific level due to the linear taper pots used in this slightly unconventional design. Hafler does include attenuator covers for applications where the amplifier levels must be protected from tampering.

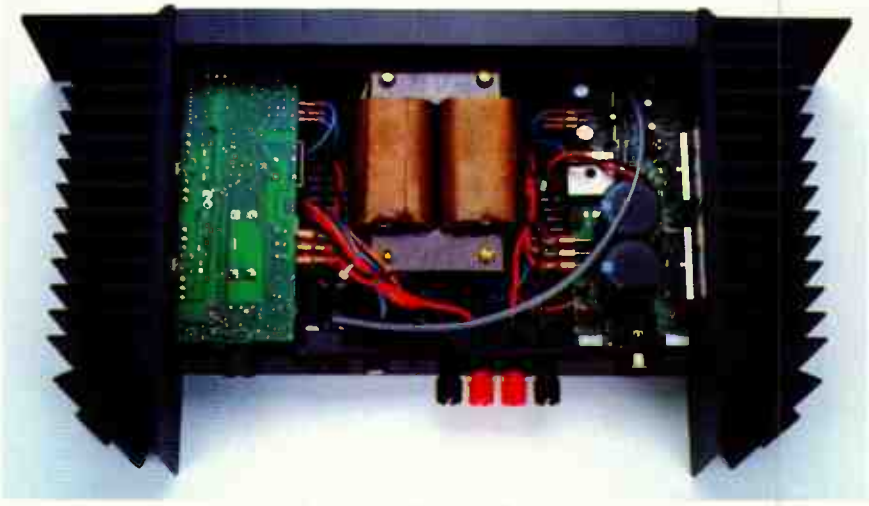
The convection-cooled P3000 is warm to the touch, even at idle. Care should be taken when rack-mounting the unit to allow air to flow above and below the unit, as there are vents in both the top and bottom panel. A set of sturdy heat-sink fins runs down the sides of the unit and wraps around to the rear. In addition to providing a cooling surface, these fins offer mechanical protection for the rear-panel connectors. The input connectors are the very convenient Neutrik Combo connectors that offer both balanced XLR and three-conductor 1/4-inch phone jacks for each channel. The pin-outs for these connectors are screened onto the rear panel. Unlike many amps intended for SR applications, the P3000 lacks a switch to parallel the inputs. However, this is merely a convenience as a simple Y-cord will accomplish the same end.

Output connection is via large 5-way binding posts with holes large enough for #10 gauge wire. These posts are in standard GR spacing and the red (hot terminals) are together to simplify bridged-mono connection. A pair of switches is provided for selection between bridged-mono mode/2-channel mode and between floating ground and ground connected to chassis. The power cord is a detachable IEC connector type and a #14 gauge power cable is supplied.

The internal construction of the Hafler P3000 is modular, allowing the entire active component section of an amplifier channel to be swapped out. The user manual is not too thick but does give a good overview of the unit's operation and includes schematics, complete parts listing, and field service instructions.

The balanced inputs increase the flexibility of the unit without noticeably marring the audio signal. The P3000 still compares favorably to esoteric Hi-Fi amps and the latest generation of professional amplifiers from other manufacturers. In the past few years we have seen (and heard) some remarkable improvements in the audio quality of professional amp, in spite of the protection circuitry required for sound-reinforcement applications. It is no longer necessary to choose between audio quality and reliability in most professional applications.

My criticisms of the original Trans•nova amplifier, the 9500, were centered around the input connection format (unbalanced RCA) and the lack of status indicators or level controls. The P3000 addresses all of these concerns (although a little greater range of input level control would be appreciated) and still retains the excellent sonic characteristics of its predecessor. Additional Hafler amps include a smaller version of the 3000, the P1500 (85 w/ch @ 4 ohms); the similarly designed but more powerful Hafler 9505 (750 watts @ 8 ohms, bridged-mono mode); and the new P7000, the biggest Hafler ever. —*Wade McGregor*



INNER SANCTUM: The interior of the P3000 is modular for easy component swapping.

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REVIEW SHORT

SansAmp/ Unisyn 1.1 Combo

"A computer-based editor may seem redundant since the PSA-1 already has physical controls for each parameter, but Unisyn offers several tricks."

The SansAmp PSA-1 ($795) is no stranger to *EQ*, having been reviewed in the August '94 issue. What is new is that parameters can respond in real time to MIDI sys ex commands, and that Mark of the Unicorn now includes a template for the PSA-1 in their Unisyn 1.1 software (an editor/librarian that supports over 200 MIDI devices). This template creates a set of virtual, on-screen faders to control the PSA-1 parameters, and allows for easy patch remapping.

ABOUT THE SANSAMP

To recap, the PSA-1 is a single-rack-space guitar/bass amp emulator based on FET technology with 50 factory and 50 user-programmable patches. Programming is easy; twiddle the eight programmable knobs until you get a sound you like, then save it. And, there's no ugly glitching when changing patches.

A computer-based editor may seem redundant since the PSA-1 already has physical controls for each parameter, but Unisyn offers several tricks, like generating random patches as "idea starters" or "blending" two patches to generate a new set of sounds that transition from one sound quality to the other. For example, if you have a "tweed amp" sound and a "stack" sound, and want a sound somewhere between the two, choose these two patches and blend.

Unisyn also lets you store a virtually limitless collection of patches. For studio owners who use the PSA-1 to get good direct guitar sounds, having a separate library for each project could be very handy. However, Unisyn is a deep program, so expect a major learning curve if you're a guitar player who hasn't worked much with software and just wants to plug 'n play.

In fig. 1, the bottom window shows Unisyn's virtual sliders. The Main Library holds saved PSA-1 patches; the Modules window is where you manage the program. Library Patch Info pops up automatically when you drag a patch into the main library. This allows for assigning keywords (for searches), name, comments, and automatically assigns a date and time of creation.

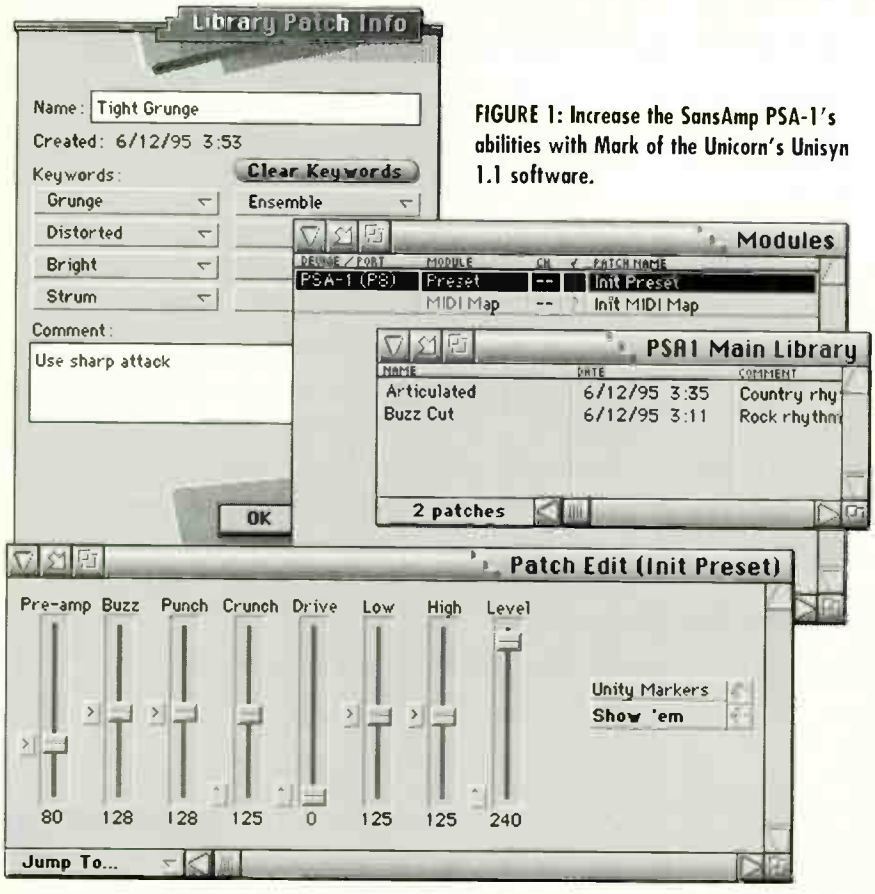

FIGURE 1: Increase the SansAmp PSA-1's abilities with Mark of the Unicorn's Unisyn 1.1 software.

GOING REMOTE

Remote control is another possibility, but note that due to the lack of continuous controller capability, you can't use a standard MIDI control pedal to vary parameters in real time. In any event, the PSA-1 can generate teeny ticking noises when moving the controls, so it's doubtful you'd want to vary parameters in real time anyway.

The PSA-1 already has a well-deserved reputation as one of the best guitar amp emulators; the addition of MIDI control, and the companion editor from Unisyn, make it an even more appropriate piece for today's high tech project studios. [Note: purchasers of the PSA-1 can purchase Unisyn for the special price of $195.]

—Craig Anderton

For more information, contact Tech 21, 1600 Broadway, New York, NY 10019. Tel. 212-315-1116; Mark of the Unicorn, 1280 Massachusetts Ave., Cambridge, MA 02138. Tel. 617-576-2760. Circle EQ free lit. #160.

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World Radio History

FRANCIS BUCKLEY

continued from page 48

ADAT. I never really liked dumping things off DATs, because there's always that little change in the sound that I didn't like, but dumping it to the ADAT is perfect."

Buckley's system presently utilizes two input and output tracks at a time, although he could update it to 16 tracks digital or analog I/Os in the future. "I started doing my minus mixes in the computer. I would do the basic tracks on two tracks, the backgrounds on two tracks, and the vocals on another two with all of their respective effects. When I'd get to the end of the mixing session, I'd send mixes off to the record company, and, nine times out of ten, the only reason they'd call back is to say, 'We need a mix with a little more vocals, a little less vocals, a little more background.' I was spending all of this time and money doing all of these little bits and pieces, and I realized that if I did a 6-channel mix when I was done, I could comply with whatever they wanted with a lot less effort. That's what I've been doing for the last few years. And also, working with people in project studios who don't have automation, now you can go back and forth until the mix is right. That's how I use it." EQ

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MI INSIDER

continued from page 34

stereo two-track, here's a tip to avoid getting an overly squeezed sound: mix in some of the straight, noncompressed signal. This helps restore a bit of the dynamics, yet you still have the thick, compressed sound taking up most of the available dynamic range.

EXCITERS

Some love 'em, some hate 'em, and a lot of people overuse them. Our ears have a tendency to get used to loud sounds (otherwise, how could anyone live in New York?), so if you crank up the exciter to get more sizzle and sheen, your ears will rapidly acclimate, which makes you increase the amount of exciter, which you then get used to so you turn it up further, and so on. Eventually, the song sounds tinny, strident, and, well, just plain bad (at this point, the unenlightened engineer pronounces the exciter in question "a piece of crap" without realizing the major problem is pilot error).

I like exciters, but only when I add them on at the very end — after everything is EQ'd, reverberated, levels set, and so on. Excitation shouldn't even be the frosting on the cake, but the powdered sugar that goes on the frosting. And don't have unrealistic expectations; even under the best of circumstances, proper use of an exciter will only add about another 5 percent of coolness to the tune — but that 5 percent can be worthwhile.

MASTERING

Mastering is the Supreme Court of audio — if you can't get a ruling in your favor there, you have nowhere else to go. A pro mastering engineer can often turn muddy, tubby-sounding recordings into something much clearer and defined. Just don t expect miracles; no one can squeeze blood from a stone. But a good mastering job might be just the thing to take your mix to the next level, or at least turn a marginal mix into a solid one.

Well, that's enough for this issue. I hope you find these tips helpful. The main point is that there is no button on your console that says "press here for wide-open mixes." A good mix is the cumulative result of taking lots of little steps, like the ones detailed above, until they add up to something that really works. Paying attention to detail does indeed help. EQ

CIRCLE 29 ON FREE INFO CARD

World Radio History

STEVIE WONDER

continued from page 40

word with the right rhythm. What sounds pretty tedious was actually really fast and pretty easy on the workstation, especially compared to trying to do that on tape.

MASTER PLAN

Nonetheless, Stevie likes to have everything on tape even if it means slaving multiple 32- or 48-track machines together. So when this was all done, everything was dumped to tape. The main reason for that is because he records so many thousands of songs that we need to know that everything exists on a master tape. In case he's in China some day and says, "Send me that song," we have to know that we can just send him tape and don't have to send other equipment.

Disk recorders are becoming so easy to use and their track capacity is getting big enough so that you can truly do musical production work without tape now. Storage space is no longer an issue. I have 40 tracks of disks and 20 GB online in my own studio, using both hard drive and magneto-optical. The fact that you can now record straight to magneto-optical in the Studioframe is great — it's like having little multitrack tape modules that you can just pop in and out. The software is now so fast and responsive that it's really as easy and fast as working with tape. But then when it comes time to do audio manipulation and multiple versions of a song and anything that'll require any kind of editing, it's just so much easier and faster to be working with a disk recorder in audio workstations. They're getting cheaper and easier to use. And not just for overdubs; in my own studio we've tracked solely to Studioframes for the last five years. We haven't had a multitrack tape machine switched on here in that time, including for album-length work. It's all a matter of hard-disk space at this point. There's really no difference in working on short-form or long-form stuff except in the capacity of your drive. I know that Stevie wants to get to the point where he's tracking with the hard drives also, and he carries around disk recorders with him now for that purpose.

The digital audio workstation in general and the Studioframe in particular made things possible on this album that we would never have tried otherwise. Combined with the fact that the sound was great, it really just pushed the performances to the next level. EQ

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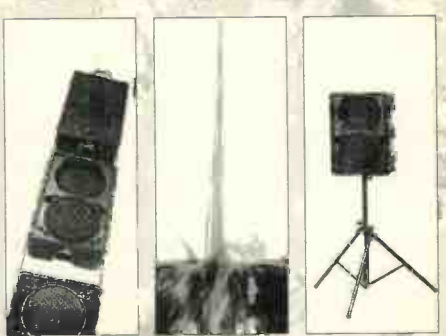

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World Radio History

YAMHA 02R

continued from page 109

ters with live metering right on the display at the same time.

Remember, the 02R is an 8-bus board with eight direct outputs. That means that any of the input channels can be routed to any of the eight busses, as well as a direct out for inputs 9-16. You can record separate instruments to a maximum of 16 tracks at once. The eight busses are sent to all of the input interfaces in 8-track chunks, so if you assign something to track one, it shows up on 1, 9, 17, and 25. The track that the signal goes to depends on which one you put into record.

SEMI CONCLUSION

There are so many features and menu pages that if I go much further this will have to be a two-part review. Yamaha is showing the 02R at October's New York AES show, but the actual ship date is as yet unannounced. The first shipment is expected by January, but it could be earlier if we are all lucky.

The console has four I/O card slots. One I/O card will give you connections to eight tape machine tracks. You will also have two analog inputs built into the back panel. There are three additional slots in the rear panel for other I/O interfaces. If all four are filled, then you can have 32 tape machine tracks on line at once. The configuration I played with was 32 tracks of TASCAM DA-88. There are interface cards for analog I/O, ADAT, TDIF-1, and AES. I successfully used the Otari DCF-24 format-converter box to connect the TASCAM interface cards in the 02R to a Sony 48-track digital machine.

One of the tapes that I brought to mix on the 02R was a Michael Franks tune that Walter Becker and I did about five years ago. We had mixed it at SoundWorks West in Hollywood. The tape machine was a Sony 3348 48-track digital machine. The mixing console was a Neve 72-input VR-P, Total Recall, Flying Faders analog console. I brought a DAT of the final album mix so I could try to match things up as closely as I could. It was very hard to do. The mix on the 02R sounded much cleaner and tighter than the mix from the analog console, so I gave up. I had to settle for something better.

The second tape that I brought was one of the Steely Dan tunes from the live recordings. The recording was done on the Sony 3348, but this time the mixes were done on the AT&T digital processor. The final mix was printed onto the 48-track, so it was easy to compare my new mix to the master mix. The drums were just as tight, the instruments were just as clear, the mix was just as clean. If the master mix sounds a little better, it's just because I spent two days on it riding every horn note and grabbing for each guitar lick.

Oh, yeah, and the price of this Yamaha puppy is going to be under $10,000. I am definitely going to get one for my home demo studio. Walter is thinking about getting three of them for his 48-track studio in Hawaii. I think the very next thing on my agenda is to decide what kind of boat to buy and which airplane I want. That's what I'm going to do with all the money I'm saving. EQ

A MONTH AT TRAMPS

continued from page 124

front-of-house. That way the artist is assured of open communications with someone he trusts in regard to his own sound, which, if it's wrong on stage, will never be right in the house.

Rance runs Stephen's in-ear monitor in mono, which, unfortunately, didn't allow us to use the stereo send on the LM20. He also brought in his own rack and wedge for Stephen, which we assigned to a ninth mix. Time was crucial, as Stephen had to be at a taping of the Letterman show. He played one song with the acoustic guitar then, after we made some adjustments, played another with the electric guitar, at which point he said everything was fine, and he was gone. The show was great, and everything went smoothly.

JULY 29: THE METERS

The Meters play at Tramps two or three times a year, and guarantee a full house for every show. The legendary New Orleans band brought Kenneth Nestar to mix front-of-house. Ken seemed very impressed with the board, especially the amount of headroom he had at the input stage due to the GTx's power supply possessing ±20V power rails. His mix was clean and vocals were especially clear. The tape of the performance was great, and, in my opinion, this was the best the Meters had ever sounded.

Talking about Meters...The GTx has one of the best analog VU meter displays available. The meters are lit by LEDs, ensuring excellent visibility. There are five large meters in the center of the bridge for Left, Right, Mono, PFL, and AFL. To the left are arranged eight smaller meters for the subgroups. To the right are individual meters for each aux send. Coupled with the eight-segment dynamic LED displays on all input channels, the engineer has all the information he needs to keep control of important levels.

No amount of equipment, regardless of quality, can make up for inadequate skills on stage. That's a given. At Tramps, top-notch talent is under the scrutiny of the New York media in a fairly intimate setting. It's my job to provide every artist and engineer with the best possible equipment and give each my best effort. Everyone who plays Tramps should have the confidence that what he or she is trying to achieve will only be enhanced by the house electronics. Fortunately, at Tramps I think we've been able to put together a combination of equipment and people to accomplish this goal.

Baker Lee is house engineer at Tramps, New York City.

HOOTIE LIVE

continued from page 130

year goes, we're pretty much where we're going to be. The band will come out and play, just like this. We want to do the same thing, we just want to be able to accommodate more fans."

Huelin says he'd hate to think that anybody would ever come to a show and not feel like they can't let the music move them. "It's not supposed to be a technical listening experience, it's supposed to be a good listening experience; something you can have fun with."

With the tour's end a day's drive and one blow-out homecoming show in Columbia away, Mark Fulton has already put the show into personal perspective: "These guys have struggled real hard to try and make a living. The camaraderie in the band and all the supporting acts is the one thing that stands out about this tour."

Based on the Ocean Center performance, that same feeling rings true for the young and old "Great concert!"-chiming fans. This band's positive, popular appeal, their evident love for what they're doing, and their respectful demeanor toward fans is exactly what defines Hootie and the Blowfish. Don't miss a chance to see them live. EQ

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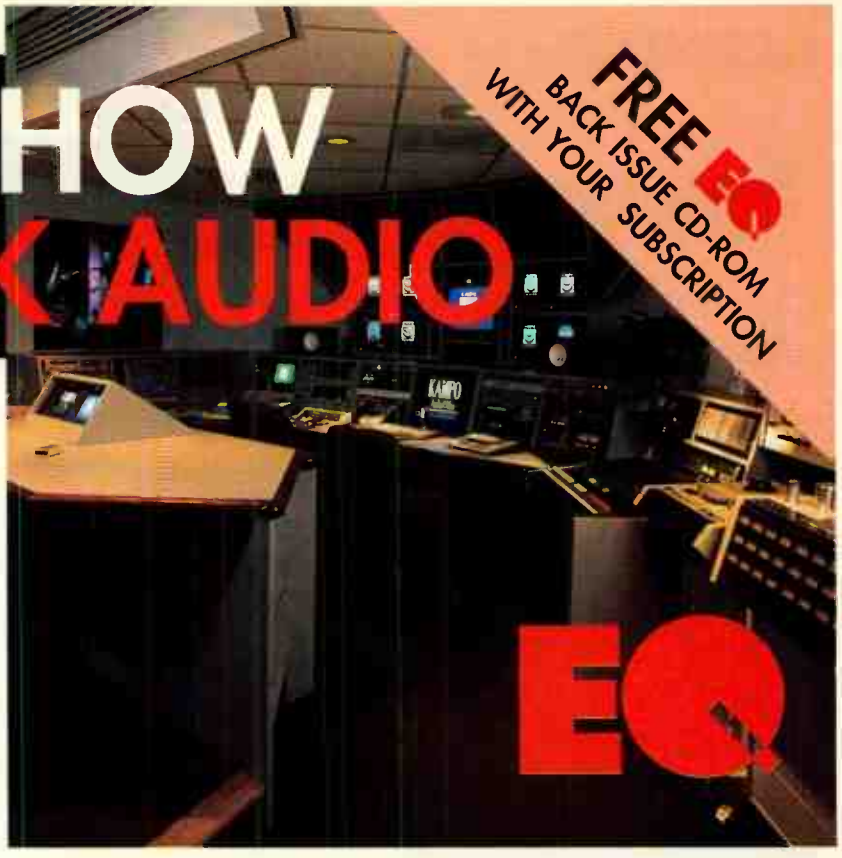

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World Radio History

Tips on Tools

What you need to use to get the job done

BY EDDIE CILETTI

As this issue of *EQ* hits the streets, some of you may still be reeling after two months of columns on RF envelopes. Others may be dizzy after cruising up and down the aisles of New York's Javits Center (site of this year's AES show). Either way, let's take a break. This month we'll tackle the basic subject of truly affordable studio accessories you can't afford to be without: Tools.

A SET OF TOOLS

Regular readers of this column know that I'm into tools, big time. Studer is one manufacturer that has set a good example by providing an extremely high-quality, 10-piece metric hex set that, believe it or not, is all that's required to perform common mechanical tasks on its wonderfully overbuilt machines. In addition to the eight, right-angled hex keys and a pair of handled hex drivers, a set of fuses and replacement lamps are included. Now that's a great way to start, but what if you aren't a Studer owner? Where do you start?

Your own facility is full of gear from around the world, reason enough to have both Metric and SAE hex tools, but not the 41-piece kit you got for $3.99 from Ace Hardware or TrueValue. It is not necessary to spend an arm and a leg on tools, but as the sign in one shop reads: "Good things are not cheap and cheap things are not good." High-quality tools, if you don't lose them, will outlast most of your gear. (See my August '95 column for purchasing info.)

In my studio travels, I, too, often find screws that have been mangled beyond recognition or screwdrivers that have been used to poke holes in plaster. (Yes, some screws are very tightly torqued and the typical screw material does tend to be way too soft for the average Mr. Goodwrench.) To increase your one chance at getting them out alive, be sure that there is no slop between the driver and the drivee. Apply more back pressure to the screw than rotational pressure because, if the tool slips out, both the tool tip and the screw head will be damaged.

SORTING SCREWS

Metric and SAE standards apply not only to hex tools, but also to screw diameter and thread spacing. The best examples are the beautiful but !@#$% impossible rack screws that come with Japanese gear. The threaded diameter of a number 10-32 SAE rack screw is .185 inches. There are 32 threads per inch. The not-quite-close-enough 5 millimeter metric equivalent translates to about .195 inches, an increase of .01 inches! Force them into your rack rail only if you want to damage the rail, ruin your screwdriver, or break the head off the screw! Just try to get that out of the rail.

Believe it or don't, metric screws come with a clue. There's a little dot on the head to help everyone avoid unnecessary damage. If you are having difficulty sorting a drawer of mystery screws, pick up both Metric and SAE "screw checkers." Known also by their proper name, "Thread Gages" are about the size of a 3 x 5 index card, only thicker. The 1/8-inch plate is tapped for all the major screw combinations and is available at better hardware stores or through McMaster-Carr (Tel: 908-329-3200).

The "Inch Style" (SAE) plate is for American and Unified screws (part number 98728A112 @ $10.95). The "Metric Style" (ISO) plate covers 2 mm to 7 mm range (part number 98728A114 @ $11.95). An 8 mm to 14 mm plate is also available (p/n 98728A116 @ $ 12.95).

CUT AND SPLICE

Common diagonal cutters and long-nosed pliers are great for electrical work, but are quite unsatisfactory for electronic work. In the film *The Adventures of Baron Von Munchhausen*, there is a large man who was tired of being used solely for his size and strength. At one point, he expresses his desire to be dainty. Likewise, wiring and electronic components require a certain amount of precision and gentleness. My first lesson in daintiness occurred when a guitar player asked for a pair of wire cutters. When the tool returned it had a notch in it the size of a low E string. I was, needless to say, furious and have to this day never again lent a musical ax wielder a pair of "wire cutters." The correct tool for this job would have been a pair of diagonal cutters designed for 12 gauge, solid copper electrical wire — not the once beautiful tool I used to trim component legs.

Have you ever cut a wire or a resistor leg and had one end fly across the room? Or, better yet, have you ever been cut by the sharp edge of a wire-ty while handling bundled cables? If yes, you will understand why I am so fond of "flush cutters." Most installers use wire-ty guns to snug their cable bundles, but these can leave sharp edges that can rip through flesh like a knife. Likewise, using diagonal cutters to trim component leads creates a force that not only propels the unwanted end, but also sends a shock wave into

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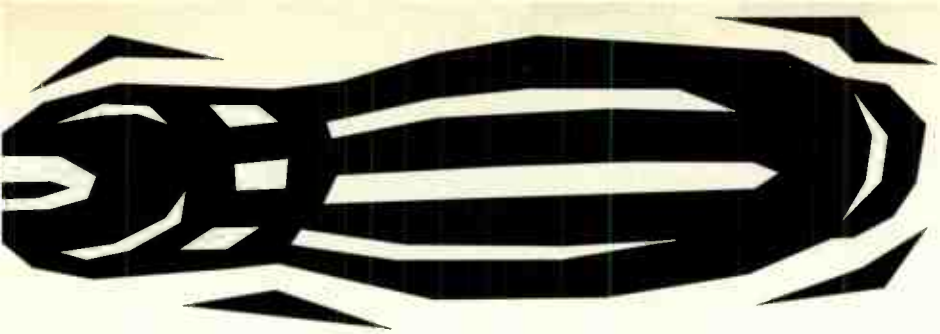


the component. For a kinder, gentler cut, orient the flat face of the flush cutters toward the device body.

Regardless of whether one is using long- or needle-nose pliers, great care is required when attempting to solder wires. Unless the insulation is made of Teflon, it is likely to melt when simultaneously heated and squeezed. For this reason, it is often better to hold the wire — either by hand or with a tool — as far away as possible from the end being heated.

SMOLDERING IRON

Because I regularly use a soldering iron, it's got to be tough and reliable. I have used Weller soldering irons for as long as I can remember. All of my irons are temperature regulated and range in price from about $75 to $250. This may seem a bit steep, but two of my irons are over 15 years old. Yes, I have changed a few tips and heater elements along the way, but the beauty of a regulated iron is that even if you forget to turn them off once in a while, the tip will not be destroyed. With proper care, the plated Weller tips can last at least a year or two under daily use.

The tip temperature range that I choose to work at is 700 degrees F. This is not to be confused with wattage, which refers to the power of the iron — basically, its ability to deliver the goods whether soldering a 26-gauge wire or a pipe. O.K., that is exaggerating just a little. The trick is to find the correct tip and temperature for the job. An undersized tip, or one that is not "tinned" (coated with fresh solder), will be unable to transfer heat to the work, be it a wire or a circuit-board trace. All metal — even a pipe — must be made hot enough to make the solder flow to it. Merely attempting to "paint" or coat solder onto its destination will result in a "cold" joint — one that is crystalline instead of shiny — and will crack if flexed rather than stand up to abuse. Clean the iron's tip at regular intervals on a damp cellulose sponge and immediately apply solder to the tip even while the iron is on but idle. Always apply fresh solder just before use.

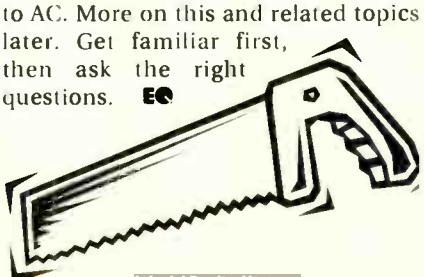
Avoid using pressure of any kind when soldering. This will wear off the plating material (rendering the tip useless), as well as damage a circuit board trace. If solder doesn't easily flow and coat the entire tip, or if the tip looks dull, rusted, or pitted, turn out the room lights. If the iron is glowing red, the temperature is not being regulated.

Tip size plays a key role in effective soldering. Most tips used for standard PCB work are 1/16-inch flat. For work on vacuum tube gear, it's better to use a broad 7/32-inch or 1/4-inch implement. Wire braid, or wick, can be used to remove solder from PCBs. I use Chem-Wik LITE (part # 10-100L), which is 1/10-inch-wide copper braid on a 100-foot spool. A variety of mechanical solder suckers are available, but these require maintenance to be effective.

The smoke that rises from an iron when solder is applied is called Flux, and it is often a turpentine-based substance that facilitates the bond between the molten lead/tin mix and the work. It is a good idea to clean up after doing work on a PCB. To leave without a "trace," a little denatured alcohol applied with an old toothbrush, immediately after the work has cooled, will safely do the trick. I use acetone on stubborn stuff, but that can melt not only the plastic brush handle but sensitive components as well. (Small, metal-handled brushes are available from the hardware store.) There are now fluxes that clean-up with water.

METERING

Question: What's better than having a volt-ohm-milliamp-meter? Answer: Knowing how to use one! Go around and test all the batteries you can. Remember to set the meter to DC mode. Test batteries both in circuit and out for an extra treat. Learn how to check cable continuity and polarity using the "Ohms/Logic/Continuity" setting. Before attempting to measure the wall voltage, remember to switch to AC. More on this and related topics later. Get familiar first, then ask the right questions. **EQ**



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SHURE

SM58
Unidirectional Dynamic Microphone

Consistently the choice of professional performers around the world, the SM58 is a rugged unidirectional dynamic mic with a highly effective built-in wind and pop filter. It's performance characteristics and compact size make it especially well-suited for music and speech applications – anytime the mic must be used outdoors or close to the mouth. A genuine world standard and audio legend, the SM58 makes all out vocalists sound their best.

- Self-contained spherical filter to control explosive breath sounds ("pop") and wind noise in outdoor locations.
- Unusually effective cardioid pickup pattern to minimize background noise and undesirable effects of studio and location acoustics. Rear and side rejection uniform to very low frequencies and completely symmetrical about microphone axis.
- Bright, clean sound. Especially good for vocal music, announcing, narration and dialogue.
- Cartridge shock-mounted for protection and quiet operation.
- Wind and "pop" filter removable for cleaning or replacement.
- Versatility – designed for both field and studio use – hand-held or on a stand (slip-in swivel adapter included).

SM57
Unidirectional Dynamic Microphone

The classic SM57 is the "workhorse" mic of stages and studios worldwide. Its carefully contoured frequency response means clean, well-defined instrumental reproduction and rich, warm vocal pick-up on lecterns or stages. The SM57 is the standard for drum, percussion and instrument amplifier miking.

- Unusually effective cardioid pick-up pattern minimizes effects of studio or location acoustics and background noise. Rear and side rejection uniform to very low frequencies and completely symmetrical about microphone axis.
- Bright, clean sound. Especially effective for announcing, narration and dialogue, vocal music, and rythym packages.
- Cartridge shock mounted for quiet operation.
- Versatility – for use in the hand or on a stand – for use indoors or outdoors.
- Microphone supplied with adjustable swivel adapter – permits tilting through 90° from vertical to horizontal.

SENNHEISER

RF CONDENSER MICROPHONES

Unlike traditional condenser mics, the capacitive transducer in Sennheiser condenser mics is part of a tuned RF-discriminator circuit. Its output is a relatively low impedance audio signal which allows further processing by conventional bi-polar low noise solid state circuits. They achieve a balanced floating output without the need for audio transformers, and ensure a fast distortion-free response to audio transients over an extended frequency range.

MKH 20 P48U3 Omnidirectional

Low distortion push-pull element, transformerless RF condenser, flat frequency response, diffuse/near-field response switch (6 dB boost at 10 KHz), switchable 10 dB pad to prevent overmodulation. Handles 142 dB SPL. High output level. Ideal for concert, Mid-Side (M-S), acoustic strings, brass and wind instrument recording.

MKH 40 P48U3 Cardioid

Highly versatile, low distortion push-pull element, transformerless RF condenser, high output level, transparent response, switchable proximity equalization (-4 dB at 50 Hz) and pre-attenuation of 10 dB to prevent overmodulation. In vocal applications excellent results have been achieved with the use of a pop screen. Recommended for most situations, including digital recording, overdubbing vocals, percussive sound, acoustic guitars, piano, brass and string instruments, Mid-Side (M-S) stereo, and conventional X-Y stereo.

MKH 60 P48U3 Short Shotgun

Short interference tube RF condenser, lightweight metal alloy, transformerless, low noise, symmetrical capsule design, smooth off-axis frequency response, switchable low cut filter (-5 dB at 100 Hz), high frequency boost (+5 dB at 10 KHz) and 10 dB attenuation. Handles extremely high SPL (135 dB) ideal for broadcasting, film, video, sports recording, interviewing in crowded or noisy environments. Excellent for studio voiceovers.

MKH 70 P48U3 Shotgun

Extremely lightweight RF condenser, rugged, long shotgun, low distortion push-pull element, transformerless, low noise, switchable presence (+5 dB at 10 KHz), low cut filter (-5 dB at 50 Hz), and 10 dB preattenuation. Handles 133 dB/SPL with excellent sensitivity and high output level. Ideal for video/film studios, theater, sporting events, and nature recordings.

TASCAM

DA-88 Digital Multi-Track Recorder

The first thing you notice about the eight channel DA-88 is the size of the cassette - it's a small Hi-8mm video cassette. You'll also notice the recording time - up to 120 minutes. These are just two of the advantages of the DA-88's innovative use of 8mm technology.

- The ATF system ensures that there will be no tracking errors or loss of synchronization. The DA-88 doesn't even have (or need) a tracking adjustment. All eight tracks of audio are perfectly synchronized. What's more, this system 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 (user selectable). The frequency response is flat from 20Hz to 20KHz while the dynamic range exceeds 92dB. As you would expect from a CD-quality recorder, the wow and flutter is unmeasurable.
- One of the best features of the DA-88 is the ability to 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, whether you want to generate special effects or compensate for poor timing. All of this can be performed easily on a deck that is simple and intuitive to use.

Fostex

RD-8 Multi-Track Recorder

Fostex has long been a leader in synchronization, and the RD-8 redefines that commitment. With its built-in SMPTE / EBU reader/generator, the RD-8 can stripe, read and jam sync time code - even convert to MIDI time code. In a sync environment the RD-8 can be either Master or Slave. In a MIDI environment it will integrate seamlessly into the most complex project studio, allowing you complete transport control from within your MMC (MIDI Machine Control) compatible sequencer.

- Full transport control is available via the unit's industry-standard RS-422 port, providing full control right from your video day. The RD-8 records at either 44.1 or 48KHz and will perform Pull-Up and Pull-Down functions for film/video transfers. The Track Slip feature helps maintain perfect sound-to-picture sync and the 8-Channel Optical Digital Interface keeps you in the digital domain.
- All of this contributes to the superb sound quality of the RD-8. The audio itself is processed by 16-bit digital-to-analog (D/A's) converters at either 44.1 or 48KHz (user selectable) sampling rates, with 64X oversampling. Playback is accomplished with 18 bit analog-to-digital (A/D's) and 64X oversampling, thus delivering CD-quality audio.
- The S-VHS transport in the RD-8 was selected because of its proven reliability, rugged construction and superb tape handling capabilities. Eight tracks on S-VHS tape allow much wider track widths than is possible on other digital tape recording formats.
- With its LCD and 10-digit display panel, the RD-8 is remarkably easy to control. You can readily access 100 locate points, and cross-fade time is fully controllable in machine to machine editing. Table of Contents data can be recorded on tape. When the next session begins, whether on your RD-8 or another, you just load the set up information from your tape and begin working. Since the RD-8 is fully ADAT compliant, your machine can play tapes made on other compatible machines, and can be controlled by other manufacturers ADAT controllers. Your tapes will also be playable on any other ADAT deck.

Roland® DM-800

Digital Audio Workstation

The DM-800 is 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 will make your work simpler, faster, more productive and more profitable. A full function workstation, the DM-800 performs all digital mixing operations from audio recording, to editing, to 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.

POWERFUL EDITING
- Time Compression, Pitch Compression
- Completely Non-Destructive Cutting, Erasing, Copying
- Very Fast Looping for Music or Ambiance Editing
- Scrub Preview and Preview to, from and thru
- Six Levels of Waveform Zoom for Fast Editing
- Optional RS-422 Interface (D10-800D) for 9-pin Control from Video Editor

FLEXIBLE I/O STRUCTURE
- Full Digital Patch Bay
- Two Stereo Aux Returns
- Stereo Aux Send Buss
- Direct Channel Outs
- Digital Stereo Input and Two Digital Stereo Outputs
- Four Balanced Analog Inputs with Gain Controls
- Four Balanced Analog Outputs with Option for 4 More

FULL AUTOMATION
- Dynamic and Snapshot Automation of Level, Pan 2-Band EQ, including Frequency Select, Boost and Cut
- Microscope Editing of Automation Data
- 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

MIDI FEATURES:
- MIDI Machine Control
- Internal Tempo Maps
- Accurate Editing by Bars and Beats and Sub-Beats
- 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

ACCURATE SYNCHRONIZATION
- Frame Accurate Sync to any Time Code
- Locks to MTC
- Generates and Reads all Types of SMPTE, including 24.25, 29.97 30 (Drop/non-drop) Frames per Second
- Incoming SMPTE Reshaped to Output Jack

RECORDING OPTIONS
- Records to Standard SCSI Drives
- Up to 24 Hours Recording Time Possible
- Uses Magneto Optical or Syquest Drives for Fast Project Changeovers
- Optional Internal 2.5" Drives for Portable Operation

PROJECT CATALOGING
- Up to 150 Projects on Line at Once
- Easy Cataloging of Sound Effects and Projects
- Easy Transfer of Sounds from One Project to Another
- File Compatible with DM-80

HIGH QUALITY SOUND
- Sampling Rates of 48, 44.1, 32 kHz
- 18 Bit A/D and D/A with 128 and 8 Times Oversampling
- 24 Bit Internal Processing
- Superb Converters

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

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TG-X
Dynamic Mic Series

The entire TG-X family of microphones is based on neodymium technology coupled with rugged construction and designed for optimum performance in a stage environment.

TG-X 5

- Clip-on gooseneck drum mic with high SPL capability.
- Acoustically coupled to capture shell sound as well as skin sound.
- Internally shock mounted for isolation from mechanical noise.
- Rugged construction with convenient clothes peg mounting.

TG-X 30/35

- Ultra-slim flexible gooseneck for easy positioning.
- Broadcast performance microphone with rugged contruction.
- Lightweight, low profile adjustable neckband.
- Applications: Hands free vocals (drums/keyboards) and aerobics.
- TGX 30.15 Omni neckworn with pre-amplifier
- TGX 30.16 Omni neckworn for wireless transmitter
- TGX 35.15 Cardioid neckworn with pre-amplifier
- TGX 30.16 Cardioid neckworn for wireless transmitter

TG-X 40

- Hypercardioid polar pattern with excellent isolation from unwanted sound.
- Flat, wide range frequency response for uncolored sound reproduction.
- Rugged construction.
- Applications: Vical piano, orchestral/recital recordings, strings and sampling

TG-X 50

- Hypercardioid kick-drum with high SPL capability.
- Reduces shell ring in bass drum.
- Exceptional gain-before-feedback.
- Superb transient response and extended low frequency range.
- Applications: Kick drum, floor toms, congas and timpani

TG-X 80

- High quality hypercardioid vocal mic.
- Full range frequency response.
- Studio quality accuracy
- Excellent off-axis isolation
- Shock absorbing rubber ring.
- Applications: Vocals, piano, strings, brass, percussion, woodwind, overheads sampling

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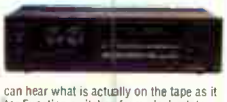
TASCAM

103 Mastering Cassette Deck



Cost effective three head stereo mixdown cassette deck, appropriate for audio and video production facilities. With its three head design you can hear what is actually on the tape as it is recorded. Auto Monitor Function switches from playback to input automatically while in record/pause mode, allowing you to set record levels or match tape levels. Dolby HX PRO circuitry provides extended high frequency performance while keeping distortion and noise to a minimum. Tape type is automatically sensed and adjusted for by the Auto Tape Selection feature.

102 Cassette Deck

Designed primarily for mixdown, the 102 provides solid performance and sound quality with durability and reliability. Although it is a two head unit, the 102 closely matches the performance and features of Tascam's 103 Mastering Deck.

202MKII
Dual Recording Cassette Deck

Dual record cassette deck offers dubbing and copying capabilities at a reasonable price. The deck is capable of simultaneously making two identical recordings from the same source, or making a single extended, recording first on one tape (both sides) then on the other (also both sides). Copying can be easily performed by using one side for playback and the other for record. Can also provide continuous background music, playing first both sides of one tape, then both of the other.

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SONY

TCD-D10 PRO II
Portable DAT Recorder

Packed with features and functions, the compact TCD-D10PROII is everything professionals need in a portable DAT recorder. Measuring only 10" x 2 ¾" x 7 ¾", it provides high performance, reliability and flexibility. Among its many features are high speed 100x search, LCD multi-function display, 4-motor Direct Drive transport mechanism and absolute time recording capability. With absolute time code, tapes recorded by the TCD-D10 PRO II can be used immediately as source material for the PCM-7000 series DAT editing system. Offering maximum performance and capabilities in a minimum package, the TCD-D10 PRO II is the recorder of choice for any field application.

- Has balancec XLR input, switchable microphone (-60dB) or line (+4dB) inputs. A 12-pin digital connector provides interfacing with AES/EBU digital signals of 32.0, 44.1, or 48.0 KHz sampling rate. This means that compatibility with other digital systems is ensured. It also provides the convenience of digital dubbing and editing without any degradation.
- Equipped with a comprehensive self-diagnostics function that constantly monitors the rotation of the head drum, capstan and reels. The tape transport mode and load/unload time are continuously checked as well. Upon detection of trouble, the tape is brought to a forced stop and unloaded automatically to protect the tape and the recorder.
- 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 these start IDs is performed in two modes at 100 times normal speed
- Offers a maximum spooling time of 140 x normal speed. A two hour tape can be rewound or fast forwarded in under a minute.
- 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 5-segment battery indicator. The last segment blinks on and off, notifying you to change batteries.
- To eliminate distortion caused by unexpected peaks, the TCD-D10 PRO II incorporates a record-level limiter with a fast attack time of 300ms. The microphone attenuator prevents distortion by suppressing the signal level 20 dB.
- Immediate playback is possible through a built-in speaker.
- A wired remote controller is supplied to control the record, play, stop, and pause functions of the recorder. The top end of the controller is designed to accept a microphone holder. Two microphone stand screw adapters are also supplied.
- The supplied NP-22H rechargeable battery pack provides 1.5 hours of continuous operation. The optional NPA-D10 battery adapter enables 1 hour of continuous operation on AA-size batteries. With the use of the supplied ACP-88 AC power adapter, it can also be operated on 100-240 VAC, 50–60 Hz

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499 Grand Master Gold Studio Mastering Tape

499-174111 ¼" x 2500' 10½" NAB Reel	20.49
499-274111 ¼" x 2500' 10½" NAB Reel	37.49
499-97M111 2" x 2500' 10½" PREC	134.99

SONY

PCM-2300/PCM-2700A DAT Recorders

The superb audio quality of digital recording and the convenience of DAT cassettes is not restricted to broadcasting and post-production applications. In fact, it is just as relevant to business and educational applications. To meet the requirements of all these sectors Sony offers the PCM-2300 and PCM-2700A DAT recorders. While both are perfect for simple recording and playback at recording studios, the PCM-2700A is also well suited for simple program transmission at broadcasting stations. Both feature exceptional sound quality, three sampling frequencies, absolute time recording, long record/playback time, alternative subcode recording and digital fader.

THREE SAMPLING FREQUENCIES

At normal tape speeds, either a 44.1 kHz or 48.0 kHz sampling frequency can be selected. When set to long play (LP) mode, they provide 12-bit non-linear digital recording at 32.0 kHz.

PROFESSIONAL PERFORMANCE

- The servo system is completely controlled by carefully programmed software. This features sophisticated, smooth transport control, which optimizes tape handling and increases the search speed to approximately 150 times normal.
- Absolute time can be recorded in the subcode area of the DAT tape. DAT tape with absolute time is ideal for editing with the Sony PCM-7000 Series Editing System, as it translates A-time into SMPTE time code.

DIGITAL FADER

A 64-step digital fader is incorporated in both units. Both fade-in and fade-out functions are available on the digital and analog inputs/outputs. The fade duration can be set over from 0.2 – 15 seconds, and can be controlled either locally or by the remote

PCM-2300 AND PCM-2700A

- The PCM-2300 has unbalanced digital input/output, while the PCM-2700A has dual digital inputs/outputs (balanced and unbalanced), allowing most digital audio equipment to be directly connected. Both also have balanced analog line level inputs/outputs which can be adjusted over a range of -12 dBs to +8 dBs, for connection to many other types of audio equipment
- The PCM-2300 has a reliable tape transport system driven by three servo-controlled motors, two direct-drive types for head drum and capstan, and a single DC motor for the reels.
- The PCM-2700A employs a four motor direct-drive tape transport with head drum, capstan and reels, all individually driven by servo-controlled motors. The four motor direct-drive mechanism gives even more precise and stable transport.
- PCM-2300 front panel display has a 20-segment peak level meter display with 0.5 dB step peak margin. The PCM-2700A has a 29-segment peak level meter with a 0.1dB step peak margin indication.

SUBCODES

They record various subcodes separately from the audio data to provide tape search functions. The subcodes include the Start ID, Skip ID, End ID, Program Numbers, Absolute Time, and Date functions. Program numbers can be recorded sequentially as the Start IDs and are written (and can be renumbered) in the correct sequence whenever additional Start IDs are inserted

OTHER FEATURES

- They operate in the Long Play (LP) mode, yielding twice the normal record/playback time. This also makes them compatible with the LP mode of consumer products. In LP mode, a maximum of four hours of recording and playback is possible.
- Built-in crystal clock generates a date function, which automatically indexes each recording with time and data info (minute/hour/day of the week/month/year). When tape is replayed it's easily checked for when the recording was made.
- Both units can be installed in a standard 19-inch rack.
- Both included a wireless remote control for remote operation.

PCM-2700A ONLY FEATURES

- Read After Write function allows you to monitor the recorded signal immediately after it has been stored on the tape. This saves you valuable time, as recorded signal can be check monitored in real time.
- High-speed location, in either direction, to points on the tape with a resolution of 1 second by entering the absolute time address via keys on the front panel.
- Convenient remote operation is performed by the optional RM-D7100 Remote Controller. Connected via the 37-pin parallel remote connector, it allows basic tape transport control.
- Has 8-pin remote interface to give a fader start function, which is particularly useful for On-Air applications.
- When manually writing the Start, Skip, and End IDs, there is an enhanced rehearsal function which is available for accurate ID recording. While monitoring the ID recording, these can be relocated forwards or backwards in 0.3 second steps.

Panasonic

SV-3700/SV-4100
Professional DAT Player/Recorders

Panasonic's SV-3700 and SV-4100 are designed for professional applications. They have highly accurate and reliable transport systems with search speeds up to 400 times normal play speed. They also feature advanced, high-quality analog-to-digital (A-D) and digital-to-analog (D-A) converters and input/output circuitry designed to interface with the widest variety of devices.

SV-3700 Features:

- When recording via the analog inputs, a front panel switch permits selection of the sampling rate (44.1kHz or 48kHz). This avoids the need for a conversion of the sampling frequency in CD mastering applications. When recording through the digital inputs, it automatically clocks to incoming frequencies of 32kHz, 44.1kHz or 48kHz.
- 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.
- High speed transport enables searching up to 250x normal speed. High-speed search up to 400x normal speed is possible once the tape has been scanned in Play, Fast-Forward or Reverse mode. This ensures access to any point on a two-hour DAT in approximately 27 seconds.
- Built-in shuttle wheel has two variable speed ranges: 3 to 15x normal speed in Play mode and 1/2 to 3x normal speed in Pause mode – an ideal way to find tape locations.
- Comprehensive display includes program numbers, absolute time, program time, remaining time and Table of Contents, which displays total recorded time and total PNO count for commercial prerecorded DAT tapes.
- Has XLR-balanced and unbalanced (phono) digital inputs and outputs. They provide direct interfacing with compact disc player, digital audio workstations and other components in a recording studio or production facility. Also has XLR-balanced analog stereo inputs and outputs. Output level is selectable between +4dB and -10db. The input level is +4dB

SV-4100 Has All the Features of the SV-3700 PLUS:

Offers enhanced performance required for professional production, broadcast and live-sound systems. Features such as instant start, external sync capability, enhanced system diagnostics, additional digital interfaces and exceptional 20-bit audio make the SV-4100 the DAT quality standard.

QUICK START WITH TRIM AND REHEARSAL

- With 8MB of memory holding five seconds of audio data, the Quick Start function provides sound almost instantly after a play command is executed. Other DAT recorders lag about 7 second, making them unsuitable for professional applications.
- Easily adjust the Quick Start position and specify it by A-Time, Start ID or PNO. Recording via Quick Start is also possible, allowing two SV-4100s to be used for frame-accurate punch-in/punch-out and assemble editing.
- You can adjust the Quick Start position with I-Frame resolution over a range of ±50 frames. Using the shuttle dial and Skip key for adjustment. Frame number is preceded by + or - sign. A-Time, subcodes and peak level are displayed to provide a general guide to positioning.
- Without playing the tape, you can monitor the level of stored data to check your Quick Start position. This preview capability is handy before actual editing or on-air play. Repeated play is also possible, using about 1.5 seconds of the data to create a kind of sampler effect.

FRAME ACCURATE INDEXING AND EDITING

- Using the trim and rehearsal functions, you can accurately determine points to write, start and skip IDs. These IDs can be written, rewritten or erased at any point in the recording and automatically renumbered.
- With two SV-4100s connected via the 8-pin parallel remote terminal, synchronized frame-accurate editing can be performed. Continuity of edit points can be checked by rehearsal playback. By entering and editing end position in one of the Locate buttons, you can determine a punch-out point as well.

FLEXIBLE SEARCH

- Easily and accurately access your A-Time. You can specify hour, minute, second and frame.
- In most modes, the currently displayed A-Time can be assigned to one of the Locate buttons. Then from Stop, Pause or Play you can rapidly jump to any of these four addresses by pressing its Locate key. In addition, Locate Last takes you to the most recent Quick Start A-Time position.
- Search is also possible by Start ID or program number.

5-MODE EXTERNAL SYNC

Has 5 external sync modes. External sync is essential for applications such as video postproduction and stereo submix recording. It assures uniformity of timing between different equipment so the audio data consistently matches up with the target media.

- Select from 3 video external sync modes (25, 29.97 and 30 frames per second) or use the word sync or Digital Data modes (which lock to the input sampling frequency).

ENHANCED SOUND

The SV-4100 satisfies the highest professional expectations both in terms of sound and functionality. It features new 20-bit (equivalent resolution) digital-to-analog converters

MULTIPLE DIGITAL INTERFACES

- Has XLR-balanced digital input and output plus unbalanced digital coaxial and optical inputs and outputs. Analog inputs/outputs are XLR-balanced and output level is switchable between +4dB and -10dB, providing compatibility with other equipment.

3-WAY REMOTE CONTROL

- GPI input allows simple triggering of Quick-Start Play. 8-pin parallel remote terminal connects to another DAT deck, computer or wired remote. Includes wireless remote control.

TASCAM

DA-P1
Portable DAT Recorder

- With rotary two head design and two direct drive motors the DA-P1 offers one of the best transport in its class.
- XLR-balanced mic/line inputs (with phantom power) accept a broad range of signal levels from -60dB to +4dB.
- Analog line inputs and outputs (unbalanced) pluis S/PDIF (RCA) digital inputs and outputs enables direct digital transfers.
- Uses next generation A/D and D/A converters to deliver amazing sound quality.
- Supports multiple sample rates (48, 44.1 and 32 kHz) and SCMS-free recording.
- Included in its design is a MIC limiter and 20dB pad to achieve the best possible sound without outside disturbances.
- To monitor your sound there is a TRS jack and level control for use with any headphones.
- Built tough, the DA-P1 is housed in a solid, well-constructed hard case. The DA-P1 includes a shoulder belt, AC adapter and one battery.

SONY

TCD-D7
DAT Walkman Player/Recorder

- High-quality Standard Play (SP) mode provides up to two hours recording of 16-bit digital audio on a DT-120 DAT cassette. The SP mode is ideal for recording live music.
- Long Play (LP) mode allows up to 4 hours of record/playback of 12-bit audio on a single DAT cassette. The LP mode is ideal for meetings, conferences or other voice recordings.
- Equipped with digital coaxial and optical input connector. Maintains highest signal purity for recording and playback of digital sources with all information retained in digital format.
- Also has analog Mic and Line inputs for recording from analog sources without external adapters.
- High-speed Automatic Music Sensor (AMS) search function finds and plays tracks, skips forward or back up to 99 tracks, all at 100x normal speed.
- Has a Digital Volume Limiter System (DVLS) that increases listening comfort and sound quality by automatically adjusting for sudden level changes of the recording. It also helps prevent sound leaks through headphones.
- Two-speed cue-review lets you hear sound while player is in fast-wind modes, up to 3x or 25x normal speed.
- Compact and portable, it has an anti-shock mechanism that permits accurate recording and playback even while in motion.
- 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. The kit is equipped with the input/output connectors for both the optical cable and the coaxial cable. Therefore you can use it as a relay between the TCD-D7 and other digital equipment. Also includes a wireless remote control.

JVC

XD-P1 Pro
Portable DAT Recorder

An integrated package, the XD-P1 Pro combines a DAT recorder and a microphone with digital output in an unbelievable light package.

- Records and plays at all three standard sampling frequencies. Choose from 32kHz for long recording sessions, 44.1 kHz for mastering if CD production or 48kHz for highest fidelity.
- Operates without the restrictions of SCMS (Serial Copy Management System), permitting one generation of digital to digital copy, using 44.1 kHz sampling frequency. You can digitally dub or copy a recording mode on the XD-P1 Pro as many times as necessary.
- The supplied detachable digital output microphone provides two pick-up patterns; "Telescopic" and "Stereo". A collapsible microphone stand is also supplied, allowing you to set the mic on a desktop for the interviews or conferences.
- Extensive use of aluminum and ultra-thin molding techniques make the XD-P1 Pro compact, lightweight and durable. The main module weighs under a pound (12.5 oz). With microphone and battery it weighs only 22 oz.
- All basic controls are on one side of the unit and readily accessible. You can operate the recorder using one hand.
- Advanced power-saving design and low power-consumption circuits give the XD-P1 Pro long recording capability – on a single battery charge. Optional rechargeable batteries further extend recording time.
- Supplied AC adapter/charger works anywhere in the world regardless of voltage or frequency.

ALL ITEMS ARE COMPLETE WITH ALL ACCESSORIES AS SUPPLIED BY MANUFACTURER

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samick

MM Series

MM842/1242/1642/2242

8/12/16/24 Channel Modular Mixers

- Electronically balanced XLR inputs.
- Channel gain trim LED headroom indicator.
- 3-band active EQ, sweep mid-band.
- Individual channel inserts for patching.
- Direct outputs on each channel.
- Assignable bar graph level indicator for left and right or group outputs.
- XLR and 1/4" balanced outputs.
- +48v phantom power.

dorrough

With today's audio systems stretching the limits of program dynamics it's become critical for engineers to obtain maximum loudness with the minimum of distortion components, to fully utilize the dynamic range available. It is of equal importance that they have a method of monitoring and establishing the maximum safe level at which a system can operate.

That's why every Dorrough Audio Level Meter simultaneously shows 3 dimensions of program material content; Peak, Average Power and Compression are displayed on a color-coded 40-segment LED scale. Meters are easily viewed while providing precision indications of program energy content.

Loudness Meter Model 40-A

The model 40-A has a scale allowing 14dB of headroom in 1dB steps. A stand-alone unit, it measures 8¼" x 2⅛" x 6¼" and has an internal power supply. Model 40-AP has a peak-hold option as well.

Loudness Meter Model 40-B

The Model 40-B provides meter ng of relative loudness to peak modulation. The 40-B is a scale differentiation of the 40-A and is calibrated in percent (%) modulation, with the lower scale in dB from +3 dB to -3 dB. The 40-BP also has a peak-hold option.

Symetrix

Signal Processing Products

601 Digital Voice Processor

- Accepts mic or line level analog signals, converts them to digital (18 bits) and then performs 24-bit digital domain signal processing.
- Processing includes fully parametric EQ, shelving EQ, notch filtering, dynamic filtering (noise reduction) de-essing, delay, chorusing, gating, expansion, compression, AGC and DC removal.
- Combination of 128 factory presets and 128 non-volatile user programs guarantee predictable and repeatable effects from session to session, performance to performance.
- Has XLR-balanced (analog) monaural mic and line inputs and XLR-balanced stereo output. XLR-balanced and S/PDIF (RCA) inputs and outputs. MIDI input/output supports connection to virtually any type of MIDI control device for programming or controlling the 601 in real time.
- Ideal for a variety of recording, broadcast, live sound, and post production applications.

488 Dyna-Squeeze

8-Channel Compressor/Interface

- Can easily increase average recording levels on your digital or analog tape recorder by 10dB with no side effects
- Tracks processed by Dyna-Squeeze have presence and increased articulation. Subtle sounds become more up front.
- Many professional mixing consoles have output levels that are much hotter than digital recorder inputs. The 488 matches any console to most any digital recorder.

We are a full stocking dealer for the entire Symetrix line

TASCAM

M-2600 Series

16/24/32 Channel Eight Channel 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. This lowers distortion and widens dynamic range. It also increases gain control to an amazing 51dB. Plus, you get phantom power on each channel.
- The M-2600 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 anything into it – keyboards, guitars, basses, active or passive microphones, samplers and more. No matter what you put into it, you can be confident that signal can be placed at optimum levels without a lot of fuss.

THE BEST AUX SECTION IN THE BUSINESS

The most versatile AUX section in its class, rivaling expensive high-end consoles. 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

You'll find both shelving and split-EQ sections on some mid-level consoles. But that's where the similarities with the M-2600 end. The M-2600's 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. Most 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 busses, or 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. You won't find this kind of speed or flexibility in a "one-size-fits-all" board.

ERGONOMIC DESIGN

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

MACKIE

MICRO SERIES 1202

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, an affordable small mixer with studio specifications and rugged construction. The 1202 is a no-compromise, professional quality ultra-compact mixer designed for professional duty in broadcast studios, permanent PA applications and editing suites where nothing must ever go wrong.

BIG CONSOLE FEATURES

- Working S/N raio of 90dB, distortion below 0.025% across the entire audio spectrum, switchable +48 volt phantom power and +28 dBu balanced line drivers.
- Real switchable phantom-powered mic inputs with discrete, balanced mic preamps as good as those found in big consoles.
- Has 4 mono channels, each with discrete front end mic preamp/line input and four stereo channels, each with separate left and right line inputs.
- Every input channel has a gain control with unity at the center detent for easy setup. Also a pan pot, low frequency EQ at 80Hz, high frequency EQ at 12.5 KHz, and two aux sends with up to 20dB available gain.
- Main outputs operate either balanced/unbalanced, as required.
- Switchable three-way 12-LED peak meter displays.
- Master section includes two stereo aux returns, a separate headphone level control, metering and two stereo aux returns.
- Line inputs and outputs are designed to work with any line level, from instrument level, to semi-pro -10dB, to professional +4dB.

HEAVY DUTY CONSTRUCTION

- Designed for non-stop, 24-hour-a-day professional duty in permanent PA applications, TV and radio station, etc.
- Sealed rotary controls instead of open frame phenolic potentiometers that suffer from dust and contamination.
- Has steel chassis, rugged fiberglass circuit boards and a built-in power supply. Also has exceptional RF protection.

MULTIPLE APPLICATIONS

- Ideal "entry level" mixer for those just starting a MIDI suite
- Ideal as headphone or cue mixer, level matching pro audio "tool kit", drum or effects sends submixer, 8-track monitor mixer.

CR-1604 16-Channel Mic-LineMixer

The hands-down choice for major touring groups and studio session players, as well as for broadcast, sound contracting and recording studio users, the Mackie CR-1604 is the industry standard for compact 16-channel mixers. The CR-1604 offers features, specs, and day-in-day-out reliability that rival far larger boards. It features 24 usable line inputs with special headroom/ultra-low noise Unityplus circuitry, seven AUX sends, 3-band equalization, constant power pan controls, 10-segment LED output metering, discrete front end phantom-powered mic inputs and much more.

LOWEST NOISE, HIGHEST HEADROOM

- With the CR-1604, having the lowest noise and highest headroom (90 dB working S/N and 108 dB dynamic range) at the same time are not mutually exclusive. It is free of commonly encountered headroom restrictions, and is able to handle the occasional pegged input with ease. In fact, many drummers consider it the only mixer capable of handling the attack and transients of acoustic and electronic drums.

CONSTANT POWER PAN POTS

- Only with constant power pan pots will a source panned hard left or hard right have the same loudness as when it is sitting dead center. While most small mixers pass simple balance controls for pan pots, the CR-1604's carefully optimized constant power pan circuitry make it a professional tool with the kind of performance necessary for CD mastering, video posting and other critical audio production.

IN-PLACE STEREO SOLO

- Stereo "in place" solo allows not only the monitoring of level and EQ, but also stereo perspective. Usually found in very expensive mixers, stereo solo allows you to critically scrutinize and carefully build a mix using all the channels with their respective sends and AUX returns.

UNITYPLUS GAIN STRUCTURE

- Proper gain settings are facilitated by proper gain labeling, along with center-click detents on the faders, clearly understandable input trim controls and output meters that read channel levels in solo mode. With properly set levels you achieve very high headroom and low noise at the same time.

EFFECTS SEND WITH GAIN

- Unusual circuit design that provides two different "zones" that reflect real world use: send from each channel can vary in level from off to unity gain, which is the normal range of effects sends in other mixers. Since you also get another whole zone from the center detent to +15 dB of gain, the channel fader can be pulled down and the effects send can be boosted above unity when more effect is needed.

INTELLIGENT EQ POINTS

- Low frequency EQ is at 80 Hz where it has more depth and less hollow midbass "bonk". Midrange is centered at 2.5 KHz, providing for more control of vocal and instrumental harmonics. A specially-shaped HF curve that shelves at 12 KHz creates more sizzle and less aural fatigue.

REAL MIC PREAMPS

- The CR-1604 has genuine studio-grade phantom powered, balanced input mic preamps on channels 1 through 6. All CR-1604 (and XLR10) discrete input mic preamp stages incorporate four conjugate-pair, large-emitter geometry transistors just like the big mixers use. So, when recording nature sound effects to heavy metal or miking flutes or kick drums, you get the quietest, cleanest results possible.

BUILT TO LAST

- The CR-1604 is designed for non-stop, 24-hours-a-day professional duty – even for tours that log 100,000 miles in three months. It has sealed rotary potentiometers that are resistant to airborne contamination like dust, smoke, liquids, and even the oxidizing effects of air itself.

Optional Accessories

OTTO-1604

Add sophisticated computer controlled automation to your CR-1604. When connected to the MIDI port of your computer (PC, Mac, Amiga or Atari), each one of the 16 input channels can be programmed to change gain or to mute, just as you would program a sequencer. Master levels can be programmed as well, along with all buss channels.

XLR10

While the standard CR-1604 comes with 6 high performance mic inputs, there are times when you need more. Enter the XLR10. This simple-to-install accessory adds 10 more (for a total of 16) mic inputs, with the same quality, performance and features as those in the CR-1604.

SENNHEISER

Incorporating state-of-the-art technology and decades of experience, Sennheiser headphones offer outstanding design, superb audio quality and luxurious comfort. From the ear padding to the O.F.C. (Oxygen Free Copper) cable, all materials are carefully selected and precision engineered to ensure incomparable quality.

HD414 Classic

A re-issue of the world's first open-Aire dynamic headphone, the HD414 Classic offers maximum transparency, fidelity and comfort. A limited edition model, the HD414 Classic also features Professor Sennheiser's signature on the headband.

- Radial based diaphragms for more accuarte reproduction
- Field replaceable parts for long-term enjoyment.
- Neodymium-ferrous magnets for broad frequency response (18-21,000Hz).
- 10ft. Kevlar-reinforced oxygen-free copper signal cable with 1/8"-1/4" stereo phone plug.

$59.95

HD25 SP

Studio Monitor Headphone

Offering dramatic isolation from external sounds, the HD25SP is designed for professionals who rely on studio monitor headphones for work and pleasure.

- High-efficiency drivers for portable and field use.
- Modular parts for long term value and durability.
- Neodymium-ferrous magnets for broad frequency response.
- Frequency Response: 16-22,000Hz.
- Sensitivity: 105dB.
- Impedance: 70Ω.

$119.95

HD265

Studio Monitor Sealed Headphone

Designed to meet the stringent demands of studio professional and audiophile alike, the HD265 breaks new ground in the sealed-chamber headphone format.

- Sealed-chamber headphone format.
- Triple-wound aluminum voice coils for quick transients.
- Polycarbonate dome-damping minimizes distortion.
- Oxygen-free copper signal cable with 1/8" to 1/4" stereo phone plug.
- Frequency Response: 10-25,000Hz.

$199.95

HD535

Dynamic Hi-Fi Stereo Headphone

The HD535's earcups surround your ears rather than resting on them, for a more natural listening experience.

- Open-back construction and classic design.
- Light aluminum coils in the transducer systems offers excellent transient and dynamic response.
- Supported by the open structure, tonal quality develops high dimensional sound qualities.
- Circumaural, oval earpads for good wearing comfort.
- Can be connected to all digital and analogue Hi-Fi components

$139.95

HD545

Digitally Compatible Circumaural Headphone

The HD545 is the headphone to which all in its price category must be compared.

- Polycarbonate dome-damping materials for clearer highs.
- Triple-wound aluminum voice coils mean powerful bass, high output and greater durability.
- Velvety soft, circumaural earpads and adjustable, padded headband for extended comfort and perfect fit.
- Oxygen-free copper signal cable assures optimal signal transfer.
- Includes 1/8" to 1/4" stereo phone plug.

$169.95

HD565

Digitally Compatible Circumaural Headphone

Offering natural sound reproduction without tonal distortion - the choice for use with the most sophisticated equipment.

- Silk dome-damping for brilliant highs and ultra-smooth midrange reproduction.
- Copper-coated aluminum voice coils for high linearity.
- Bass-tube tuning for extended, powerful low frequencies.
- Velvet ear cushions provide lavish comfort.
- Oxygen free copper signal cable with 1/8" to 1/4" stereo phone plug.

$239.95

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B&H AUDIO-VIDEO

Stewart

PA1000/1400/1800 Power Amplifiers

- High frequency switch mode power supply fully charges 120,000 times per second (1000 times faster than conventional 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. There is no need for staggered turn-on configurations or other preventive measures when using multiple amp set-ups, as current drown during turn-on is only 6 amps per unit.
- They produce smooth and uncolored sound, while offering very full detailed low end response and tons of horsepower.
- They each carry a 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 extends on 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.

TANNOY

System 6 NFM II

A 6.5 inch Dual Concentric with Tulip HF wave guide forms the heart of the System 6 NFM II providing a reference single point source monitor in a more compact enclosure than ever before. Every aspect of design fully complements the drive unit's capability. The rigid cabinet with carefully contoured baffle and trim minimizes diffraction and the high quality minimalist DMT crossover and gold-plated Bi-Wire terminal panel optimize the signal path. Pin-point stereo accuracy with wide frequency response, good power handling and sensitivity make this an ideal nearfield monitor.

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 nitrile rubber surrounds and the highest quality components including polypropylene capacitors and carefully selected inductors. 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 nitrile 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" low-frequency driver and 3/4" tweeter are fed by a completely redesigned hard-wired 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 extens on 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 matrix 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.

TURTLE BEACH SYSTEMS

Turtle Beach audio cards bring true studio performance to the PC platform. Based on the technology used in their professional products, the performance of both their hardware and software has garnered accolades from users and press alike. Unlike other PC-based audio cards, Turtle Beach products are not designed for sound card game compatibility. Instead, the design philosophy is to give the best possible performance and quality, in the Windows operating environment, while bypassing traditional PC limitations.

MULTISOUND MONTEREY Multimedia Sound Card

The next generation of Turtle Beach's award winning Multisound board, Monterey offers high quality performance and features at a very reasonable price. Multisound's Hurricane technology provides very high speed audio data transfer between the card and the hard drive. This approach allows for data throughput up to eight times faster than the more common DMA designs, while putting minimum burden on the CPU (critical if you're recording audio and video simultaneously).

- The Motorola DSP-56001 Digital Signal Processor operates at 20MIPs and performs all digitization functions with very low system overhead.
- High S/N (-89dB, A weighted), low distortion (<0.01% THD, <0.01% IM - both A weighted), flat frequency response (DC-19KHz/0.5dB)
- On-board real-time effects processor for a variety of effects, including reverb and echo.
- Professional quality MIDI synthesizer with wavetable playback (4MB of real instruments audio). Up to 4MB of standard SIMM-type memory can be added for sampling of new sounds.
- True 16-bit recording, using 64x oversampling and sigma-delta convers on technology
- True 16-bit playback, with 64x oversampling and sigma-delta conversion utilizing 18-bit DACs, and an 8x interpolating filter

$349.00

WAVE 2.0 Professional Sound Editing for Windows 3.1 Compatible Sound Card

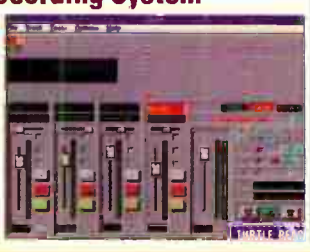
Wave is simply the best audio recording/editing/effects program available under Windows 3.1. With its logical layout, plethora of functions and wealth of effects, Wave will become an indispensable tool in your studio. Wave has the features (and interface) of a tape recorder. It supports stereo or mono recording/playback at 11.025, 22.05 or 44.1KHz sampling rates. Wave will work with any Windows 3.1 compatible audio board.

- Supports cut & paste editing (just like editing in a word processor) and has a full Undo function to eliminate fatal mistakes.
- Gain adjustment can be made to a whole file, or just the section you highlight.
- Wave can import and export a large variety of file formats, including .SMP, .SFI, .WAV .16, .8 and .VOC. In addition, you can change the sample rate of previously stored files.
- EFX Clips function provides real professional effects like distortion, flange, digital delay, reverb, auto-stutter and others.
- A four band parametric equalizer function (WaveQ) gives you the ability to touch up sections of your audio as well as the whole file. You can easily correct flaws in the sound or go for the special effects.
- Speed control lets you adjust the playback rate of your recorded audio (up to 200% faster or 50% slower).
- You can mix up to three sound files into a new fourth one, with control of volume and starting time of each file.
- Glitches in the recorded sound can be repaired by simply drawing the correction on the waveform with your mouse.

$99.00

QUAD STUDIO Professional 4-Track Recording System

Quad Studio is the first real-time four track recorder for the PC. Now you can record two tracks directly to your hard drive (16ms or faster), then record two more tracks while playing back the first two. With its high performance and ease of use, Quad Studio is the perfect replacement for 4 channel mixer/cassette decks.



- Graphics interface emulates all common mixer/tape deck controls.
- Record, overdub, mix and bounce tracks in real time with no loss of quality.
- Previously recorded audio can be effects processed (using the optional Wave program) and then mixed, in real time, with new audio.
- Includes Turtle Beach's high-performance Tahiti board
- Software is also separately available for Monterey cards.

$399.00

BEHRINGER

MDX 1000 Autocom Automatic Compressor/Limiter

- Incorporates an interactive auto processor for intelligent program detection. With the auto processor, the attack and release times are derived automatically from the respective program material – preventing common adjustment errors.
- The auto processor also allows you to compress the signal heavily and "musically" in dynamic range without any audible "pumping" "breathing" or other side effects.
- Provides both Attack and Release controls allowing for deliberate and variable sound processing.
- Switchable soft knee/hard knee characteristics. Soft knee is the basis of the "inaudible" and "musical" compression of the material. Hard knee is a prerequisite for creative and effective dynamics processing and for limiting signal peaks reliably and precisely.

MDX2000 Composer Interactive Dynamics Processor

- Powerful and versatile signal processing tool provides 4 most commonly dynamic control sections: fully automatic compressor, manually controlled compressor, expander and peak limiter.
- Innovative IKA (Interactive Knee Adaptation) circuit combines the "musicality" of the "soft knee" function with the precision of the "hard knee" characteristics. Provides subtle and "inaudible" compression of the sound allows creative dynamics processing.
- Auto processor provides fully automatic control of attack and release times. There is also manual control.
- Interactive Ratio Control (IRC) expander eliminates "chatter" on or around the threshold point.
- Interactive Gain Control (IGC) Peak Limiter combines a clipper and program limiter. This allows for "zero" attack, distortion-free limitation of signal peaks.
- IGC is invaluable in live applications. Servobalanced inputs and outputs. Operating level switchable from -10dB to +4dB.

PEQ305 Studio Parametric The Musical Equalizer

- Five independent, switchable bands. The quality of each of the five frequency bands can be modified gradually from notch to broad-band characteristics. This offers more flexibility than any graphic equalizer can provide.
- Bands 1 and 5 are switchable between shelf and peak. This is extremely useful, since acoustic problems usually occur in the upper and lower frequencies.
- Utilizes the "Consistent Q™" principle to eliminate interaction of the parametrics frequency, bandwidth and amplitude. The same applies to interaction between the individual frequency bands.
- Parallel arrangement of the individual filters reduces phase shifting and associated delays to a minimum.
- Potentiometer response follows human hearing characteristics.
- Relay-controlled hard bypass with auto-bypass function during power failure.

DEQ8000 Ultra-Curve 31-Band Digital Graphics Equalizer/Analyzer

The DEQ8000 is an innovative programmable graphic equalizer/spectrum analyzer built with digital technology. A two-channel unit, it features Burr-Brown 20-bit A/D and D/A converters for input and output. It achieves the dynamics and audio quality of analog equipment while avoiding the drawbacks of analog filters such as tolerances in components.

- Programmable two-channel equalizer with 31 graphic bands on digital basis.
- Filter settings are displayed either in the form of display slide controls or as a filter curve representing the actual frequency response and taking the influence of several adjacent filters into consideration.
- Shelving function makes the moving of groups of faders possible.
- Up to 3 additional notch filters can be used whose frequency and bandwidth is freely selectable.
- Search and Destroy function automatically detects resonant frequencies, thus acting as an automatic feedback suppressor.
- The integrated Real Time Analyzer features both peak and RMS weighting, a noise generator with a separate output and a broad selection of auxiliary functions such as variable integration time, peak hold, etc.
- In Analyzer mode, a cursor is used to poll the amplitude of the single bands with an accuracy of .25dB.
- The signal source (measuring microphone or equalizer input) fed into the analyzer input is freely selectable.
- Various analyzer measurements can be saved and recalled for reference purposes.
- Auto EQ mode combines the analyzer with the equalizer section and thus allows for the automatic equalization of acoustic environments. Within 0.5 seconds, the Ultra-Curve provides a linear frequency response based on the actual room acoustics.
- MIDI interface allows for selecting memory locations from and external MIDI controller. Remote control of all Ultra-Curve parameters can be realized via system exclusive information. ALso, several units can be linked together via MIDI.

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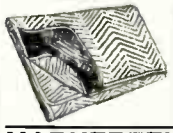

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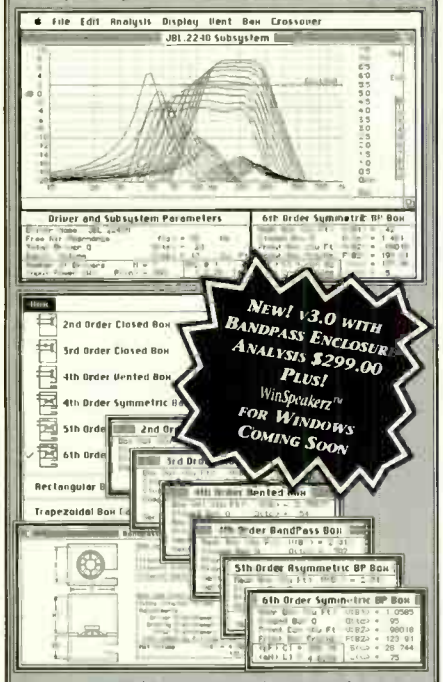

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BY MARTIN POLON

The outcome of a recent study on personal and project studio management emphasized a mistake common to well over 50 percent of all owners and/or operators. The owners/operators/managers of these small-to-large facilities either underinsured their studios or effectively had no insurance at all! Insurance was the last issue in the minds of most individuals responsible for their own in-house facilities. Eight thousand dollars was not considered outrageous for a new 12-track digital recording deck, but $800 for insurance was viewed by many as a "waste of money."

Proper and adequate insurance coverage of all studio facilities was found lacking in all but a small percentage of the studios surveyed. A larger percentage were found to be dependent upon whatever coverage in their homeowners insurance that could be gerrymandered to provide some kind of coverage for their in-house studio facilities.

What is so difficult to perceive is that the investment for insurance is generally costed out in multiples of one percent of the value being insured. If a project studio investment is valued at $100,000, it may well be possible to insure that facility for $1000 or less (or a little more). Yet, whatever the cost, the resistance to the concept of insurance remains strong among personal and project studio owners. This, despite the perception by studio operators that theft is the major threat to project facilities. Project studio owners counter the danger of theft with such comments as "I'll get an alarm," or "I'll get a dog," or "I'll get a gun!"

In fact, from actuarial data it becomes clear that, except for New York City and environs, electrical and other kinds of fire plus natural disaster pose a far greater threat to studio investment than theft; especially in Southern California and Florida — where in excess of 20 percent of all personal and project studios in the United States are located. Earthquakes, riots, and fires account for most California losses, while Florida suffers regularly from the depredations of hurricanes — with 1995 being the most active hurricane season in 30 years.

Consider these factors regarding studio insurance:

1. Riders On Home Owners Policies: If the studio in question is part of a residence (home or apartment), this insurance option is worth considering, especially if the studio is not being used for outside projects or as a rental facility. As a hobby or musician's or home business studio facility, the studio can ride on the coat tails of the active homeowner's insurance policy for the home or apartment. The insurance agent, through the underwriting company, will provide a rider that will give coverage — albeit at a reduced level from what would be obtained via a commercial policy. Any increased level of liability via the presence of outside individuals or outside projects or outside income could, in effect, nullify the rider.

2. Full Replacement Value: Full replacement value (FRV) insurance is a very important issue and one that is frequently overlooked by those buying studio insurance, especially when attached to a homeowner's policy. FRV means that the total cost of replacing an item that is deemed destroyed for the purposes of insurance will be borne by the insurance carrier! Otherwise, replacement is based on the yearly depreciated value of the item or items in question on a claim. Depending upon the established life of a given item, replacement payments will be at a percentage of full replacement value based on the number of years an item has been owned. Although full replacement value is much more likely to be associated with an commercial policy, it is available with some, though not all, homeowner's policies.

However, since coverage of studio and/or computer equipment by a rider on a home policy agreed to by the insurer as well as the insured will frequently include a total value limit of from $12,000 to $20,000, the option of buying a limited commercial policy at the total declared value of the studio investment — from the same agent and company with FRV — may be the best way to go.

3. Off-Premises Coverage, Coverage Of Loan Equipment, or Third-Party Equipment And Liability Issues: All of these factors, which are important if the studio is doing remote recording, or borrowing, renting equipment, or receiving loans from manufacturers, are best served by a commercial insurance policy. The same can be said for liability of others on the premises during a recording session, whether from electrocution, dog bite, or food poisoning.

The bottom line on insuring the personal or project studio facility is a relatively simple one to follow. First, insure the facility properly to its full replacement value. Second, if the facility is privately owned and utilized by its owner(s) within one of the owner's domiciles, then it may be possible to leap frog onto an existing homeowner's policy. Third, if there is any other situation, such as operating the facility for profit or with outside users or in a space that is not directly contiguous with residence space, then buy a commercial policy that will cover your studio nest with a financial safety umbrella. To do less is "penny safe and pound foolish!" EQ

World Radio History

ACROSS THE BOARD

continued from page 178

You can also mix the analog and digital inputs together if you want to. I will be doing a full review, but I wanted to let you know so you could check while you're at the AES show.

SPEAKING OF THE AES SHOW

Like that segue? At the AES show I was as busy as a one-armed paper hanger. I spilled my guts about archiving old tapes on one of the AES panels, did some demos in the Yamaha room (the 02R and free food made me say yes; see my review in this issue), presented a TEC Award with Donald Fagen, and handed out blurbs about my new company, Digital Atomics, and reviewed this year's hot dogs in the AES lunch area.

Digital Atomics strives to be 5 ms ahead of its time, which is pretty easy now that they have broken the time barrier. Because of our Gear Slut tendencies, we will be showing the ultimate Gear Slut device known to Man, the Digital Atomics Rubidium Clock. This Master Clock will supply 44100.000000 Hz and 48000.000000 Hz to an accuracy of one minute in 10,000 years with a jitter figure in the single-digit picosecond range. (For those of you from L.A., Pico runs parallel to Olympic). This unit is being made for Digital Atomics by Music Sciences, Inc. with the Rubidium parts supplied by a spy satellite company. I could tell you the spy satellite company's name, but then I would have to kill you.

I have strived for over a decade to get studios to use house sync for all video and digital operations. I have personally been tortured by trying to synchronize digital audio that has been recorded in different studios, on different days, and at different sample rates. If you used one frequency to derive all of your word sync signals, and derived them from a highly accurate time base, everything would always be able to lock to everything. Even 44.1 kHz to 48 kHz. So check it out. It definitely has the Gear Sluts Stamp of Approval, and, as the Marx Brothers once said, "Rubidium up-up-up." (No, I don't get it either.)

ARCHIVE THIS

The archiving business is doing great. Digital Atomics has come up with a 24/48 track 20-bit optical disc recorder for archiving old multitrack tapes. The MO disks are guaranteed to 99 percent data retention at 300 years. Watch for my column in the September, 2295 issue of *EQ* to find out how it went.

Archiving 2-track stuff to MO or CD-R has been happening for a while now, but until fast, high-density MO drives became available, there was no way to archive multitrack tapes without doing it two tracks at a time. Watch the horizon, I bet Sony will show a 24/48-track optical recorder sooner than you think.

THAT'S ALL FOLKS

I am still trying to get Pro Tools 3.1 running on the Turbo 601 board. No Luck. I'll keep trying. I have been cutting tons of CDs using Toast CD-DA with the Revelation CDR-100 with not so much as a hiccup. I have been transferring old Sony PCM-F1 tapes digitally using the Sony PCM-601 box (digital out) through the Roland SRC-2 to remove emphasis and DC, then through the Z-Systems SRC-1 to sample-rate convert from 44.056 kHz to 44.1 kHz. Works like a charm.

I am going to cut this off now, I have to go and play with my new Vacuum Desiccator and some liquid Nitrogen. You haven't seen my cat around here recently, have you? **EQ**

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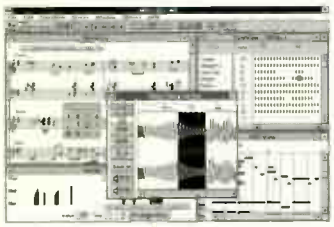

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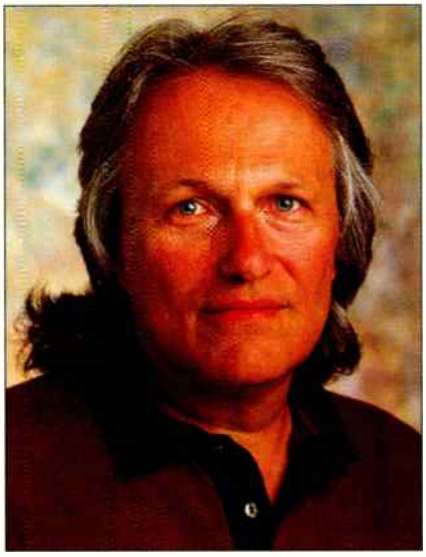

...But I'm pretty sure I can still fill about a page and a half doing it

BY ROGER NICHOLS

I am still recovering from the brain tumor I must have received from the heavy use of my cellular phone last month. It was nice of them to use the 900 MHz band, which just happens to be the resonant frequency of the brain. Have you ever noticed how your ear gets a little hot when you talk for too long? Is it because the phone is getting hot or because your brain is? Technology can bite back if you are not careful.

When I went to Cuba last month with Gloria Estefan, I was outfitted like the hi-tech road warrior I have always wanted to be. I think I must have looked like one of those guys on a street corner in New York City who opens his trench coat to display the stolen kitchenware he wants you to buy. I had my cellular phone, 800 beeper, Mac laptop with internal modem, cordless razor, HP palmtop for phone numbers, battery-operated color printer, radiation monitor, electric toothbrush, pocket camera, portable DAT recorder, MiniDisc recorder, scanner, Ham radio, airband transceiver, altimeter/ depth-gauge watch, and portable GPS receiver with moving map display. (I had to see if it included Cuba. It did.) Oh yes, and one pair of underwear because that is all I had room for. Most of the toys were not charged up because they have been sitting around waiting for a good excuse to be used.

ROAD WARRIOR

I was sort of hoping that the C-5A transport that we traveled on would have a massive electrical failure, losing all navigation and communication. Then I could say, "You can borrow my GPS, altimeter watch, and airband radio if you let me drive," but that never happened. Our flight down was delayed six hours, however, because of a failure of one of the three INS (Inertial Navigation System) computers. My hopes raised. I performed a radio check with the airport tower and got the current barometric pressure to set into my altimeter watch.

It turned out that we were staying on a cruise ship that was docked at Guantanamo for use by the military for R & R. We checked into our cabins and I unpacked all of my electrical goodies so that I could charge them up to prepare for the next possible emergency. A sticker by one of the wall outlets stated "WARNING 110 VOLTS DC". You're kidding! We were nowhere near DC Foiled again!

I ended up using nothing I took with me, well, except for the electric razor to shave the hair off my tongue after an all night party with the band and crew. I think that somehow technology knows you shouldn't be using it and dares you to accomplish anything. Recently, I had a power outage at home and my wife Connie had a song idea. No studio, no tape recorder (the cassette batteries weren't charged up), no MIDI sequencer, no synthesizer, nothing. Later on during the day, I saw her sitting at the acoustic piano (remember those) and writing her ideas on staff paper with a pencil. I heard an expletive and walked over to see that she had just written four bars of music on the wrong ledger line. I said, "Where's your Undo key?" She looked up at me, smiled, and proceeded to use the eraser on the other end of the pencil.

COOL NEW STUFF TO PLAY WITH.

Remember Valley Audio? They made the Kepex and Gain Brain. They are back with a vengeance. They have a new digital domain stereo dynamics processor called the DynaMap that will blow your socks off. The limiting sounds good, the gate sounds good, the de-esser *soundssssss* good. The most impressive part of the package is that the chassis is made of stainless steel. It looks like a rack-mount DeLorean. I had to run out and buy some new gear to fill up my rack so I would have to let the DynaMap sit on top out in the open. Coffee cup rings wipe right off!

The DynaMap has some pretty cool modes including the "Enhanced Compressor" that lets you mix back some of the original signal into the compressor output so that you can compress the main part of the sound while letting the peaks stick through untouched. Doing things like that on the console was always hard to do — and almost impossible to repeat for remixes. It is much easier when all of the parameters are internal and self-contained.

The basic unit is digital in and out only. Twenty-bit analog converters are optional. If you have them, you can use the analog input as the key input.

continued on page 176

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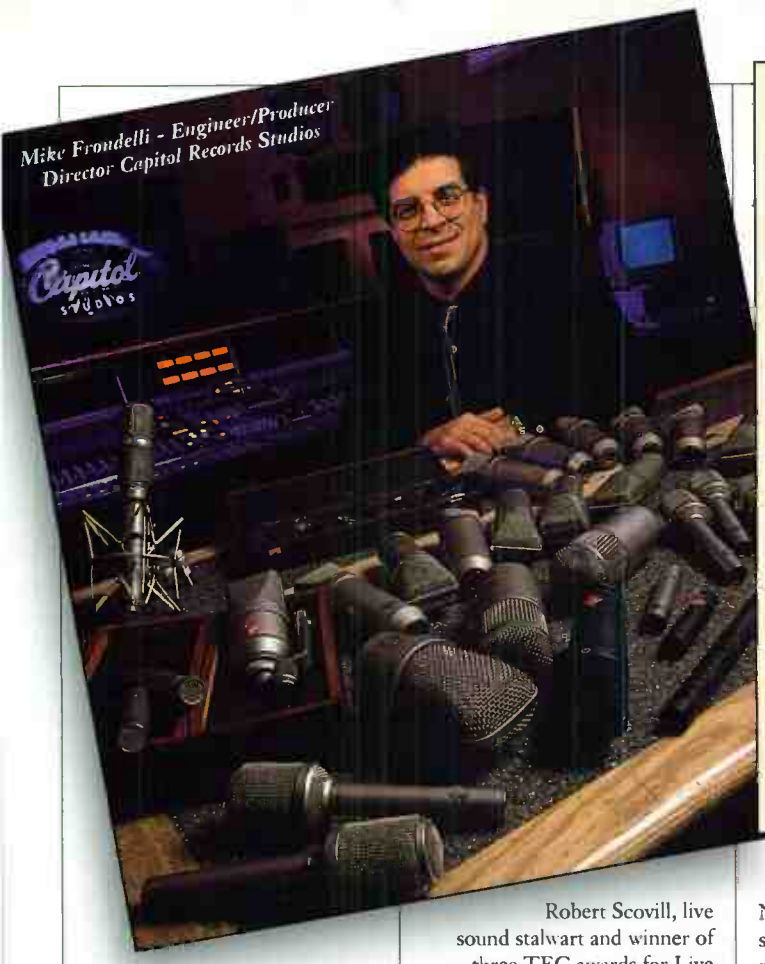
TWO PROS WHO KNOW GREAT SOUND.

TWO MICS THAT MAKE THEM VERY HAPPY.

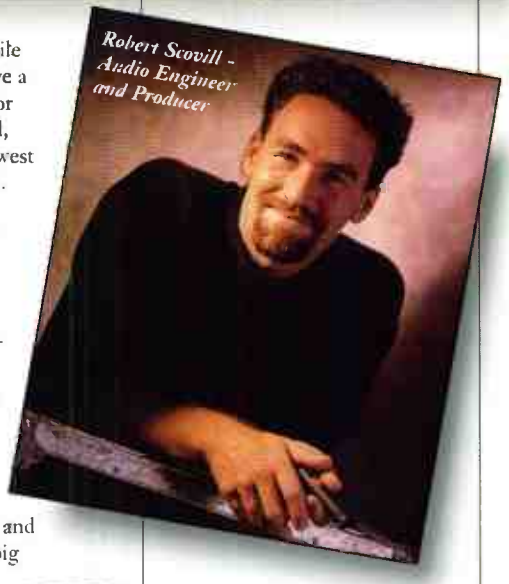


Mike Frondelli, Director of Capitol Records Studios, has a connoisseur's mic locker, including more than 50 Neumann mics dating back to the 1940's. Newest in the collection? The mic Mike calls "the working man's Neumann," the TLM 193. Because it sounds so good in so many applications, Frondelli recommends the TLM 193 as "the one mic to have" for Capitol acts setting up project studios.

The TLM 193 is a stripped down, cardioid-only version of our famous TLM 170. It provides oodles of headroom, has virtually no self-noise, and can immediately give your project studio that professional sound (particularly on vocals) that you've been missing. (By the way, the TLM 193 has become our biggest seller.) It carries a retail price of less than $1500.

TLM 193

Robert Scovill, live sound stalwart and winner of three TEC awards for Live Sound Excellence, knows a great microphone when he hears one. He has toured as the front-of-house mixer with bands like Rush, Def Leppard and most recently Tom Petty. "I am using the new KM 184 both out on tour and at MusiCanvas." (Robert's studio in Scottsdale.) "The KM 184 carries all of the Neumann signatures, and I have had great success on a wide variety of sources, from the subtleties of violin to the extremes of distorted guitar." The KM 184 is perfect for instruments of all kinds, and excels at overhead drum miking and capturing the elusive acoustic guitar. For professional quality at less than $700 each, a stereo pair of KM 184s can easily be a part of ANY studio.



Let's face it. While Neumann mics have a stellar reputation for rich, opulent sound, they are not the lowest priced mics around. Why? Because we have to ensure that our microphones satisfy even the most demanding engineers in hyper-critical recording environments. But, we *have* found a way to take a few of the bells and whistles off a couple of our mics and still give you that big (HUGE) studio sound on a project studio budget.

The bottom line is this: before you go dropping big cash on outboard gear trying to make your studio sound good, consider the most important part of the signal path, your microphones. The only way to get great sound *out* of your studio is to *capture* great sound. And no other microphone captures sound as well as Neumann . . . not even close.

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