

Access: Chumbawamba • Mix Master Andy Wallace • Radical Recording • Elton John Tour

AM INTERTEC PUBLICATION

WWW.MIXMAG.COM • U.S. \$4.95 CANADA \$5.95 MAY 1998

MIX[®]

Multichannel I/O Cards: Workstation Alternatives

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

Direct-to-DAW Recording Tips

Wireless! On Tour and in Teleproduction

*****3-DIGIT 902
MX90290GANDEM003 9707
pt8 p4
MARK GANDER
21000 WINFIELD RD
TOPANGA CA 90290-3636

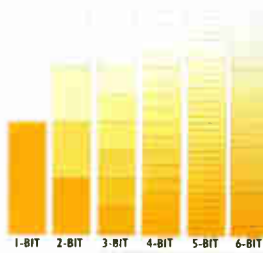
THE MIX INTERVIEW .. BJÖRK



It's Not Science Fiction. It's Reality.



3-DIGITAL RECORDING



Every bit you add doubles the resolution of a digital recorder. Compared to 16-bit formats, ADAT Type II's non-compressed, linear 20-bit recording offers a wider dynamic range, less quantization distortion at low levels, more headroom and even lower noise. Result: detailed, full-spectrum audio fidelity that far exceeds the quality of any analog recorder.



Don't get fooled by the science fiction of some "24-bit" recording systems. Just read the fine print: the state-of-the-art ADAT Type II recorders offer audio specs that rival any 24-bit system, without resorting to tricks like data compression or track sharing.

While the rest of the world is trying to figure out the final frontier of recording formats, you need to make a decision. What's the best choice today that will keep you ahead of the game tomorrow?

The answer: **ADAT Type II**. It's the next generation of Alesis' award-winning digital audio technology that combines the proven power of ADAT with the astonishing fidelity of true 20-bit linear recording.

With the new **XT20™**, you get a serious improvement on the world standard for professional recording. The new **LX20™** is the most affordable ADAT ever made. Both provide all the real-world qualities that made ADAT the most popular professional recording format: modular design, efficient tape-based media and complete compatibility with over 110,000 ADATs around the world. Plus, as the only modular digital multitracks that write 20 bits to each track of tape, the new ADAT Type II recorders offer audio quality that's miles ahead of any 16-bit system, period. And with the introduction of the **ADAT-PCR™** interface card, you get the advantages of nonlinear editing on your Mac® or Windows® computer seamlessly integrated with ADAT format recording.

Most importantly, the intuitive ease-of-use, comprehensive features and incredible affordability of the ADAT Type II systems put no limits on your creativity. Because, after all, the final frontier is really your imagination.

adat TYPE II

There are over 110,000 ADATs in use today, and the new ADAT Type II recorders are compatible with all of them. The XT20 and LX20 will work with your 16-bit ADAT tapes, and you can combine the Type II recorders in a system with any model of older ADAT.



If you think tape isn't as advanced as other removable recording media, think again. You'd need more than 30 Zip® disks to equal the 3.4 gigabyte storage capacity of just one inexpensive ADAT tape.

For more information on ADAT Type II, the XT20, the LX20 and the PCR, see your Authorized Alesis Dealer. Or call 800-5-ALESIS to order the ADAT Type II Systems video and brochure (\$4.95 for shipping and handling).

* Alesis and ADAT are registered trademarks; XT20, LX20 and PCR are trademarks of Alesis Corporation. Mac is a trademark of Apple Computers. Windows is a trademark of Microsoft. Zip is a trademark of Imega.

CIRCLE #001 ON PRODUCT INFO CARD

Alesis Corporation

1633 26th Street Santa Monica CA 90404 800-5-ALESIS www.alesis.com

ALESIS

Great Studios Of The World



PRODUCTION NOTES

Olympic Studios, the prestigious London all-SSL recording facility, was one of the first UK studios to install an SL9000 J Series console, and was recently the venue for the recording and mixing of the new Eric Clapton album 'Pilgrim'. Engineering the sessions was Alan Douglas, who obviously enjoyed working with the Solid State Logic console. "The 9000 has remarkable capabilities. The bottom end is fantastic, the top end is really open and the automation is brilliant. The J is the best sounding console that I have ever worked on."



OLYMPIC STUDIOS

117 Church Road, Barnes,
London, SW13 9HL, UK
Phone: +44 (0)181 286 8600

Solid State Logic

International Headquarters
Begbroke, Oxford, OX5 1RU, England
Tel: +44 (0)1865 842300
Fax: +44 (0)1865 842118
E-mail: sales@solid-state-logic.com
<http://www.solid-state-logic.com>



Music week awards
BEST STUDIO **98**

New York
+1 (1)212 315 1111

Los Angeles
+1 (1)213 463 4444

Tokyo
+81 (0)3 5474 1144

Paris
+33 (0) 3460 4666

Milan
+39 (0)2 2622 4956

Toronto
+1 (1)416 431 9131

Singapore
+65 (0)285 9300

Hard to Find . . . Tough to Beat!

While Drawmer products are readily found in top recording studios and sound systems throughout Europe and the rest of the world, they are a bit harder to find in the U.S.

ALL THAT'S ABOUT TO CHANGE!

Demand a Drawmer Demo Now!

To find your local dealer call:

(805)241-4443

Drawmer

Transamerica Audio Group Inc.
2721 Calle Olivo • Thousand Oaks, CA 91360

DRAWMER MX



MX30 Gated/Comp/Limiter \$449



MX40 Punch Gate \$599

COMING SOON! MX50

DRAWMER PRO



DS201 Dual Noise Gate \$699



DS404 Quad Noise Gate \$999



DL241 Auto Compressor \$649



DL251 Spectral Compressor \$999



DL441 Quad Auto Comp/Limit \$1,049

DRAWMER SIXTIES



1960 Vacuum Tube Compressor/Preamp \$2,349



1961 Vacuum Tube Equalizer \$2,349

DRAWMER DIGITAL



1962 A/D Digital Vacuum Tube Preamp \$4,999

COMING SOON! Model 2496

Clean Up Your Listening Environment



Recycle Your Old Monitor Speakers



TANNOY
FOR THOSE WHO KNOW
REVEAL



Tannoy/TGI North America • 300 Gage Avenue, Unit 1 • Kitchener, Ontario, Canada N2M 2C8 • Fax: 519 745 1158 • Fax: 519 745 2364 • Web site: <http://www.tannoy.com>

TOLL FREE DEALER ORDER HOT LINE (FAX): 1-800-525-7081

CIRCLE #003 ON PRODUCT INFO CARD

MIX[®]

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

MAY 1998, VOLUME 22, NUMBER 5

AUDIO

- 20 The Fast Lane:** Now I Know My LCDs
by Stephen St. Croix
- 24 Insider Audio:** Back to the Web—
Can We Talk...Again? *by Paul D. Lehrman*
- 31 On the Cover:** FM Studios
- 34 Radical Recording:** Creative Chaos in the
Control Room *by Rick Clark*
- 42 Report From NAB98**
by George Petersen and Sarah Jones
- 60 The Mix Interview:** Björk *by Bryan Reesman*
- 66 The Project Studio:** Gino Vannelli's Inka Productions
by Mark Frink
- 68 Sound Design for "Riven"** *by Robert Thomure*
- 82 Mix Masters:** Andy Wallace *by Maureen Droney*
- 96 Producer's Desk:** Garth Richardson
by Tim Mosebansky
- 104 Tapeless Tracking:** Engineers Sing Praises of
Direct-to-DAW Recording *by Philip De Lancie*



PAGE 130



PAGE 68

- 116 Multichannel I/O Cards:** Workstation Alternatives
by George Petersen
- 196 Recording Notes**
- Pell Mell *by Adam Beyda and Anne Eickelberg*
 - Farm Dogs *by David John Farinella*
 - Victor Wooten *by Robin Tolleson*
 - Classic Tracks: Iron Butterfly's "In-A-Gadda-Da-Vida"
by Russell H. Tice
- 209 Media & Mastering News** *by Philip De Lancie*
- 256 Power Tools:** Alesis ADAT: Finding the "Hidden"
Functions *by George Petersen*

SOUND FOR PICTURE

- 160 Post Script**
- Editing Before the Edit: Gathering Your Personal
Effects, Part 3 *by Larry Blake*
 - Facility Spotlight: Bad Animals Seattle
by Tim Mosebansky
 - Facility Spotlight: Bash, Boom, Bang *by Kim Wilson*
 - On the Set With "Blues Brothers 2000"
by Jeffrey Wolpert



PRODUCTS

- 130 Technology Spotlight:**
Otari RADAR II *by Sarah Jones*
- 132 Preview/Hot Off the Shelf**
- 136 Computer Hardware/Software for Audio**
- 139 Field Test:** AB International SUB3600
Three-Channel Amplifier With Integrated Crossovers
by Mark Frink
- 140 Field Test:** Benson StudioStat 8.2 Electrostatic
Near-Field Studio Monitors *by George Petersen*
- 144 Field Test:** Audio-Technica AT4054 and AT4055
Handheld Cardioid Capacitor Microphones
by George Petersen
- 146 Field Test:** Tascam TM-D8000 Digital Recording/
Production Console *by Mel Lambert*
- 150 Field Test:** Audix OM-6 Dynamic Microphone
by Javier Alcaez
- 152 Field Test:** Ensoniq PARIS Professional Audio
Recording Integrated System *by Gary Eskou*
- 156 Field Test:** Lawson L47MP Tube Condenser
Microphone *by Michael Cooper*

LIVE SOUND

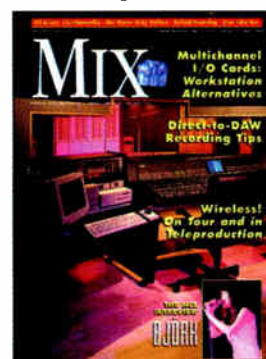
- 46 Going Wireless**
- What You Should Know Before Choosing a System
by Bill Sien
 - Wireless on Tour *by Mark Frink*
 - Wireless in Teleproduction *by Dan Daley*
- 172 How to Manage Sound System Gain Structure**
by Bob McCarthy

- 180 New Sound Reinforcement Products From
Winter NAMM** *by Mark Frink*
- 181 Tour Profile:** Elton John *by Chris Michie*
- 182 All Access:** Chumbawamba *by Steve Jennings*
- 183 The Sports Page:** Sound for Super Bowl XXXII
by Mark Frink; NBA All-Star Weekend
- 195 New Sound Reinforcement Products**

DEPARTMENTS

- 8 From the Editor**
- 10 Feedback**
- 12 Current**
- 16 Industry Notes**
- 212 Coast to Coast** (Includes
L.A. Grapevine, NY Metro
Report, Nashville Skyline,
Sessions & Studio News)
- 226 Studio Showcase**
- 232 Ad Index/Product
Information Card**
- 238 Marketplace**
- 244 Classifieds**

On the Cover: FM Studios, owned by producers Deniz Foster and Thomas McElroy and featuring a Euphonix CS2000 in a Chips Davis-designed space, opened to outside clients earlier this year in the San Francisco Bay Area. For more, see page 31. **Photo:** Tom Rider. **Inset Photo:** Steve Jennings.



328

Spirit 328 represents a REVOLUTION IN LOW COST PROFESSIONAL AUDIO, bringing all the functionality and sonic excellence of digital mixing to a brand new audience. With its unique CONSOLE BASED INTERFACE, 328 finally bridges the gap between analog and digital mixers, retaining the SPONTANEITY AND EASE OF USE of an analogue console yet providing all the advantages of digital, such as INSTANT TOTAL RECALL, MOVING FADER AUTOMATION and ONBOARD LEXICON EFFECTS.

Quite simply, Digital 328 is the most advanced analog 8 bus you'll ever drive combined with the easiest digital console you've ever used - check it out for yourself.

42 Input/8 Bus Configuration

For a mixer with such a small footprint, Digital 328 packs an extraordinary number of inputs. 16 full spec. analog mono mic/line channels - each with its own balanced XLR connector, dedicated insert point and access to phantom power - come as standard, along with 5 stereo inputs. With the addition of 16 digital tape returns on 328's TDIF* and ADAT* optical interfaces, a maximum of 42 inputs are possible. Every input is fully routable to any of the 8 groups and has access to the full complement of 328's parametric EQ, signal processing, onboard effects and auxiliaries.

As Easy to Use as your current analog console

Although other digital mixers offer an amazing array of functions, it can often be a nightmare to access them.

In contrast we've designed Spirit 328 to operate like your old analog 8-bus console and not like a computer with faders, so that you can take it out of its box and get started without even opening the manual. Unlike other digital mixers, there's instant access to any channel, group or master feature with one button press, and you can see that feature's status from the front panel without having to rely on an LCD display.

The key to it all is Spirit 328's unique "E-Strip", the lighter-colored bank of encoders and switches that runs across the center of the console. Simply select a channel and the E-strip immediately becomes a "horizontal input channel" with instant access to all that channel's EQ, aux sends, channel pan and routing. Alternatively, press any button in the rotaries section above the E-strip and the encoders change to become a channel pan, auxiliary send, or Lexicon effects send for each channel.

Select a fader bank to display mic/line input faders, tape returns faders, or group and master faders and that's it; no delving through level after level of LCD menus to find the function you want, no delays in making alterations and no need to study complicated EQ curves. With 328, everything you need is immediately accessible from the front panel of the console - giving you the freedom to let your ears decide.

If you want the functionality of a digital console but the usability of your old analog 8 bus, then Spirit 328 is for you.

All the Digital I/Os you need as standard

Most digital mixers don't include digital multitrack I/Os, which means that to get digital recording and mixdown you have to buy extra, expensive I/O options. In contrast, Digital 328 includes two Tascam TDIF* and two ADAT* optical interfaces as standard, allowing you to record 16 tracks entirely in the digital domain, straight out of the box. As you would expect, we've also included a pair of AES/EBU and SPDIF interfaces assignable to a wide range of inputs and outputs, including group and auxiliary outs, as well as for use as mix insert points with digital signal processors. In addition, a dedicated auxiliary optical output allows you to send a signal digitally to an effects unit.

2 Onboard Lexicon Effects Units

Only 328 can offer the world's premier name in studio effects on board - Lexicon. Two separate effects units are included, offering a full range of reverbs, choruses, delays, and flanges as well as dual effects such as chorus plus delay - all with fully editable program and parameter settings.

Digital 328 includes two mono or stereo signal processors which can be assigned to any input, output or groups of ins or outs. Each processor provides a choice of compression, limiting, gating or ducking.

Comprehensive EQ

All of 328's mic/line, tape return and stereo inputs have access to 3 bands of fully parametric EQ, designed by British EQ guru and co-founder of Soundcraft, Graham Blyth. A man with over 5 million channels of his EQ designs in the field, Graham has brought 25 years of Soundcraft analog EQ circuit experience to bear on Digital 328. If you want the warm, musical sound of real British analog EQ, look no further.

Unparalleled Sonic Spec

Rubbish in, Rubbish out! It doesn't matter whether the console is digital or analog - if you have poor mic preamps, your sound will be compromised. That's why 328 includes Spirit's acclaimed UltraMic+™ padless preamps, giving your input signals the cleanest, quietest start of any digital mixer on the market. With 66dB of gain range and a massive +28dBu of headroom, they offer an extremely low noise floor and are virtually transparent. Spirit 328 is 24-bit or better throughout; your signal hits the digital domain through state-of-the-art 24-bit ADCs with 128 times oversampling, guaranteeing that it maintains its clarity, while 24-bit DACs on all main outputs equal this sonic integrity should you wish to return your signal to the analog world.

Moving Fader Automation

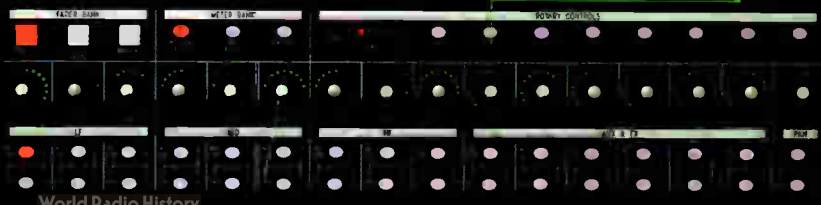
All of Digital 328's 100mm faders [including the master] are motorized to allow current channel, tape return, group and aux master levels to be viewed at a glance.

DIGITAL 328

By pressing AUX1 in the rotaries section, the E-strip indicates Auxiliary Send 1 levels for each channel. The Fader Bank section indicates whether Mic/Line or Tape Return levels are being shown.



By pressing any select switch, the "E-Strip" becomes a horizontal channel strip, indicating EQ, auxiliary, FX and Pan settings. Mono Mic/Line, Tape Returns & Stereo Inputs all have access to the same channel strip functions



In addition to level automation, every other digital parameter of 328 is instantly recallable, allowing snapshots of the entire console's status to be taken. Up to 100 of these "scenes" may be stored internally and recalled either manually, against MIDI clock or against MTC or SMPTE. Alternatively, every console function has been assigned its own MIDI message allowing dynamic automation via sequencer software.

Easy to edit - direct from the control surface

The majority of 328's input and routing parameters may be edited from the control surface without resorting to the console's LCD. Settings and levels may be copied and pasted from one channel to another with just two button presses and, using 328's query mode, the routing or assignment status of every channel on the console may be viewed instantly simply by selecting the function (such as Group 1 or Phase Invert) you

located in the master section, editing is entirely non-destructive, allowing you to compare new EQ - and other settings - with previous ones.

Grows with your needs

Two Digital 328s may be digitally cascaded, giving you up to 64 inputs at mixdown and 32-track digital recording capability

Full Metering and Monitoring Options

All of the Mic line inputs, Tape return inputs, group and master levels may be monitored per bank via Digital 328's 16 10-segment bargraph meters. Additionally, 328's onboard dynamics processors may be monitored using the console's master meters. Any input may be solo'd using AFL, PFL or Solo-in-Place.

Timecode and Machine Control

Digital 328 reads and writes MTC and reads all SMPTE frame rates, with a large readout display instantly indicating current song position. Store and locate points are accessible from the console's front panel, with 328's transport bar controlling a wide range of devices including Tascam and Alesis digital recorders.

digital

three two eight

Add-On Module Options

To meet the needs of a variety of users, there are several module options:

8 Channel Analog I/O Interface

Connecting to the TDIF* ports, 16 phono connectors provide 8 analog group or direct outs and 8 analog inputs for tape returns 17-32. Two interfaces may be connected, allowing 16 track analog recording or access to 16 more sequenced keyboard or sampler inputs.

AES/EBU interface

4 pairs of AES/EBU connectors allow optional digital interfacing to hard disk production systems such as Pro Tools*. A maximum of two interfaces can be connected.

Mic Pre-Amp Interface

Each interface provides 8 XLR mic ins with Spirit's acclaimed UltraMic+™ preamps and gain control, plus 8 analog outs. Connecting two interfaces turns 328 into a 32 mic input, 8 bus mixer for PA or theater applications.



SPIRIT

by Soundcraft

Spirit by Soundcraft™,
Harman International Industries Ltd.,
Cranborne House, Cranborne Industrial Estate,
Cranborne Road, Potters Bar,
Herts EN6 3JN, England.

Tel: +44 (0)1707 665000 • Fax: +44 (0)1707 665461

Spirit by Soundcraft™ Inc.,
4130 Citrus Avenue #9, Rocklin, California 95677, USA.
Toll Free (888) 459-0407 • Fax: (916) 630-3950

usa: www.spiritbysoundcraft.com
uk: www.spirit-by-soundcraft.co.uk



This equipment complies with the EMC Directive 89/336/EEC.

*ADA is a registered trademark of the Alesis Corporation. TDIF is a registered trademark of the Tascam Corporation. Pro Tools is a registered trademark of Digidesign, Inc.

H A Harman International Company

CIRCLE 2004 ON PRODUCT INFO CARD

FROM THE EDITOR

TRAVELIN' MAN

I just returned from Frankfurt Musikmesse, a convention that combines a bit of NAMM, AES, LDI and DJ Expo into one massive show with more than 100,000 attendees filling nine trade show halls. Aside from the 14-hour airline rides, the real thrill of overseas shows is seeing products before they debut in the States. The down side is that some of these will never arrive on U.S. shores. With that in mind, here are some gems that caught my eye.

Eko Guitars' (www.eko.it) pro sound division showed its NoteMix mixer, built into a laptop PC-sized chassis. Inside the hinged top is a 6-channel mixer surface, with digital FX and fader outs for in-ear monitors and LR mains. The bottom section houses a 200-watt/channel switching power amp. A brilliant concept for a presentation mixer. Sherman's Filterbank (www.xenoweb.com/xta.html) provides about as much fun as you can have in a studio without being arrested. Whether you're doing rap, rock, jazz or sound design, this analog-synth-in-a-box really delivers, with 23 pots controlling ADSR, dual VCFs, LFO for ring modulator effects, harmonics generation and more—from any audio line input. Friend-Chip's (e-mail: friend-chip-berlin@t-online.de) series of pocket-sized, low-cost digital converters include S/PDIF optical-to-RCA, AES-to-S/PDIF, SCMS removal, SRCs, word clock generators, super clock drivers and a 4x2 router. In the same booth was Rosendahl Studiotechnik's line of mini timecode converter/generators (VITC/LTC-to-MTC+word, biphase-to-LTC/MTC, etc.). I could use a bunch of these! Klein + Hummel's (Ostfildern, Germany) O-198 is a compact, tri-amped near-field with a shaped front baffle designed to reduce console reflections. The sound? Marvelous. The price? \$3,200/pair.

Despite walking past familiar products and logos, seeing a display of 3-inch CD-R blanks reminded me I wasn't in Kansas anymore. However, there were plenty of treasures that are coming here, such as Yamaha's 01V 24-channel digital mixer (\$1,995), with moving faders and two effects processors. Better yet, link two for 48-channel/16-track work. Coming soon to a studio near you, Focusrite's new Platinum Series analog processors offer awesome performance at an unbelievable price. Successful in the live sound market, Audix takes on the recording world with its CX-101, a large-diaphragm studio condenser mic priced at \$499. TC Electronic unveiled effects on plug-in cards for Yamaha's 02R and Mackie's D8B mixers. And destined to become a "must-have" accessory in any rack, SPL Electronics' Transient Designer does what no compressor has ever achieved, using an envelope follower technology to shorten or extend the sustain time of any input signal. This must be heard to be believed.

Of course, 24-bit was hot: Steinberg's Cubase VST/24 has 24-bit/96kHz resolution; Studer's V-Eight ADAT now ships with 24-bit ADCs and DACs; Mackie added 24-bit ADCs to its D8B mixer; and SEK'D broke the price barrier with its \$995 half-rack 24-bit/96kHz ADC/DAC.

Musikmesse had plenty of great technology fishing. Speaking of shows, we stepped up our timetable to provide complete coverage of last month's NAB on page 42. Next, I'll tackle AES Amsterdam from May 16-19.

See you there!



George Petersen



Mix magazine is published at 6400 Hollis St. #12, Emeryville, CA 94608 and is ©1998 by Intertec Publishing Corp. Mix (ISSN 0164-9957) is published monthly. One year (12 issues) subscription is \$46. Single copy price is \$4.95, back issues \$6.00. Send subscription applications, subscription inquiries, back issue requests and changes of address to Mix magazine, PO Box 41525, Nashville, TN 37204 or call (800) 843-4086. Outside U.S., call (615) 377-3322. POSTMASTER: Send address changes to Mix magazine, PO Box 41525, Nashville, TN 37204. Address all other correspondence to Mix magazine, 6400 Hollis St. #12, Emeryville, CA 94608; (510) 653-3307; Fax: (510) 653-5142. Periodical class postage paid at Oakland, CA, and additional mailing offices. Editor Responsible (Belgique), Christian Desmet, Vuurgatstraat 92, 3090 Overijse, Belgique. This publication may not be reproduced or quoted in whole or in part by printed or electronic means without written permission of the publishers. Printed in the USA. Canadian GST #129597951; Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement #0478733.

S T A F F

EDITOR George Petersen
EXECUTIVE EDITOR Blair Jackson
MANAGING EDITOR Tom Kenny
ASSOCIATE EDITORS Adam Beyda Barbara Schultz
TECHNICAL EDITOR Chris Michie
ASSISTANT EDITOR Sarah Jones
EDITORIAL ASSISTANT Anne Eickelberg
SOUND REINFORCEMENT EDITOR Mark Frink
MEDIA & MASTERING EDITOR Philip De Lancia
LOS ANGELES EDITOR Maureen Droney
EAST COAST EDITOR Dan Daley
CONSULTING EDITOR Stephen St.Croix
TEC AWARDS EDITOR Karen Margroff Dunn
CONTRIBUTING EDITORS
Larry Blake Rick Clark Michael Cooper
Bob Hodas Paul Lehman
PHOTOGRAPHY Steve Jennings

ART DIRECTOR Tim Gleason
ASSISTANT ART DIRECTOR Kay Marshall
GRAPHIC DESIGNER Mika Chisaki
GRAPHIC ARTIST Alex Butkus

PUBLISHER Jeffrey Turner

EASTERN ADVERTISING DIRECTOR
Michele Kanatous
EASTERN ADVERTISING ASSOCIATE Jason Perl
WESTERN ADVERTISING DIRECTOR Terry Lowe
WESTERN ADVERTISING MANAGER Shawn Yarnell
SALES ADMINISTRATION MANAGER
Dan Hernandez
SALES ASSISTANTS
Marianne Moro Marl Stancati
Kahlil Thompson Amanda Weedon
CLASSIFIEDS & MARKETPLACE MANAGER
Robin Boyce-Trubitt
CLASSIFIEDS SALES ASSISTANT Jef Linson
CLASSIFIEDS ASSISTANT Mark Hopkins
FACILITIES SALES MANAGER Shawn Langwell

MARKETING SERVICES MANAGER Jane Byer
PROMOTION MANAGER Christen Pocock
MARKETING ASSISTANT Daniela Barone

DIRECTOR, SPECIAL PROJECTS Hillel Resner
SPECIAL PROJECTS ART DIRECTOR Judy Oliver

DIRECTOR OF OPERATIONS AND MANUFACTURING
Anne Letsch
PRODUCTION DIRECTOR Georgia George
PRODUCTION ASSISTANT Tom Marzella
COLLATERAL PRODUCTION DIRECTOR
Ellen Richman
SENIOR ADVERTISING PRODUCTION COORDINATOR
Elizabeth Myron
REPRINT COORDINATOR Sherry Bloom
COMPUTER SUPPORT TECHNICIAN Mike Castelli

CIRCULATION DIRECTOR Phil Semler
CIRCULATION FULFILLMENT ASSOCIATE
Austin Malcolm

BUSINESS MANAGER Cindy Elwell
EXECUTIVE ASSISTANT Heidi Eschweiler
RECEPTIONISTS
Carrie Gebstadt Lauren Gerber



ALSO PUBLISHERS OF
ELECTRONIC MUSICIAN
MIX BOOKS
RECORDING INDUSTRY SOURCEBOOK
MIX MASTER DIRECTORY

INTERTEC PUBLISHING CORPORATION
PRESIDENT AND CHIEF EXECUTIVE OFFICER
Raymond E. Maloney
SENIOR VICE PRESIDENT
Cameron Bishop

NATIONAL EDITORIAL, ADVERTISING AND BUSINESS OFFICES.
6400 Hollis St. #12, Emeryville, CA 94608 (510) 653-3307, FAX (510)
653-5142 Web site www.mixmag.com PHOTOCOPY RIGHTS:
Authorization to photocopy items for internal or personal use of
specific clients is granted by Intertec Publishing, provided that
the base fee of U.S. \$2.25 per copy, plus U.S. \$00.00 per page is
paid directly to Copyright Clearance Center, 222 Rosewood Dr.,
Danvers, MA 01923 USA. The fee code for users of this
Transactional Reporting Service is ISSN 0164-9957/1997 \$2.25 +
\$00.00. For those organizations that have been granted a photo-
copying license by CCC, a separate system of payment has
been arranged. Before photocopying items for educational
classroom use, please contact CCC at 508/750-8400.
Organizations or individuals with large quantity photocopy or
reprint requirements should contact Sherry Bloom at (510) 653-
3307. Microfilm copies of Mix are available by calling/writing UMI,
300 N. Zeeb Rd., P.O. Box 1346 Ann Arbor, MI 48106-1346, 313/761-
4700, 800/521-0600

Founded in 1977 by David Schwartz and Penny Riker Jacob



THE TAPE FORMERLY KNOWN AS AMPEX.



FEEDBACK

GRADING OUR FIELD TEST

The "Field Test" on ASC's Attack Wall by Bob Hodas (Feb. '98 *Mix*) was a pretty good workout for our Studio Traps. However, contrary to the title of the review, Bob did not set up or evaluate our Attack Wall monitoring system. Instead, he reinvented, in nearly perfect detail, our "acoustic shadow" technique used for developing hi-fi room acoustics. We are pleased that his work demonstrates how creative and useful Studio Traps can be, even when used outside of the Attack Wall configuration.

The Attack Wall is a very different system. Studio Traps must be wrapped tightly to the monitors and the sides of the console. This creates an acoustic wall to load the near- or mid-field speakers. In the review, the Studio Traps were not closely coupled to the monitors. Bob could not hear, measure or comment on the effects of first loading the bass wave and then venting it, just before it hits the floor and ceiling. He did not have a chance to experience the decoupling of the monitor from the room.

The Monitor Stand is our only "wave guide" class of bass trap. It's made to do one thing and do it well. It kills the floor bounce and keeps it from phase add coupling to the ceiling bounce, back at the monitor location. It eliminates acoustic feedback conditions that are imposed on nearly every elevated monitor due to the simultaneous return of both floor and ceiling bounces. These bounces combine to produce the comb filter effect of a 65Hz cut, 130Hz boost, 195Hz cut and so on.

Bob correctly voiced the Traps behind him by facing the absorptive side inward. All imaging would have been lost by adding a group of very early reflections from behind his head. However, no one crosses the LEDE line, not even the crew at ASC. The Attack Wall and the setup Bob used (except for his image markers) both provide good protection from early reflections, except from ceiling and console bounce, while allowing for a flush, diffusive, time-delayed backfill. The Traps to his back were spaced apart, and the reflectors were set toward the back of the room. If he had walked around to the back of

the Traps, he would have noticed a very bright and diffusive hallway effect. Likewise for the side wall traps. This pocket of energy bleeds back through the openings between the Traps and over their tops to create the time-delayed backfill of diffusive ambience required in all studio designs. No mid/high-frequency impulse response curve was shown. It would be interesting to see those results.

*Arthur Noxon, president
Acoustic Sciences Corp.
Eugene, Ore.*

APPLE TALKBACK

I have just finished Philip De Lancie's article "Apple Talk: Desktop Vendors on the Future of the Mac" (March '98 *Mix*). I think this was a well-written article that supported the Apple perspective effectively. However, I believe it would have been infinitely more useful to have spoken with both developers who have a vested interest in the success of Apple as a company, as was done, and software companies who have no vested interest in Apple. The article clearly overlooks the fact that it is Apple who created the loss in the marketplace as a function of their own marketing shortfalls. Elitist marketing is, and has been, their problem. The entry of Mac product into the lower-priced markets was met all over the world with open arms. The stock went up, the market rushed to it and they started to gain in the market. Then they made the worst mistake a marketer could: They couldn't deliver product. Demand went down as a function of the buyers going elsewhere, and the downward spiral began.

I believe that the Power PC is, or was, the platform best suited to the future of computers for our market. It had so much potential that even arch rival IBM had signed on to support it. Motorola became part of the deal, and the future looked sunny. But Apple could not leave well enough alone and began playing games with its partners, the result of which was that this uneasy partnership dissolved.

I think it might be wise to support a more open discussion of where the market is going in the future. The PC occu-

pies 93% of the small-computer market, and it's foolish to treat it as if it doesn't exist in an article like this. Most software is written for this format, and music software is going that way quickly, as well. People should know about these things, and it is the job of your forum to tell them.

*Kurt Bevers
Portland, Ore.*

MORE TECHNOLOGY, LESS COMMON SENSE

The article written by David Carroll ("Wiring, Patching and Interconnecting: A Guide for the Project Studio," Feb. '98 *Mix*) was another common-sense piece written totally bass backwards.

David Carroll writes that he assumes the reader already has a grasp of AC power, grounding, shielding and balanced vs. unbalanced. Any reader who has that background doesn't need lecturing in neatness, cable labeling and cable management. What the reader does need is information that no one ever writes about (except in your title), i.e., interconnecting.

The real, as opposed to ideal, project studio contains a mix of audio gear with a mix of standards. Some of it is balanced, low-impedance, operating at +4 dBm while the rest of the gear is semi-pro. The interconnection via patchbays can be a nightmare. This is what needs to be addressed. Does one use one kind of patchbay throughout with various kinds of terminating procedures or use a mix of patchbays? And that's before we get to the problem of some manufacturers saying Pin 2 is high and some not. You get my drift. Go to some real project studios and ask the owner-operators what their problems are and what they would like to read about. I am sure it is not whether they are neat enough.

*Noel Masson
nmasson@pipeline.com*

Send Feedback to Mix, 6400 Hollis St. #12, Emeryville, CA 94608; fax 510/653-5142; or mixeditorial@cardinal.com.

Capricorn.

"The most fun I've had with my clothes on!"

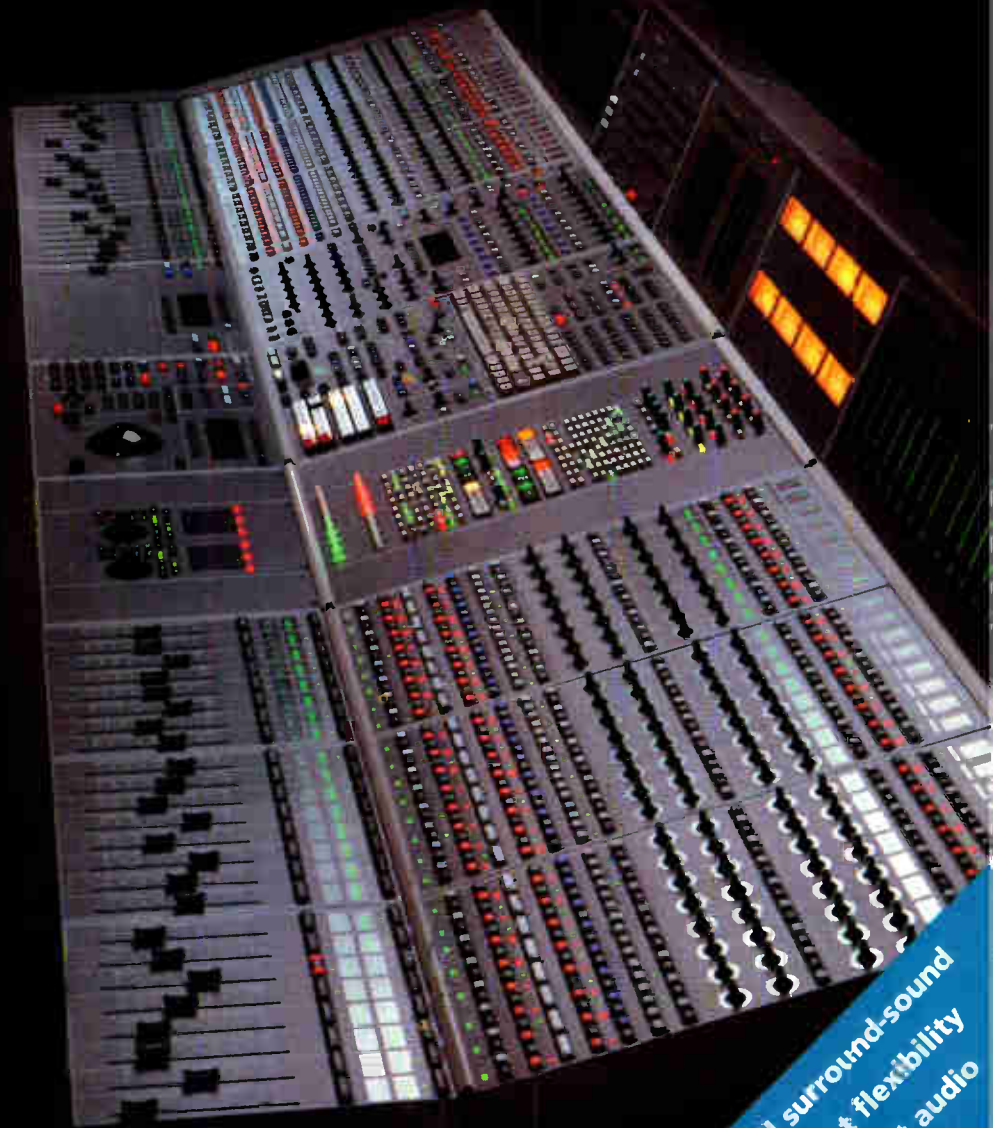
Roger Nichols, producer/engineer

"My first sessions on Capricorn at Chung King Studios, New York City, were the most fun I've had with my clothes on.

"Do you like the EQ before the dynamics, after the insert, before the fader, or EQ on the dynamics sidechain? No sweat.

"I could easily toggle between mixes to compare them. At one point I also kept everything from my current mix but recalled the drums from the final mix of another tune. The recalls were exact, sample by sample.

"The Capricorn mixes sounded so much better than what we'd mixed already, I wanted to remix the tracks done on other consoles."



Full surround-sound
format flexibility
24-bit audio

Digital First



**AMS
NEVE**

HEAD OFFICE - AMS Neve plc · Billington Road · Burnley · Lancs BB11 5UB · England · Tel: +44 (0) 1282 457011 · Fax: +44 (0) 1282 417282 · LONDON - Tel: 0171 916 2828 · Fax: 0171 916 2827
GERMANY - Tel: 61 31 9 42 520 · Fax: 61 31 9 42 5210 · NEW YORK - Tel: (212) 949 2324 · Fax: (212) 450 7339
HOLLYWOOD - Tel: (818) 753 8789 · Fax: (818) 623 4839 · TORONTO - Tel: (416) 365 3363 · Fax: (416) 365 1044
e-mail: enquiry@ams-neve.com - <http://www.ams-neve.com>

CIRCLE #006 ON PRODUCT INFO CARD
World Radio History

CURRENT



Pictured (L to R) at the AES Golden Anniversary Celebration are founding member Les Paul, AES president Subir Pramanik, executive director/past president Donald Plunkett and founding member Norman Pickering.

AES 50TH ANNIVERSARY

On March 11, Bell Atlantic hosted the AES Goes Gold meeting commemorating the Society's first get-together, which was held 50 years earlier, to the day.

A video montage highlighting "The Early Years" of the audio industry preceded the showing of another tape entitled 50 Years of AES in Audio, which was first shown at the September 1997 AES conference. These pieces were played in the Bell Atlantic Corporate Auditorium to a house filled with AES members and members of the press. Master of ceremonies Michael Tapes introduced a number of key AES figures, including executive director Roger Furness, president Subir Pramanik, and Jerry Bruck, chairman of the AES New York section.

Honored guests from the first meeting included renowned guitarist and inventor of the multitrack, Les Paul. Norman C. Pickering, best known as the designer of the Pickering playback cartridges and arms, was also in attendance. Other original members on hand for the festivities were Emory Cook, Lewis S. Goodfriend, Jack Hartley, E.L. Grayson, Clair D. Krepps, Donald J. Plunkett, Jerry B. Minter and Gerald Shirley.

A number of AES past presidents also were there, including Leo Beranek, Marshall Buck, Elizabeth Cohen, Daniel Gravereaux, Albert B. Grundy, Daniel

von Recklinghausen and Guy Woodward.

MOOG LAWSUIT

Robert Moog filed a formal federal complaint against Moog Music Inc. and Don Martin. Moog's action is a claim of unfair competition, false advertising and violation of his right of publicity. The complaint, filed in U.S. District Court in northern Florida, demands a trial by jury.

Robert Moog was president of the original Moog Music Inc. until

1977; the company remained in operation until the mid-'80s. Don Martin later founded a new company called Moog Music. Moog's complaint is based on the fact that his name is closely associated with the Moog trademark and that his usage of the Moog name as a trademark predates Martin's. Moog also argues that Martin's company has made false or misleading statements regarding its connection with the original Moog Music.

Moog also filed a consolidated notice of opposition with the United States Patent and Trademark Office in which he formally opposes Martin's application for the Moog Music and MiniMoog trademarks and requests that the registration of the trademarks in the name of Don Martin and/or Moog Music Inc. be refused.

MIX L.A. OPEN IN FULL SWING

The Third Annual Mix L.A. Open is on its way to a third consecutive sell-out tournament. Skated for Monday, June 15, at the popular Brookside Golf Course in Pasadena, Calif., the event once again is being chaired by producer/engineer Ed Cherney. Proceeds from the tournament will be distributed to Hearing Is Priceless (HIP), founded by the House Ear Institute and co-sponsored by *Mix* magazine and other programs benefited by the Mix Foundation for Excellence in Audio.

Confirmed sponsors as of April 1 in-

clude Audio-Technica, Group One, TSI, Alesis Corporation, Fairlight, BASF, Record Plant, Keith Hatschek & Associates, Euphonix, Quantegy and Sony Pro Audio. A limited number of sponsorships and individual tickets are still available. For more information, call Terry Lowe, tournament director, at 310/207-8222.

TELEX-EVI RESTRUCTURE

Telex Communications Inc. announced its new corporate management structure following its recent merger with EVI Audio. The new structure was established with the goal of managing the more than 20 professional brand names under the Telex Communications umbrella.

The combined companies will have an extensive worldwide distribution network, multinational manufacturing and combined research and development resources.

Dan Dantzer, president of the pro audio group, and Paul McGuire, vice president of marketing and sales, will have worldwide brand management and product development responsibility for Electro-Voice, Altec Lansing and Telex professional sound products. Dantzer also will have responsibility for TRS and Vega products; McGuire will have U.S. responsibility for sales of Elec-

—CONTINUED ON PAGE 16

MIX MASTER DIRECTORY AND RECORDING INDUSTRY SOURCEBOOK

The *Mix Master Directory* and the *Recording Industry Sourcebook* will be publishing their tenth editions in 1999. Applications will be mailed this month and must be returned by July 1, 1998. Professional audio manufacturers, production facilities and other music industry-related companies who have not received applications but wish to be listed should call 800/344-5478 or e-mail mix-ris@intertec.com. ■

We'd Like To Thank The Academy...

We don't actually set out to win awards for ourselves.

Instead, we endeavor to

build the finest microphones in the world



so that YOU win the awards. In fact, many artists have already brought home the gold for performances captured with this incredible microphone. Combining the best of our classic designs with the most advanced modern electronics has resulted in a microphone that even our most demanding customers call "stunning."

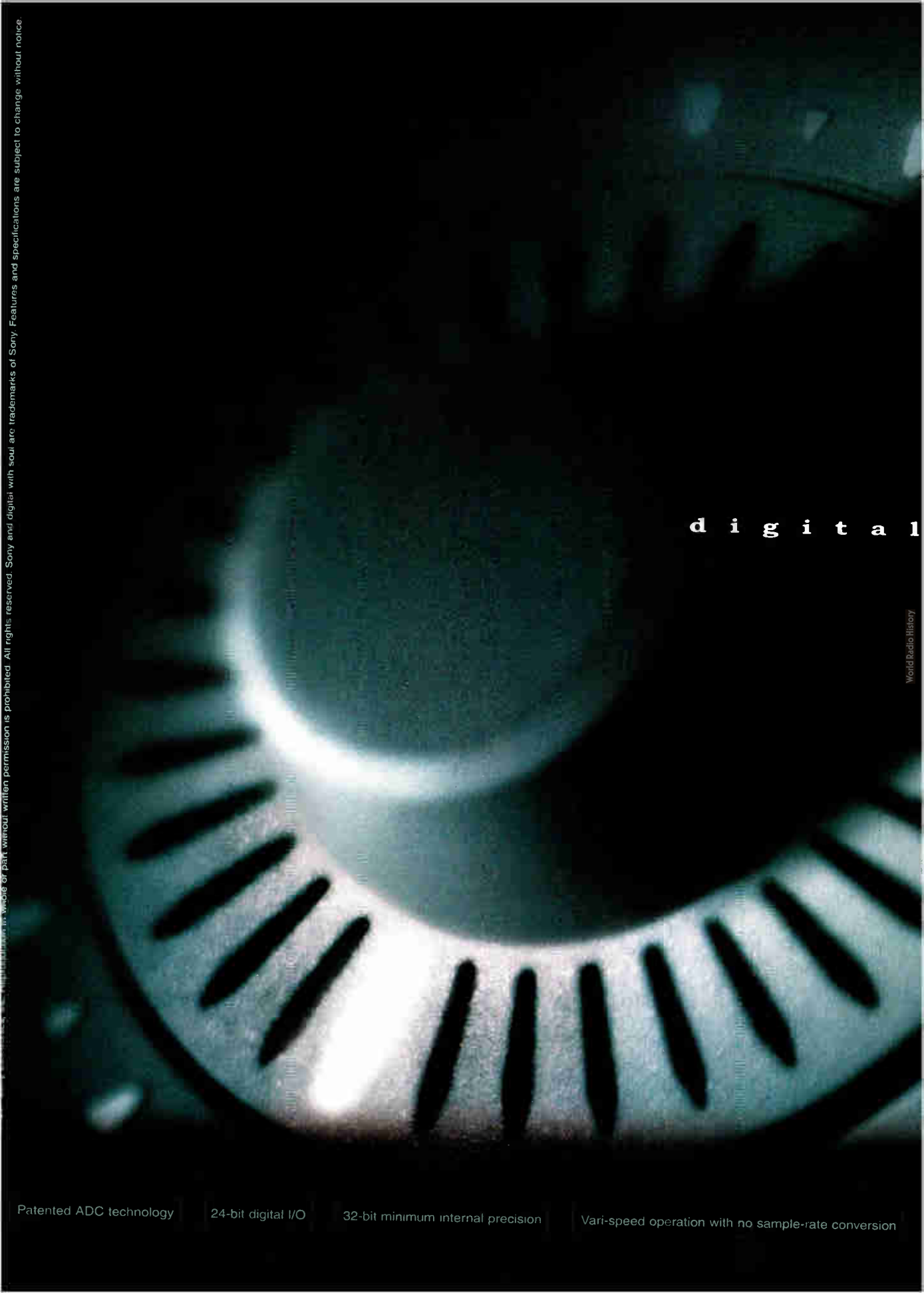
Try the M-149 Tube and hear the magic for yourself.

Neumann...the choice of those who can hear the difference.



Neumann USA

One Enterprise Drive • PO Box 987, Old Lyme, CT 06371 Tel: 860.434.5220 • FAX: 860.434.3148
West Coast: Tel: 818.845.8815 • FAX: 818.845.7140
Canada: Tel: 514-426-3013 • FAX: 514-426-3953 • Mexico: Tel: 52-5-639-0956 • Fax: 52-5-639-9482
World Wide Web: <http://www.neumannusa.com>



d i g i t a l

World's best history

Patented ADC technology

24-bit digital I/O

32-bit minimum internal precision

Vari-speed operation with no sample-rate conversion

closer to the sound than ever before. And it's only part of

Sony's complete



24-bit digital

Retain the Oxford's 24 bit resolution by mixing to the PCM-9000 digital master disc recorder

recording system that includes the new PCM-3348HR



The Oxford's unique assignable control surface put unlimited creative possibilities within reach

DASH PLUS digital multitrack and PCM-9000 digital

master disc recorder.



So let the sound

Sony's new PCM-3348HR digital multitrack recorder. 4 tracks of 24 bit (DASH PLUS) or 16 bit (DASH) digital audio

move you to the Sony OXF-R3. For more information,

call (800) 635-7669, ext. OXFORD and check out our

website at www.sony.com/professional

5 band equalization

4 section dynamics processing

Direct interface to DASH/DASH PLUS recorders

SONY

enough guts to strip in public.

the SR24•4 is equally at home in the recording studio or on the road.

■ **Solid, cold-rolled steel chassis.** Not aluminum or plastic. Monocoque design resists flexing and bending.

■ **Gold-plated internal interconnects** remain corrosion free for perfect electrical contact, even if used repeatedly in industrial sections of New Jersey.

■ **Sealed rotary controls** keep out dust, smoke and other airborne schmutz.

■ **Large, high-current internal power supply** lets us use VLZ® (Very Low Impedance) circuitry at critical points in the SR24•4 and SR32•4. VLZ® significantly reduces thermal noise and crosstalk by using extremely low resistor values in certain circuits. This innovative technique is normally only used in mega-expensive consoles, because it requires VERY high operating current. Which requires a robust, high-current power supply. Which is why we spent the extra money to build one into SR Series mixers. Live or in the studio, you'll hear the difference.

■ **All inputs and outputs are balanced*** to eliminate hum and allow extra-long cable runs (they can also be used with unbalanced connectors). Tight-gripping 1/4" jacks are solid metal; XLR's are genuine Neutrik®s with internal ferrite beads to reduce radio frequency interference. * **except RCA-type tape jacks and channel inserts.**

■ **Low-noise, high-headroom discrete mic preamps.** It can be argued that the preamps are the most important part of a mixer — whether you're recording in the studio or running a sound reinforcement system. They must be accurate and free from coloration...yet be able to handle screaming vocalists and close-miked kick drums without overloading. And, they have to be ultra-quiet. Nowadays, we're not the only ones to claim our mic preamps are "studio-grade." So we invite you to put us to the test. In the store, plug in a good, high-output microphone and a pair of

■ **Double tape outputs eliminate repatching during tracking.** Okay, we'll be the first to admit that eight buses are a nice feature. But if you're on a tight budget, the SR24•4's "double-bussing" feature is a great solution (and besides, how many times do you REALLY track more than four channels to tape at a time?). Each of the SR24•4/SR32•4's four submix buses feed two different outputs. For example, Sub Bus 1 feeds Tracks 1 and 5; Sub Bus 2 feeds Tracks 2 and 6, etc. Instead of repatching, you route the bus' destination by what tape tracks you put into

■ **Dual headphone outputs** with enough level to satisfy even most drummers. And a separate input for a talkback mic (so you don't tie up a mixer channel).

■ **Inserts on all mono channels.** Plus submix and main stereo mix inserts, separate control room outputs, extra RCA-type tape inputs and outputs, both 1/4" and XLR stereo outputs, and XLR mono output with its own rear panel level control.

■ **The SR Series in a proverbial nutshell.**

| | 24•4 | 32•4 |
|--------------------|----------------------------|-----------------------------|
| Total Channels | 24 | 32 |
| Mono Channels | 20 | 28 |
| Stereo Line Inputs | 2 | 2 |
| Mic Preamps | 20 | 28 |
| Submix Buses | 4 | 4 |
| EQ (mono chs.) | 12kHz HF 80Hz LF | 100-8kHz Swept Mid |
| | 18dB/octave low-cut filter | |
| EQ (stereo chs.) | 12kHz HF 80Hz LF | 800Hz Lo Mid 3kHz Hi Mid |
| Aux Sends/Ch. | 6 | 6 |
| Stereo Aux Returns | 4 | 4 |
| Tape Outputs | 8 | 8 |
| Channel Inserts | 20 | 28 |
| Width (inches) | 31.0 | 39.25 |

■ **Below:** A few of the 500+ folks who build the SR Series, our other mixers, amps and studio monitors at Mackie Designs in Woodinville, Washington, 20 miles northeast of Seattle

■ **Advanced surface mount technology** increases reliability and lets us stuff more stuff into less space.

■ **Extra-thick double-sided/thru-hole-plated fiberglass circuit boards.** This big mouthful of adjectives really DOES make a big difference... in terms of reliability AND sound quality. The expensive thru-hole plating process maximizes electrical conductivity and eliminates the possibility of intermittent contact. The SR Series' flexible fiberglass main board soaks up downward impacts that would shatter brittle phenolic circuit boards.

■ **Ultra-wear-resistant fader wiper surface** derived from automotive sensor technology won't develop "the scratches" even after years of use.

■ **100% genuine name brand electronic parts throughout.** Nuff said.

■ **Mix amplifier headroom.** The SR24•4's inside story.

Better mix amplifier design is why the SR24•4 can handle 24 simultaneous HOT inputs without distorting. The mix amplifier is where signals from all channels are combined. Some mixers sound OK with just a couple of inputs...but when you pour it on with lots of inputs — particularly signals from digital tape recorders, things start to sound pretty harsh. Backing off on the bus or main faders doesn't help, since the mix amp comes before these gain controls.

The SR24•4 and SR32•4 use Mackie's innovative negative

gain mix amplifier architecture. Instead of mixing at unity gain where headroom is quickly used up, our mix amps operate at -6dB. At this negative gain level, SR Series mixers are capable of summing **FOUR TIMES** the number of channels before clipping. That nets out at **DOUBLE** the amount of mix amplifier headroom compared to any competitive mixer. It's a critical difference that you can plainly hear.

headphones and decide for yourself whose preamps have the most headroom, the least noise and the best sound.

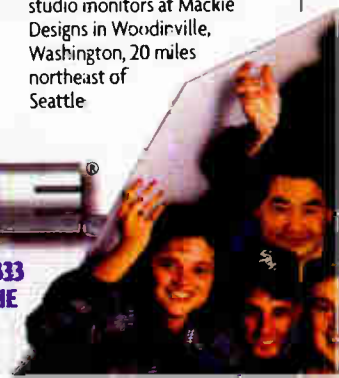


The mix amp funnels multiple channel inputs into a single bus.

MACKIE®

In the U.S., phone 800/898-3211 • Outside the U.S. 425/487-4333
Web: www.mackie.com • E-mail: sales@mackie.com • NASDAQ: MKIE

CIRCLE 1008 ON PRODUCT INFO CARD



NOW I KNOW MY LCDs

WELL, SORTA

THE HISTORY OF (NON-ASTRAL) PROJECTION

In the beginning there were video projectors—sorta. Little TVs with their brightness and contrast turned all the way up and a Fresnel lens stuck out in front on coat hangers. I never had one of these leading-edge systems, but I used to see them in the catalogs that would stick to my boots whenever I would try to get the Harley started in front of Frederick's of Hollywood. Not that I ever actually went to Freddie's—my brother used to live across the street.

Ah, the good old days. Back then I used to carry three guns (remember—my brother lived across the street from Frederick's). I'm pretty sure that this practice of re-

lying on three guns was common enough to have inspired the next development in video projection—three gun projectors. Bikers love big TVs.

GUNS 'N HOSES

These three-gun phosphor systems have been around for quite some time now and, though they are very bright, they are soft, can't be zoomed, and are plagued with a plethora of uniformity and convergence problems. Not to mention that they need to be hooked up to your garden hose for cooling if you want the image to remain truly stable. And they burn and ghost.

They are big, heavy and hot. Oh yeah—and unstable and expensive. Every time you move them you have to spend the rest of the day setting them up. They generate magnetic fields that will make any studio host to a hum-fest, yet they cannot tolerate even the wimpiest magnetic field from your favorite speaker. I have never liked them.

They are dinosaurs, yet they still dominate. Why? Brute force. They can be bright enough to project images for an entire stadium audience.

THROUGH THE LOOKING GLASS

Many of us do enough film or TV

—CONTINUED ON PAGE 233

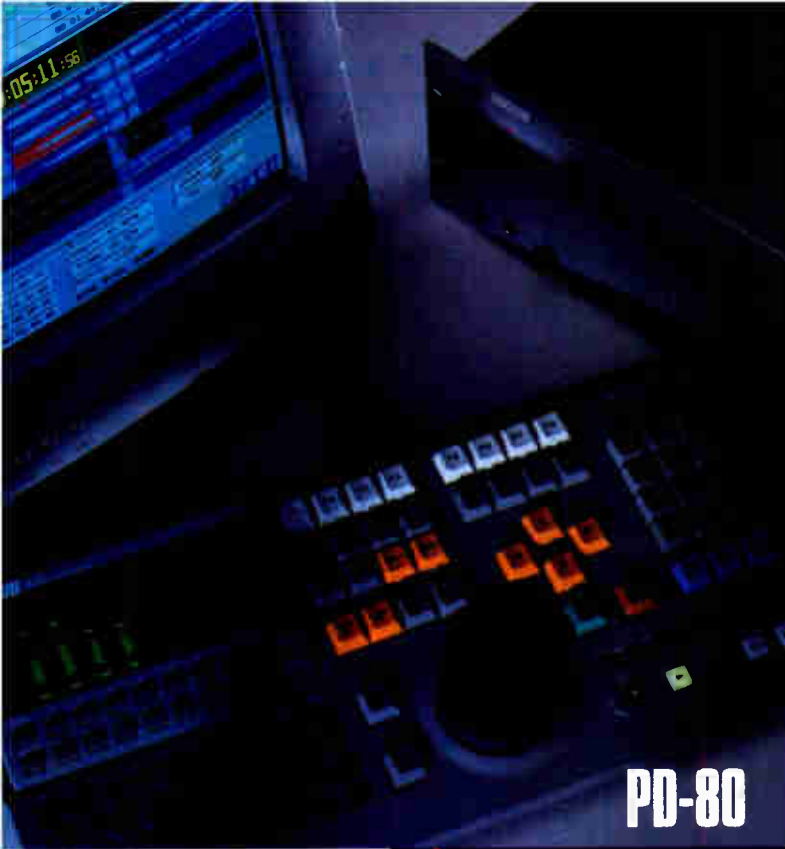
BY STEPHEN ST. CROIX



ILLUSTRATION: ANDREW SHACHAT

Digital Recorders

by Otari



PD-80

For decades Otari has pioneered the art of analog Multitrack Recording. With hundreds of thousands of machines installed worldwide, Otari is clearly the benchmark in recording technology. In this spirit of innovation a new generation of leading edge Digital Recorders has emerged.



BX-5050

▲ **8 Channel MO Recorder/ Editor**
Fully self-contained, with dedicated controller and no external computer required.
Easy to edit. On screen waveform display with DSP
Ideal for Post Production and Broadcast applications
Sonically Superior 20 bit D/A's and A/D's

▲ **2 Channel MO Recorder/ Editor**
Comprehensive editing and DSP functions
Ideal playback system for fixed venue installation
20 bit D/A's and A/D's

▲ **2 Channel MO Recorder/ Editor**
Familiar tape-like interface, lightweight and easy to use
Standard PC WAV file format
Inexpensive 1/4" 2 track machine replacement
Compatible with most PC based editors

Contact Otari today for details about any of our leading digital recorders

PD-20



▼ **OTARI Family of Digital Recorders**

Otari, Inc.
Japan
Phone: 81-424 (81) 8626
Fax: 81-424 (81) 8633

Otari Corporation
USA
Phone: (415) 341-5900
Fax: (415) 341-7200

Otari Deutschland GmbH
Germany
Phone: 49 (0) 2159-50861
Fax: 49 (0) 2159-1778

Otari Singapore Pte., Ltd.
Singapore
Phone: (65) 284-7211
Fax: (65) 284-4727



PD-20



PD-80



DX-5050



The Otari Logo is a registered trademark of Otari Corporation.
© 1997 Otari Corporation. Internet Address: www.otari.com



I SING

DO ONE THING.



DO IT BETTER.

Claire sings for one reason, to bare her soul. Electro-Voice has designed the N/D367 Female Vocal Mic to capture the emotion of the female voice. For a microphone that listens first, then speaks just the way you want to be heard, contact your nearest Electro-Voice dealer and check out our complete line of application specific, N/DYM® Series mics.



Electro-Voice 600 Cecil Street Buchanan, MI 49107 616/695-6831 800/234-6831 In Canada: 613/382-2141 www.electrovoice.com
© Tele Communications, Inc.

CIRCLE #810 ON READER SERVICE CARD

BACK TO THE WEB

CAN WE TALK...AGAIN?



ILLUSTRATION ADAM MCCAULEY

Not too long ago I wrote in these pages about how I hated the World Wide Web, how it was all full of hucksterism and hype, scams and schemes, and what a shame it was that the Information Superhighway was being built more for the sake of the billboards than the travelers.

None of my feelings have changed, except that now I'm an active participant in all this, and you know something? It's fun. It's led to some very valuable connections and some insights about the nature of communications and community.

The column I wrote last year talked about how I was going to set up a non-commercial Web site for the pro audio industry, courtesy of the university where I teach,

called Signal2Noise. Well, I did that, and it has been a success on a lot of levels. Readership is steady, we get lots of contributions from all over the world (especially in the horror-story and joke departments), and we've been able to air some important issues that all of us in the audio industry have to deal with. Plus I've been able to link into CNN's video clip of Bill Gates getting a pie in the face, get two heavy-duty audio theorists arguing enthusiastically about the fine points of perception, and post an exhaustive first-hand account from inside the zoo that was CBS's coverage of the winter Olympics in Nagano, complete with menus of the American-style restaurants that

BY PAUL D. LEHRMAN

have popped up there and visits to the bathhouses. I did this with a modicum of help from fellow faculty and a couple of students, on a budget of exactly zero.

And I have learned that there are plenty of people out there craving good information, and entertainment, about what we do. There are people who have stories to tell, some of which will leave you rolling on the floor laughing (or ROFL as we say in Net-speak), while others will have you wincing in pained recognition. They will make you envious of their gigs, or grateful that you've got your own. If the folks who have responded to Signal2Noise are any representative sample, then the people in this industry (whether they're acolytes, hotshot remixer,

The power of
an 02R digital
mixer and
16-track hard
disk recorder



(cleverly
disguised as
a \$1,000
computer card).

Imagine having the processing power of the 02R

digital recording console on a computer card. When you install the card in

your computer, you've got a 24-channel, 10-bus digital mixer with all

the mixing power of the acclaimed 02R. Pretty great. Imagine this card

also gives you 16 tracks of tape-less recording

with up to 32-bit resolution. And works

out-of-the-box with the industry's most

popular PC and Mac recording soft-

ware*. Imagine you can have all

this for under \$1,000. Yamaha

proudly presents the DS2416

Digital Mixing Card. The star

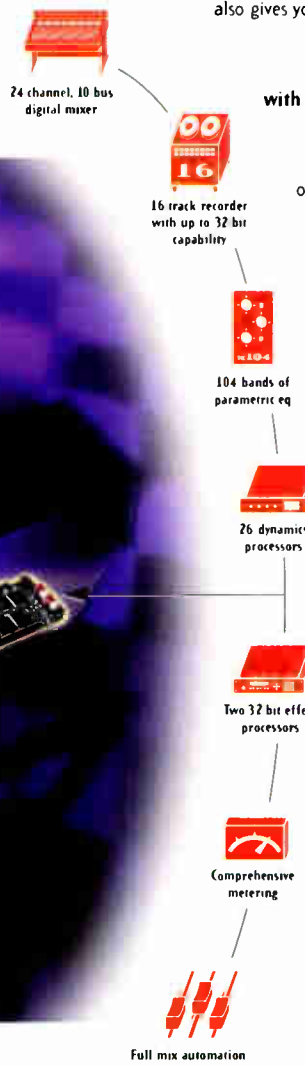
component in the Yamaha

DSP Factory—a complete digi-

tal recording and mixing system

inside your computer. For details,

call 800-937-7171 ext 662.



All features available simultaneously



*DSP Factory is supported by:



© 1998 Yamaha Corporation of America, 6600 Orangehorpe Avenue, Buena Park, CA 90620

World Radio History

CIRCLE #011 ON PRODUCT INFO CARD

Tannoy AMS12A



*Power
and
accuracy*

Hot House ASB212

Over 1,000 watts of tri-amplified audiophile power. Unrivaled dynamics and peak SPL at the mix position. Ruler-flat 25Hz-25KHz response. Phase-accurate point source imaging. Perfect console-height mid-field package.



275 Martin Avenue Highland, NY 12528
TEL 914-691-6077 FAX 914-691-6822

CIRCLE #012 ON PRODUCT INFO CARD

INSIDER AUDIO

ashtray-emptiers, repair-bench jockeys or grizzled, burned-out veterans) are *interesting*, and are worth listening to and talking to.

Somehow, while I was finding all this out, the folks at *Mix* were getting the same idea and began looking at

**Not too long ago,
I wrote about how the
World Wide Web was
all full of hucksterism
and hype, scams
and schemes.
None of my feelings
have changed.**

ways to enhance their own Web presence to create a "virtual community" around it. *Mix* Online has been up for a while, but the communication it generates has been pretty much one-way: People log on when they want to read an article or review, and then they go somewhere else. But it doesn't have to be that way. *Mix*, with its loyal, active readership and enormous depth of information, could be the center of an interactive community of audio professionals, making its archives available to everyone, and drawing in new ideas and thoughts.

At a certain point, it became obvious that our goals were complementary. In order to make Signal2Noise more effective, I needed a broader base (in other words, more publicity—contrary to popular belief, on the Web you have to work to get people to know about things; word doesn't just "get around") and better economic support. *Mix* needed someone with the skills and desire that could make the same thing happen on their own turf. It was a logical decision for them to ask me to help them. So a couple of months ago I took over as editorial director of *Mix* Online. You can go there now to see what we've accomplished so far: the address is www.mixmag.com.

Although we've changed the look of the site completely (with the brilliant assistance of Richard Elen, whom I've worked with on a score of projects—

from ad campaigns to software development to record albums—over the past 20 years, and who has designed more Web sites for the pro audio industry than anyone else in the world), lots of what is on the new *Mix* Online will be familiar to visitors to the old site. We're posting selected articles from the print (we Netizens call it the "dead-tree") version, including Insider Audio, a few features, and most of the Field Test reviews. We're also making available the Studio News and Sessions columns. Because we're not dependent on a printer and the U.S. Postal Service to deliver our issues, however, we can update some sections, like Industry News, weekly, and when it comes to breaking stories (lawsuits, awards, companies changing hands, ongoing events like the Olympics, that sort of thing), we can publish them as fast as they can be written.

The articles we publish online can be enhanced by stuff that doesn't fit or is simply impossible to include in the print edition: the complete transcript of an interview, for example, or a large portfolio of pictures from a new facility, or downloadable or streaming audio files or QuickTime movies demonstrating a new technology or product.

We are also building a complete archive of *Mix* going back to when the magazine started being produced electronically, which is about 15 years ago. The archive will be organized chronologically, so it'll be easy to find an item if you know the issue date, but more importantly, there is a built-in search engine that will let you find any or all of the articles that deal with a particular topic or person instantaneously. The whole magazine goes into the archives: news items, session reports, new product announcements (whether or not the products actually ever shipped) and reviews. Constructing the archive, as you can imagine, is an enormous task, and it's not going to be done all at once. We'll be working backward, starting with the most recent years' issues.

Because we're not restricted the way a paper magazine is in terms of how much content we can print or deliver, we can do things on the Web site no dead-tree publication can do. Every month, there are more Letters to the Editor received at *Mix*'s offices than can possibly be published on paper. On *Mix* Online, we can publish all of them, and have room for the editors and authors to respond and engage in an extended dialog if that seems to be the thing to do. This is what's going on

The New PCM 81 Digital Effects Processor



"You'll run out of ideas before you run out of effects."



Scott Martin Gershin
Sound Designer



NEW FEATURES • Pitch Shift algorithms on-board • 20 seconds of stereo delay • AES Digital I/O



The new PCM 81 Digital Effects Processor has everything that made the PCM 80 the choice of professionals – and more. More effects, more algorithms, longer delay and full AES/EBU I/O. Each effect has an uncompromised stereo reverb with several voices of additional effects. A full complement of Pitch Shifters provides everything from pitch correction to unique special effects. 300 meticulously-crafted presets give you instant access to pitch, reverb, ambience, sophisticated modulators and dynamic spatialization effects for 2-channel or surround sound applications.

With its huge assortment of superb effects, the PCM 81 is the

perfect tool for a sound designer like Scott Martin Gershin of Soundelux Media Labs. Scott, who used the PCM 81 to process his voice as the voice of *Flubber*, says, "This is the best pitch shifter I've used. Our job is to create emotional illusions in audio and the PCM 81 is a powerful tool to get us there. I feel I have only scratched the surface of what can be created on the PCM 81 and encourage everyone to explore the depths of this processor."

Explore the depths with Scott's customized presets – Send us proof of purchase and your PCM 81 serial number by July 30, 1998, and we'll send you the Scott Martin Gershin Preset Card – FREE.

Heard In All The Right Places

Lexicon

A Harman International Company
CIRCLE 48: 2 ON PRODUCT INFO CARD

3 Oak Park, Bedford, MA 01730-1441
Tel: 781 • 280-0300 Fax: 781 • 280-0490
Email: info@lexicon.com Web: www.lexicon.com

Scott Martin Gershin's film credits include:
JFK, True Lies, Braveheart, Flubber
and *Mouse Hunt*

AnthroCarts®



AnthroCarts are *so* flexible. You have **dozens of shapes and sizes** to choose, plus over **50 accessories** to configure your cart exactly the way *you* want.



And they have a **Lifetime Warranty!** Made of steel and high density particle board, these AnthroCarts are as tough as nails.



See them all in our catalog, then call us direct to order. We'll ship to you the very next business day!



Call for your free catalog:

800-325-3841

6:00 AM to 6:00 PM PST, M-F



**Anthro Corporation®
Technology Furniture®**

Tualatin, OR 97062

Fax: 800-325-0045

www.anthro.com

In Japan, call 03(Tokyo)-3947-2735

Since 1984. Prices from \$299. For a lower cost line for the home, ask for our Compacta catalog. GSA contract. Available for OEM applications. Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

in our Talkback section. We also have discussion groups that are not related to published articles, but just deal with subjects our readers want to talk about.

All of these discussions are moderated and contributed to by yours truly, both to keep them interesting, and so that participants don't have to worry about the things that make life unpleasant in many unmoderated Internet Usenet groups: the personal attacks, irrelevant asides, anonymous "hit-and-

If you have a favorite story about the worst gig you've ever done, we want to know about it.

run" postings, blatant sales pitches or e-mail address "harvesting" by spammers. None of that will occur here. And if you don't want other readers to know who you are, that's cool (but you do have to tell *us*...that's for your own protection as well as ours).

If a discussion leads off into a different direction, we simply start a new group, and anyone who wants to follow it, can. We are using some very hip discussion-management software, which makes it easy for people to follow what's being said by whom about what.

Another feature we're in the process of constructing is Ask the Experts. Here you can ask questions about particular products and get real answers from people who know (or at least should). We can get inside the companies who make those products (or repair them) and find exactly the right person to ask, then publish their response so that you and everyone else can benefit from that contact. This feature will be updated constantly, and the questions and answers will be archived just like everything else, so if five years from now you need to find out how to change the idler wheel on a long-discontinued tape transport, that information will be right here.

Two of the most popular features of the Signal2Noise site have been the

—CONTINUED ON PAGE 235



Meet the family.

The award winning professional technology that set the benchmark in studios around the world is now available at every price point, meeting every users needs. Each version offers Digital Audio and real-time DSP and the same professional character – not just another pretty face.

Emagic Inc.
Tel. +530.477.1051
Fax +530.477.1052

Emagic Internet
<http://www.emagic.de>

All rights reserved. Logic™ and Logic Audio™ are Registered Trademarks of Emagic®.

World Radio History

emagic

Technology with Soul.

Track Output Source

The FUTURE of Music is at Sweetwater TODAY!



ALESIS 20-BIT MULTITRACK

DIGIDESIGN PRO TOOLS 4.0

TASCAM DA-98 MULTITRACK

MACKIE DIGITAL CONSOLE

ORAM PRO PRODUCTS

ROLAND V-DRUMS

MACKIE HIGH DEFINITION MONITORS

AND MORE!

IF YOU'VE BEEN WAITING FOR THE NEWEST TECHNOLOGY TO ARRIVE, YOU DON'T HAVE TO WAIT UNTIL THE 21st CENTURY!

We're talking about 20-bit digital multi-tracks, sophisticated computer-based hard disk recorders, cutting edge mixing consoles and electronic percussion with full digital modeling of acoustic instruments. Those are just a few of the incredible advances headed your way and it's only the start. Manufacturers are designing products right now that we couldn't even begin to imagine a decade ago.

Here at Sweetwater, we have a long history of bringing the very latest technological breakthroughs to our customers at affordable prices — we've been doing it since 1979. No wonder over 100,000 musicians worldwide turn to us to separate fact from hype, real products from vaporware. Plus, because we're one of the largest music retailers on the planet, you can be sure that when the hottest new equipment is available, we'll have it in stock in our gigantic new warehouse, ready to deliver right to your door.

Been thinking about equipping a new studio or upgrading an existing facility? Ordering the wrong gear can cost you hundreds or even thousands of dollars. True, other dealers may be able to sell you some of this new equipment, but they simply don't have the expertise to integrate it into your existing system or to put together the perfect new studio package to exactly fit your needs.

So call us! We really understand the latest hardware and software and are committed to taking care of all our customers by providing personalized, dependable advice, excellent technical support and service those other dealers can only dream about.

America's **FASTEST-GROWING MUSIC RETAILER!**

(800) 222-4700

WE HAVE THE GREATEST SELECTION OF PRODUCTS IN THE INDUSTRY FROM MANUFACTURERS LIKE:
ALESIS • KORG • ROLAND • MACKIE • TASCAM • FOSTEX
KURZWEIL • SONY • KRK • DIGIDESIGN • GODIN • CROWN
EVENT • LEXICON • PANASONIC • AKG • GENELEC • ORAM
MARK OF THE UNICORN and dozens more!

(219) 432-8176 • FAX (219) 432-1758 • sales@sweetwater.com

www.sweetwater.com

Sweetwater SOUND INC.

5335 BASS RD. FT. WAYNE, IN 46808

CIRCLE #015 ON PRODUCT INFO CARD

World Radio History

ON THE COVER

FM STUDIOS

Denzil Foster and Thomas McElroy didn't set out to be studio owners. They are primarily known as writers, musicians and the powerhouse producers behind such multi-Platinum acts as En Vogue, Tony, Toni, Toné and Club Nouveau. From the late '80s to early '90s, the pair found themselves constantly working days and nights for weeks on end in such San Francisco Bay Area studios as Infinity, Starlight and Fantasy. However, they eventually decided to create a recording environment better suited to their wide-ranging production styles, which typically depend on a distinctive rhythmic combination of sampled material and live instruments.

In 1993, Foster and McElroy located a warehouse space in Emeryville, Calif., just across the Bay Bridge from San Francisco, and gutted it. Chips Davis was brought in to design a versatile live space and a large control room that would be big enough to house racks of keyboards, guitarists going direct or even a vocalist set up in the control room for on-the-fly inspirations. The producers also set up a pre-production studio, with an Amek Einstein board, as a place to work while the 18-month build-out was going on. In June 1995, the main room opened for Foster&McElroy productions, with tracking handled by engineer Steve Counter and mixing by Ken Kessie. Last November, the pair opened the two-studio space for commercial booking.

"We wanted to keep the essence of the energy and the vibe that's here in the Bay Area," says McElroy. "This is where we're most comfortable working—we know how to get around, we know where to eat, all our families are here, friends and musicians. There's so much good music in the Bay Area to be recorded. We want to try to make this into an 'artist central' meeting point, where all types of artists can get together, record on each other's albums and network with each other.

"Part of that is trying to make the studio accessible to all different styles of recording and all styles of music. So we set up a recording environment that was very versatile and a control room that was large enough to record in."

The control room, centered around a Euphonix CS 2000M console (192 line inputs), 16-channel Pro Tools and JBL DMSI monitoring (powered by Crown Macro Reference amps, with companion double-18 JBL sub), measures 30 feet deep, by 25 feet along the back wall, and 20 feet across the front. Keyboards move between the two studios; McElroy's current favorites include a Korg Trinity and a Roland JV2080 module with Orchestra and Vintage cards. The outboard selection is vast, though engineer Counter regularly uses the TubeTech mic pre on guitar/bass and the Night EQ2 for overall smoothing. Focusrite Red 2, GML EQs and mic pre's, API graphic EQs and countless effects units round out the package.

The studio space, which can hold up to about 20 pieces, is completely variable, with one wall containing RPG Trifusors ("great for piano and drums," Counter says) and roll-around baffles that can be used to create a roomwide diffuse sound. The room has been used for horns, strings

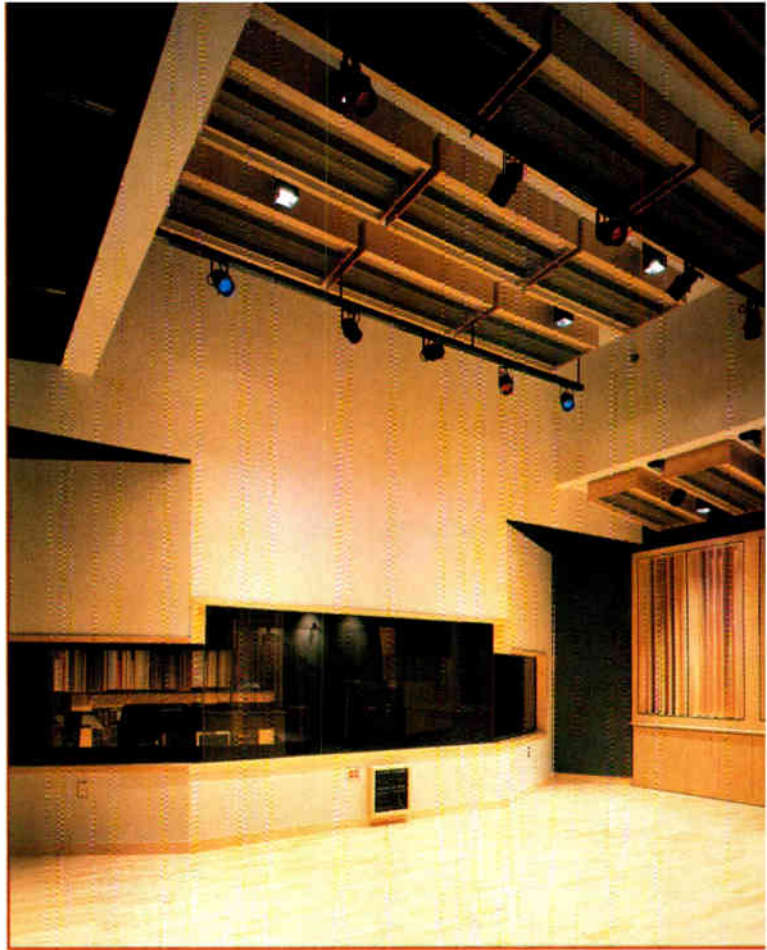


PHOTO: © TOM RIDER

and a lot of vocals, not to mention rock band productions. Counter is particularly impressed by the drum sound, which he tends to capture with Crown PZM ambient miking or Neumann U67s.

Perhaps the most unique part of the facility remains hidden in the rather wide space between studio and control room. Davis, known for the LEDE® concepts, designed a unique isolation structure to handle the low-frequency energy that pumps through the studio. "We came up with a way of constructing a steel cage so that it cantilevers out into the studio," Davis says. The structure that supports the control room front walls is built out of 4x4 tubular steel and is anchored into the ground, holding up the front wall of the control room and studio. The speakers slide into the soffits on spring-isolated rails. It completely isolates the speakers from the structure.

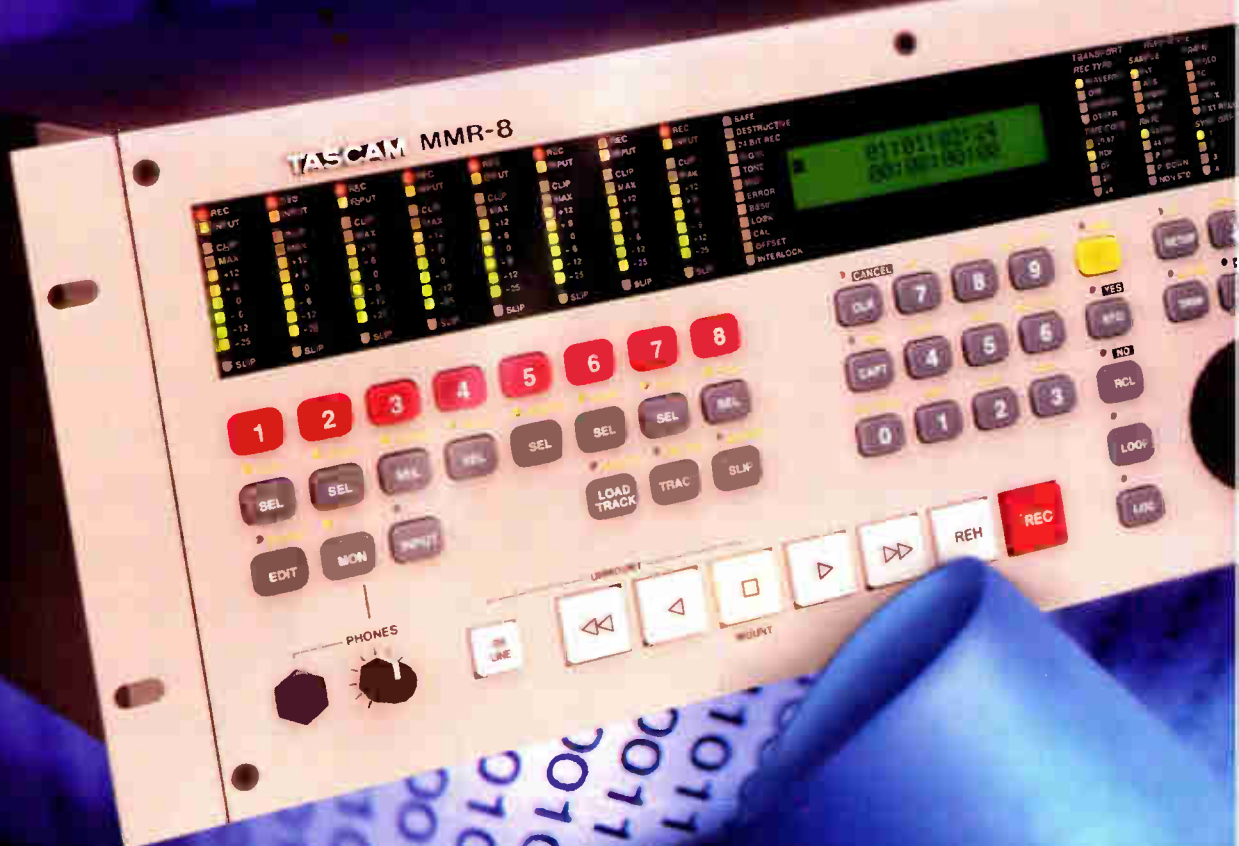
"It's all about controlling energy," Davis continues. "These guys push the low end and push the air on the bass drum. And there's no transmission between control room and studio."

Controlling energy would seem to be an apt description for Foster & McElroy, as well. After a brief production lull during the studio construction, they seem to be back in full swing. Artists on their new label (they are shopping for non-major distribution and have talked with DreamWorks) include R&B acts Premiere, Extreme and ID, and rock acts Big Lunch and Deep Julia. A 1996 Terry Ellis project brought ten strings into the main room.

"Right now, we're trying to re-establish our R&B roots and establish ourselves as studio owners," McElroy concludes. "We look forward to seeing what people can do with it. We know what we can do with it, but it's always great to see how different creative people can come up with things you'd never expect." ■

INTRODUCING CROSS PLATFORM, MULTI-FORMAT DIGITAL DUBBING FROM TASCAM

The TASCAM MMR-8 Digital Dubber Will **Open Your Mind**. Now, there's no reason to get locked into a closed, proprietary digital dubbing system. With TASCAM's Open Systems approach to post-production audio, you make the choice. That's because the TASCAM MMR-8 is the only tapeless digital multitrack recorder that directly mounts and reads nearly any audio file format — MAC or PC. This means Pro Tools 4.X session files, OMF (*Open Media Framework*),

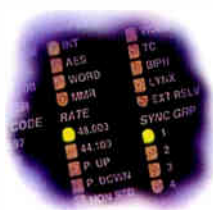


© 1998 TEAC America, Inc., 7733 Telegraph Rd., Montebello, CA 90640 (213) 726-0303
 TEAC Canada Ltd., 5939 Wallace Street, Mississauga, Ontario L4Z 1Z8 Canada (905) 890-8008
 TEAC Mexico, S.A. de C.V., Privada Corona # 18, Colonia del Carmen, Coyoacan, Mexico D.F. 04100 (5255) 658-1943

Sound Designer II, WaveFrame and others coming soon.

No Matter Which DAW You Use, Incompatibility Won't Be Part of the Picture. With the MMR-8 digital dubber

and the MMP-16 digital player you can chain up to six additional SCSI drives online. This means you can dramatically increase your accessible track pool. Perhaps more important is the MMR-8's rock-solid integrated synchronization



solution. It supports virtually every kind of sync including Biphasic in and out, LTC, VITC, MMC, word clock and digital audio sync.

Scrub. Slip. Slide. And Edit. Just like mag tape, the MMR-8 and MMP-16 scrub audio in forward and reverse — while locked to film or video. Need to cut 11 seconds out of a scene?

No problem. And no need to go back to the DAW. With the MMR-8 you can slip tracks independently, slip events and even slip regions within a track. You can Cut, Copy, Paste and Insert (with 10 levels of undo/redo) directly from the front panel. But if your scene calls for more complex editing, go back to your DAW with the MMR-8's Kingston™ carrier equipped drive and edit away. Bring the edited files back to the MMR-8 for dubbing and watch it mount and read them. Magic. No more transfers. Imagine the time you'll save.

Master Control With Sony P2,

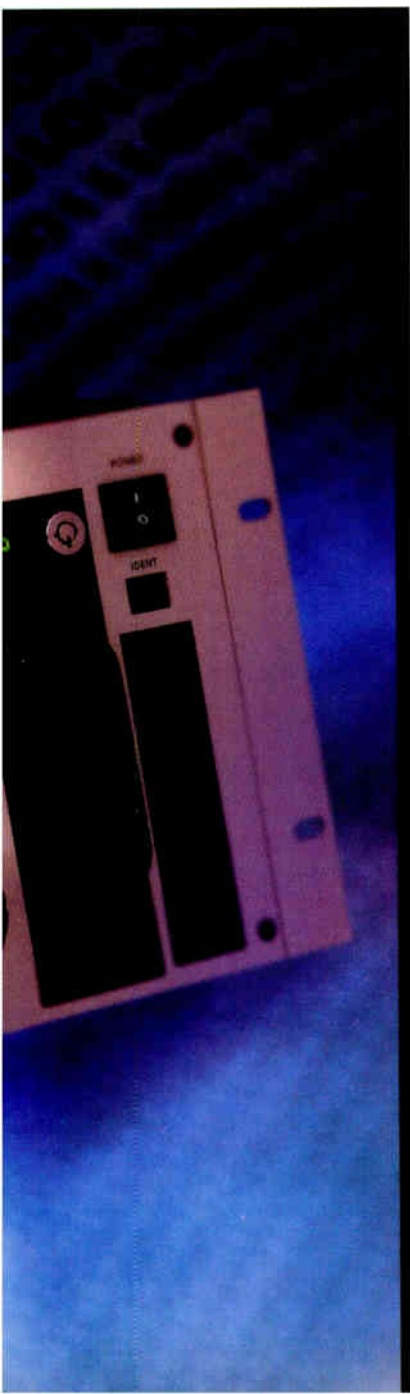
TimeLine Lynx or MM-RC. Use your Lynx KCU for full function control of your MMR-8 including track arming and punch-in/out of up to six units. If you're really a control freak, use the optional MM-RC remote to simultaneously control up to 100 units. That's up to 1,600 tracks with the MMP-16. All with sample

accurate sync across all machines. As for sound quality, let's face it, even with the best 16-bit machines, as you open more tracks on the console you add more noise. The MMR-8 and MMP-16 give you true 24-bit resolution. This keeps the noise floor at an absolute minimum — no matter how many tracks you're running.



Open Systems Mean Easy Integration.

Installing TASCAM's digital dubbing system is literally a plug-and-play process. The MMR-8 and MMP-16 come with analog and AES/EBU Digital I/Os that use the same standard cables as your TASCAM DA-88s. So you see, there's no reason to be closed-minded. Visit the website at www.tascam.com. Or call TASCAM FaxBack at 800-827-2268 for document #5080. You'll get the story on how the MMR-8 Digital Dubber and MMP-16 Digital Player will keep your platform and format options open — wide open.



TASCAM®

Take advantage of our experience.

World Radio History

CIRCLE #016 ON PRODUCT INFO CARD

RECORDING

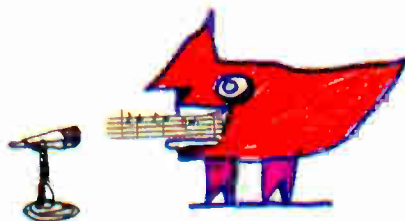
In the studio, it can be so easy to get in a rut and end up falling back too often on gear or methods that you know will yield predictable results. Habits and too little time (compounded by the ease of all manner of samplers, MIDI devices, digital workstations and so on) can make it possible to work without ever really feeling the need to journey into the land of fearless, whacked-out experimentalism.

But where would we be without the creative recording leaps made by The Beatles, Beach Boys, Pink Floyd, U2, the Latin Playboys and many others who figured the music wasn't creatively "fixed" unless they took a chance breaking convention? To get a perspective on the possibilities, *Mix* spoke to some contemporary practitioners of control room iconoclasm. What you'll find here are not only some great ideas, but also some outrageous stories that will, we hope, inspire you never to forget what it's like to be truly playful while recording. After all, humor and playfulness are at the root of creative magic.

by Rick Clark



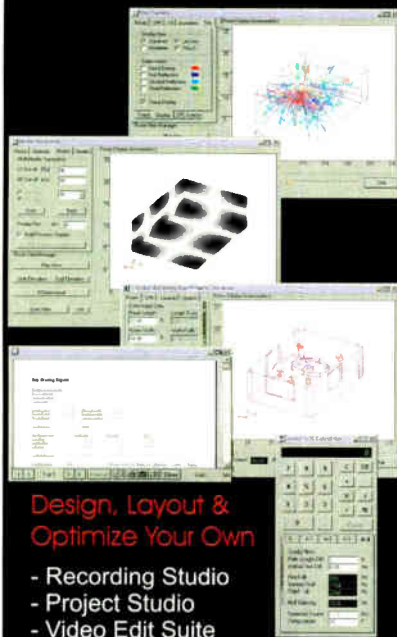
M



Acoustic-X™

Acoustic X

THE ULTIMATE ROOM OPTIMIZATION SOFTWARE



Design, Layout & Optimize Your Own

- Recording Studio
 - Project Studio
 - Video Edit Suite
 - Home Theater
 - Critical Listening Room
- For Stereo or Surround-Sound Monitoring, or just to learn more about acoustics

You Will Believe Your Ears



With Acoustic-X software you are the **eXpert**

Acoustic-X™ Software Corporation



376 Queen Street East
Toronto, Ontario, Canada
M5A 1T1
Phone: (416) 868-0809
Fax: (416) 861-0620
WWW: pilchner-schoustal.com
E-Mail: acoustic@idirect.com

Inquire about a Demo at a music store near you



ROY THOMAS BAKER

Roy Thomas Baker is one of rock 'n' roll's most audacious producers. Since the '70s, Baker has worked on now-classic projects with artists such as Queen (including "Bohemian Rhapsody"), The Cars (their first four albums), Journey, Dusty Springfield, Nazareth, Foreigner, Alice Cooper, Reggie Knighton, Ian Hunter, Be Bop Deluxe, Ron Wood and, most recently, Other Star People, whom he is recording at his studio spread in Western Arizona.

"My experimental years begin with Queen. There is a song on *Sheer Heart Attack* called 'Now I'm Here.' We wanted a long delay, and an Echoplex wasn't long enough, and there weren't any digital delays in those days. So we got two Studer A80s, and we ran a tape loop to the second Studer 2-track machine, which was about ten feet away from the first Studer 2-track machine. The distance was just far enough away for the delay to be in time with the music. To watch the tape go from one machine across a light fixture and down to a chair and over a table and then to the other machine was really funny. Because the Studers had double guides, and they wouldn't work unless they were both physically in action (otherwise the machines would just stop), we had to gaffer-tape the rotary guides down.

"So we had Freddie's voice going into one of the tracks on the Studer multitrack and we went out of that into the left-hand channel of the first 2-track machine and playing back off the left-hand channel of the second 2-track, and that would go back to another channel of the multitrack as a delay. We would feed the left-hand output of the second machine into the right-hand input of the first one at the same time we were recording that on a separate track on the multitrack. Then we were playing back off the second Studer machine, on the right-hand side, and that would go into the third track on a multitrack.

"So whatever Freddie sang, there would be a delay coming from his vocal. He would sing something, like 'Now I'm there,' and then it would come out 'Now I'm there,' again, and it was all in time with the music. It was a really long delay, and Freddie was actually singing harmonies with himself.

When he heard the repeat coming out of his headphones, he automatically sang the third above, and when he heard the third above coming back, he was then singing the fifth above, so it was a three part harmony.

"I'm located on the Mohave Mountain Range, overlooking the Colorado River. Since we are on mountains that are half volcanic and half granite, there are loads and loads of volcanic rocks around. They're the rocks with the holes in them. We've got these solar tubes called Burke Tubes. I've got one that is like six feet long, and I stick it in front of the bass drum and seal the bass drum and the Burke Tube, which is the same width as the bass drum, and fill it with all of these volcanic rocks. Then we put a couple of Shure flat mics inside. I think they're called FM91s. That sounds really good. It livens up the sound, but deadens some frequencies more than others. We end up with this huge low-end thud that comes from the bass drum. It's such a big, big sound, yet it's relatively short, because the weight of the rocks alone causes a lot of dampening. The sound doesn't go long like a normal bass drum. It actually makes a high-impact dead sound, really loud.

"Years ago, I did an album with Chris DeBurgh over in Europe and he was always on tour and had his own fleet of airplanes. So while I was mixing in Metropolis Studio in London, we hooked up the stereo mix going from ground to airplane control via satellite, on two separate radios in his private airplane. What he did was he had one set of headphones on one radio and one set of headphones on the other radio, and he put one headphone from each set on each ear, so he could hear the mix in stereo, as we were doing it, while he was flying from Ireland to Germany!

"When The Cars first bought their studio in Boston and changed the name to Synchrosound, we were doing the mixes of their fourth record. We weren't sure if the mixes were going to sound good over the radio, so we set up a link to the main rock radio station and played the mix over the air at 2 o'clock in the morning, while we were still mixing. We had it on automation, so the faders were going up and down. The radio station was playing the mix live on the air, and we were driving around and waving at each other, listening to the mixes as they were going down on the radio. That way we could hear exactly what it would sound like as it came over the radio, through their compression and through all of their EQs and stuff."

CIRCLE #017 ON PRODUCT INFO CARD

Our customers' comments

"Ghost is Killer! Classic fat British EQ like you've always dreamed of. And the faders are awesome...the taper on them is as smooth as anything I've ever used. Incredible. Ghost has just about everything I look for in a quality console; great tone...great feel...looks...even the name! I'd swear you custom made this for me. I could not have picked a better console for sound, features and feel."

Geno Porfido, Boulevard Recording Co. New Milford, NJ

"Other consoles I've worked with in the past just couldn't deliver the levels of punch and clarity I felt the music deserved. I never have this problem with my Soundcraft Ghost. The Ghost gives me the flexibility I need over a wide range of frequencies and has the body and warmth to really bring my music to life."

Johnathan Moffett, Drummer with Michael Jackson and Madonna

"After the first mix I did, I realised I was in a whole new league. This thing sounds beautiful. Very silky in the high end and full in the lows. The EQ is totally cool and the board has a quality feel to it. I know of nothing that touches it in its price range and I have been recommending Ghost for months to anybody who's looking for a console."

Garth Webber, Red Rooster Studio, Berkeley CA

"I've worked on many competing 8 bus consoles and none can compare to the Ghost in features, ergonomics and, most importantly, sound. The Ghost, simply put, sounds warm and musical - you don't have to work hard to get great sounding mixes on this board. The EQ is very flexible and we compared the mic preamps (using a Neumann U-47) to the Neve 1066s in our studio. We were very surprised at how favourably they compared to these megabuck classics."

Peter Thorn, What If? Productions.

Just about the only sound as sweet as our EQ!



Let us know what you think about the Soundcraft Ghost by visiting our web site at <http://www.soundcraft.com> or via e-mail to info@soundcraft.co.uk

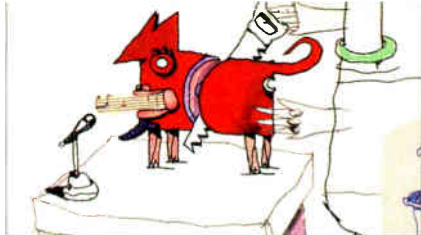
Ghost

The Soundcraft logo, featuring a stylized 'S' icon followed by the word 'Soundcraft' in a bold, sans-serif font.

H A Harman International Company

SOUND-CRAFT, HARMAN INTERNATIONAL INDUSTRIES LTD., CRANBORNE HOUSE, CRANBORNE RD., POTTERS BAR, HERTFORDSHIRE EN6 3JN, UK. TEL: +44 (0)1707 665000 FAX: +44 (0)1707 660742
SOUND-CRAFT US, HARMAN PRO NORTH AMERICA, INC., AIR PARK BUSINESS CENTER 12, 1449 DONELSON PIKE, NASHVILLE, TN 37217, USA. TEL: 1-615-399-2199 FAX: 1-615-367-9146

All trademarks acknowledged



EDDIE DELENA

Since 1979, Eddie Delena has earned a reputation as one of the industry's finest engineers. Delena (who works extensively out of legendary L.A. studio The Record Plant) has worked with many top artists, including Stevie Wonder, Tom Petty, John Cougar Mellencamp, Mick Jagger, Black Sabbath, Kiss and Devo. For his work with Michael Jackson, Delena and a couple of other engineers pushed the limits in the realm of radical mixing. He also discusses capturing Jackson's organic percussion methodology.

"We've made entire drum and percussion kits out of Michael sort of beat-boxing. He would sing on a wooden platform, because during his singing and sometimes without singing, he would stomp on the platform, which would basically be the kick drum, and he would do all of the percussion with his hands and mouth. He'd clap and

finger-snap and slap his thighs and do all of this beat-boxing with his mouth. All of these sounds would be incorporated. At one point, we sampled every one of them and made a whole percussion kit out of that, and he even wrote songs with that as the foundation. One song was called 'Stranger In Moscow,'

The stuff I did with ZZ Top is the nuttiest, because they had money and time.

—Joe Hardy

which was on *HIStory*. He does that on a lot of his records anyway. Sometimes you're not sure if it was a percussion instrument or him. He's really tremendous to work with, and that is a lot of fun to do.

"During the mixing of Michael Jackson's record *HIStory*, we did something that was the height of overkill. I don't know if it's been done before, but for

mixing the song 'History,' we hooked up two control rooms with four 3348 digital multitracks DASH-locked and both SSL computers running in sync from different rooms at Larrabee North Studios. That was 96 tracks in each room. This was for one song!

"Basically, in Room A we had an 80-channel SSL, so we were using both large and small faders. That essentially had the basic tracks, like all the music tracks and lead vocals, etc., and Room B had an orchestra spread out, a choir, background vocals, Boyz II Men and a bunch of other stuff.

"The tracks in the B Room, like the orchestra, were sent to the front bus, and the vocals, like the choir, were sent to the rear bus, which came up on four faders in the A Room. Then the entire stereo mix bus from A was sent to an external monitor in B, so you could actually adjust the levels in the B Room and listen to how everything sat in the entire mix. By changing which 3348 was master, you could run the mix in either room. Between Steve Hodge, myself and a guy named Andrew Scheps, who put it all together technically, we all worked on the on-going song."

Dolby has the production tools for DVD and DTV.

With Dolby Surround and Dolby Digital, we wrote the book on multichannel delivery formats. So it only stands to reason that we can provide the production tools you need to meet the soaring demand for multichannel

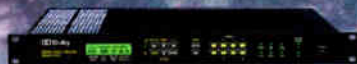
audio programming, including encoders and decoders for four-channel Dolby Surround and up to 5.1-channel Dolby Digital. Contact us for more information and the name of your nearest dealer or distributor.

DOLBY DIGITAL ENCODERS AND DECODERS

DOLBY SURROUND ENCODERS AND DECODERS



Dolby DP561B: Multichannel Dolby Digital encoder.



Dolby DP567: Two-channel Dolby Digital encoder.



Dolby DP562: Multichannel reference decoder for Dolby Digital and Dolby Surround programming.



Dolby Surround Tools TDM Plug-Ins: Dolby Surround encoder and Pro Logic decoder for Digidesign® Pro Tools® workstations.



Dolby SEU4 and SDU4: Dolby Surround encoder and reference Pro Logic decoder.

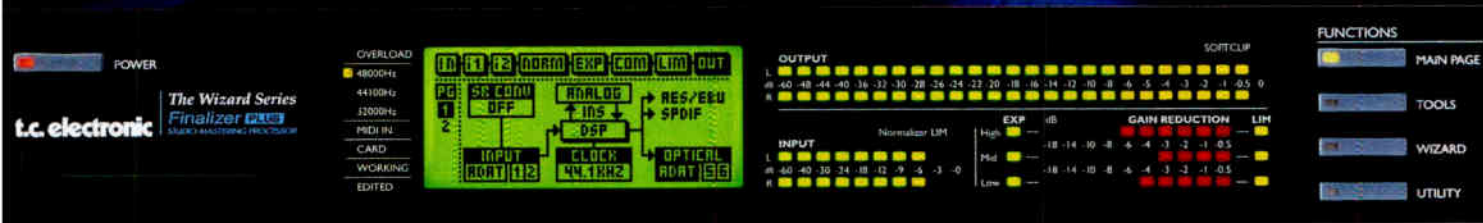
Dolby Laboratories Inc. 100 Potrero Avenue, San Francisco, CA 94103-4813 Telephone 415-558-0200 Fax 415-863-1373
Wootton Bassett, Wiltshire SN4 8QJ England Telephone (44) 1793-842100 Fax (44) 1793-842101 www.dolby.com
Dolby and the double-D symbol are trademarks of Dolby Laboratories ©1998 Dolby Laboratories Inc. 5/98/11883
"Pro Tools" and "Digidesign" are registered trademarks of Digidesign, a division of Avid Technology, Inc.

DD Dolby

CIRCLE #019 ON PRODUCT INFO CARD

THE WORLD HEAVYWEIGHT MASTERING CHAMPION

just got even tougher!



Introducing Finalizer™ Plus

Improving on the Multi-Award winning Finalizer platform, the Finalizer Plus delivers an unprecedented level of clarity, warmth and punch to your mix.

With an all new set of advanced features and enhancements, Finalizer Plus puts the world of professional mastering within reach of every studio - large or small.

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

Finalizer PLUS
STUDIO MASTERING PROCESSOR



The Finalizer knocks out the industry heavyweights:

"TC Electronic has come up with a winner by packing tremendous flexibility into this unit. The Finalizer contains all the latest thinking in dynamics control and it is easy to use."

Bernie Grundman
Bernie Grundman Mastering
Six Time TEC Award Winner

"The Finalizer is capable of producing first-rate professional results. There's a lot of "bang for the buck" in this single rackspace mastering tool."

Bob Ludwig
Gateway Mastering Studios
Seven Time TEC Award Winner

NEW features

- 24 bit resolution A/D & D/A converters
- Real Time Sample Rate converter
- Industry standard connectivity - AES/EBU, S/PDIF, Tos-Link and ADAT® I/O's
- Word Clock Input
- Dynamic Filtering
- External Insert. Simultaneous Inserts
- MS Encoder/Decoder

NOW SHIPPING!



The Finalizer Digital Master Fader

OTHER features

- Multiband Compressor
- Five band 24 bit Parametric Equalizer
- De-Esser, Stereo Adjust & Digital Radiance Generator
- Real Time Gain Maximizer
- Variable Slope Multiband Expander
- Variable Ceiling Limiter

t.c. electronic
ULTIMATE SOUND MACHINES

TC ELECTRONIC INC., 790-H HAMPSHIRE ROAD, WESTLAKE VILLAGE, CA 91361, USA · PHONE: (805) 373 1828 · FAX: (805) 379 2648
FOR LITERATURE CALL TOLL-FREE: 800 283 7925 E-MAIL: INFO@TCELECTRONIC.COM · HTTP://WWW.TCELECTRONIC.COM/FINALIZER
TC ELECTRONIC A/S, SINDALSVEJ 34, DK-8240 RISSKOV, DENMARK · PHONE: + 45 8621 7599 · FAX: + 45 8621 7598

CIRCLE #020 ON PRODUCT INFO CARD



JOE HARDY

Joe Hardy is another producer/engineer renegade who relishes pushing the envelope whenever there's a chance. His credits include the Georgia Satellites, Steve Earle, Colin James, Jeff Healey, Carl Perkins, Tom Cochrane ("Life Is a Highway"), Jimmy Barnes, Merchants Of Venus, The Replace-

ments, The Hooters and many others. Hardy is probably best known for his work with ZZ Top. His organic "Leslie" effect for acoustic guitar has inspired every person with whom he's shared this trick.

"I just produced this artist from Australia named Marie Wilson. For this one song, I wanted this acoustic guitar to sound sort of like a Leslie, but the problem is that when you run an acoustic guitar through a Leslie cabinet, it sort of destroys the acoustic-ness of it—once you amplify the guitar, then it's no longer an acoustic instrument. It may be a cool sound, but it's a different thing.

"So to get a Leslie effect, I miked the acoustic guitar by putting two wireless SM58 microphones on a ceiling fan. So instead of making the speakers spin, as in a Leslie, I was making the microphones spin. It really does the same thing, but this way it sounds like an acoustic guitar. There is a lot of Doppler and phase shifting going on, except it's all acoustic and not electronic.

"The stuff I did with ZZ Top is the nuttiest, on the verge of being almost unbelievable, because they had money and time and Billy Gibbons, who is just insane. For example, on the song 'Rough Boy,' Gibbons had five different guitars tuned to the chords of the song, and he played them with an airbrush, so there was no impact. On the song 'Sleeping Bag,' I bolted an EMT driver onto one of those gray metal utility shelves that you see in people's garages. We put that in the echo chamber at Ardent, and that's on every snare sound on that song.

"On the last ZZ Top record, which is the best album they've done in many years, there's a song called 'Loaded.' Billy wanted a guitar effect on the end that sounds like a shortwave radio. Since he was a kid, he would listen to these broadcasts from Mexico, and he has always loved the way shortwave radios sound. (Shortwave radios sound so oddball because part of the signal gets there direct, but part of it bounces off of the ionosphere, so it takes longer, because it has to go further. It phases with the original signal that was direct. Because the ionosphere changes so much, the frequency that it phases at changes really rapidly and in a weird, random fashion.)

"We made a cassette of only the guitar part, and sent it to a friend of Billy's in Mexico, who broadcast it over his shortwave radio to Houston. We recorded it off of Billy's radio in Houston, and then flew it back into the track. It is a nutty guitar sound. Instead of running it through a Harmonizer that happens to say 'Shortwave Radio Effect' or something, we just did the real thing. If you were across town and tried it, it wouldn't work. You need to be far away, because if you're close, there's not enough phasing. Plus, Billy insisted that it come from Mexico." ■

Contributing editor Rick Clark is a producer, songwriter and writer based in Nashville. He thanks Greg Archilla, Brad Jones and Eli Shaw for their valuable input.

**"Dynamic Performances
Come From the Front of
the Stage too!"**

Wedge Branon, FOH Engineer
Smash Mouth, deftones, Coal Chamber, H.W.P.

Night after night, under the most demanding conditions, Wedge Branon's A R T Pro MPA Tube Mic Preamps and Pro VLA Tube Compressors deliver the goods. "The A R T Tube units sound great, and they make the bands sound great too." Like Wedge, recording and sound professionals all over the world have found the secret to the perfect mix with our full range of Tube Dynamics Processors. Let A R T do that same tube magic for you.

There's an A R T Tube Dynamics Processor to fit any application. See your favorite A R T dealer today for a demo.

A R T
APPLIED RESEARCH AND TECHNOLOGY

215 Tremont Street
Rochester, NY 14608
<http://www.arttech.com>

CIRCLE #021 ON PRODUCT INFO CARD

If you already know these interesting facts about Akai Digital Recorders . . .

8 Track simultaneous disk recording
 8 machines • 18 bit ADC • 64X over
 digital mixer • Dynamic MIDI mix au
 S/PDIF digital I/O • 50 pin SCSI port
 (DR 8) • 8 in 16 out + stereo master
 Varispeed playback
 Machine control • Auto
 input • Switchable
 ACAT interface - \$299
 \$299 • 2nd SCSI port
 parametric EQ - \$699
 destructive editing
 • 20 bit DAC • 8X
 Built-in mic preamp
 1/4" TRS in/out •
 Balanced input
 DR8, DD8 and
 50-pin SCSI port
 Auto punch In
 \$299 • S.M.P.
 controller - \$79



expand to 123 tracks • Link up to
 internal processing • 16 channel
 on: autolocator • AES/EBU and
 eves • 8 in 8 out + stereo master
 116 with fine resolution mode •
 • MIDI automated mixing • MIDI
 4Ks • Word clock/video sync
 16 bit 32K 32K • 16 channel 3 band
 8 track simultaneous disk recording • Nor
 18 bit ADC • 64X oversampling
 • 16 channel MIDI mix automation •
 50 pin SCSI port • Balance
 8 + stereo master (DR16)
 playback • Compatible with
 filter • Adjustable preroll
 40db line levels
 MIDI interface
 \$299 • MT8 M
 EQ - \$699

Maybe you'll be interested in these new facts

8 Track DR8 - \$1995
 16 Track DR16 - \$2995



FOR MORE INTERESTING FACTS AND GREAT NEWS ON PRICING -
 CONTACT YOUR NEAREST AUTHORIZED AKAI DEALER OR THE AKAI MUSICAL INSTRUMENT CORPORATION
 4710 Mercantile Dr. • Ft. Worth, TX 76137 • Phone 817-831-9203 or shoot off a Fax to 817-222-1490
 e-mail akaiusa@ix.netcom.com
 In Canada contact: Power Music Marketing • 3349 Bloor St. W. #24 • Toronto, Ontario M8X 1E9 • Ph. 416-234-1226 • Fax 416-234-0824

NAB98

CONNECTIVITY IN THE DIGITAL AGE

By George Petersen and Sarah Jones

Last month, more than 100,000 convention-goers descended on Las Vegas for NAB98, the 75th-anniversary exhibition and conference of the National Association of Broadcasters. The town's exponential growth (including expansion of both The Sands and the Las Vegas Convention Center) forced attendees through a network of detours. However, after making it through the maze, those who survived the shuttle buses, taxi lines and gastronomic delights of \$3.99 casino buffets found a wealth of new technologies in the other "city that never sleeps."

"Convergence" was the theme of this year's NAB, yet the term "connectivity" seems more appropriate. With DTV and digital radio coming to U.S. broadcasters, many attendees were planning full-scale system upgrades, with integrated all-digital production, networking, servers, file format exchange and scalable open-architecture systems, as well as a budget line or two for rewiring entire facilities to handle the requirements of this "intra-tech." Expect a major broadcasting buying binge over the next five years: It's a sure bet—even by Vegas odds.

Lately, the buzz at every convention seems to be digital consoles. In terms of affordability, Tascam's (www.tascam.com) TM-D1000, introduced at NAB98, is a winning choice for the edit suite or project room. Retailing at a mere \$1,199—and about the size of a Mackie 1604—the D1000 is an automated 16-channel/4-bus mixer with four XLR mic inputs, eight channels of TDM I/O, two AES/EBU outs and two S/PDIF outputs. Two slots accept optional cards for DSP effects (four dynamics processors and a stereo reverb/chorus/delay, etc.) or eight more channels of TDM

I/O. Up to 128 snapshots (EQ/aux/pan/mute/effects) can be stored or recalled via MIDI. Deliveries begin this summer.

Larger consoles were well-represented, especially for on-air duties. **Wheatstone** (www.wheatstone.com) announced a digital radio production board, while **Calrec** (www.avb-forum.com) has added a fully digital model to its proven T Series of digitally controlled analog broadcast desks. The Digital T uses 24-bit ADCs and floating-point 40-bit processing for superb clarity, while its hot-pluggable DSP cards, 14-second boot-from-cold and redundant power supplies are ideal for critical applications.

Perhaps the biggest surprise came from **Graham-Patten** (www.gpsys.com), which is best known for its Emmy Award-winning D/ESAM line of edit suite mixers. The company unveiled a prototype of a large-scale (up to 512-channel) mixer designed for DTV and post applications and based around a scalable DSP engine with up to 144 SHARC processors. Shipments are slated to begin early 1999.

In the DAW realm, Sonic Solutions debuted its networking technology years ago, and now other manufacturers are getting on board. **AMS Neve** (www.ams-neve.com) unveiled StarNet, a high-speed fiber-optic network allowing multiple

AudioFile (updated to Version 3.0, now dubbed AudioFile 98) units to access and share 24-bit files over multiple disk drives. Using an independent NT server, MediaLink is a real-time, multichannel network supporting multiple **Fairlight** (www.fairlightsp.com) MFN3plus DAWs and FAME systems via standard Ethernet cabling. Demonstrated with Media 100xs workstations, an impressive third-party solution was **Rorke Data's** (www.rorke.com) StudioNet-FC, an eight-seat Fibre Channel system including network and volume management software and expandable storage ranging from 16GB desktop arrays to 2-plus-terabyte towers. **Doremi Labs** (www.doremi-labs.com) showed the V1 Video Server, a slick and very affordable approach to accessing large libraries of audio and video for multiple users via SCSI-3 or Fast Ethernet. It features full 4:2:2 ITU601 picture resolution and variable 2:1 to 34:1 compression; systems are expandable and vary from simple setups to total redundancy.

There was plenty of talk at the show about Advanced Authoring Format (AAF), a cross-platform digital media interchange spec under development by a group of content providers including **Microsoft** (www.microsoft.com), **Digidesign** (www.digidesign.com) and Digi parent **Avid Technology** (www.avid.com). Avid has licensed selected portions of its Open Media Framework Interchange (OMFI) to the working group. Expect more on this over the coming months. In other Digidesign news, the company announced support for Avid's MediaShare F/C Fibre Channel workgroup storage solution, which allows shared real-time access of audio, video and

THE MIRAGE

liance with developers providing HDSP high-density audio and surround sound technology plug-ins. Initial partners include George Massenburg Labs, Metric Halo, Pacific Microsonics, POW-r Consortium and Spatializer; more to come at AES Amsterdam.

Sonic Solutions was giving Opcode's (www.opcode.com) Studio Vision Pro software free to people who knew what MIDI stood for—but never ran out of copies. (You shoulda been there!) So clearly, there's room for better audio awareness in many areas of the broadcast industry. Yet we're starting to see increased audio support from developers of video-oriented workstations: Silicon Graphics (www.sgi.com) says its Nuendo system is almost out of beta; and Media 100's (www.media100.com) Version 4.5 for Mac now has real-time, 3-band EQ, multiple filters and updated audio metering.



Graham-Patten's big digital prototype

session files over a multi-user network. And although testing focus will be on MediaShare F/C, Pro Tools is designed to integrate many storage subsystem platforms, and Digi is providing manufacturers with compatibility evaluation tools.

Sonic Solutions (www.sonicolutions.com) introduced its HDSP Plug-In Processor, designed to deliver multichannel 24-bit, 88.2/96kHz and 192kHz high-density audio, plus a family of products supporting high-density technology. Debuts included a High Density Mastering Workstation with eight tracks of 96kHz/24-bit audio and NoNoise tools, a CD Mastering Workstation offering 16 24-bit/48kHz I/O channels (expandable to support high-density and surround sound audio) and a high-density multichannel I/O supporting resolutions up to 24 bit/192 kHz. Just announced, Sonic's HDSP Partners is an al-

Popular with classical engineers, the OMX 24 MkII optical disk recorder from Holland's Augan (www.sascom.com) has been used in high-end applications in Europe since 1992, most notably at Deutsche Gramophon. This self-contained, stand-alone system offers 24 tracks of 24-bit recording/editing and is linkable (up to 24 systems controlled from the RC-48 remote) and networkable. Now, with Sascom's distribution, it's likely to gain popularity in the States. Hans Zimmer reportedly used a 24-track system to record a London orchestra direct for an upcoming DreamWorks project.

New at WaveFrame (www.waveframe.com) was the Version 6.2 upgrade for its 401, 408, DCS and the recently introduced 408 Plus systems. The new software features enhanced support for file exchange, plus faster waveform display, improved network support and support for multichannel digital I/O via AES/EBU pairs. WaveFrame also introduced the DIO-8 I/O board, which offers eight channels of I/O on AES/EBU; up to three boards can be accommodated in one system to provide up to 24 channels of I/O. Last but not least, the new R8-Plus board allows playback of eight channels over a SCSI bus and allows integration with a Tascam MMR-8 using a single cable.

Australian manufacturer DSP (Digital Studio Processing; www.dspl.com.au), which had a low-key presence at last year's AES, offers the Postation P family of modular, upgradable media production workstations with up to 32 tracks of recording, nondestructive editing, 80-channel digital mixing and fully integrated nonlinear video with a unique, ergonomic control

—CONTINUED ON PAGE 223

Augan OMX 24 MkII

Calrec Digital T Series



Going Wireless

What You Should Know Before Choosing a System

by Bill Sien

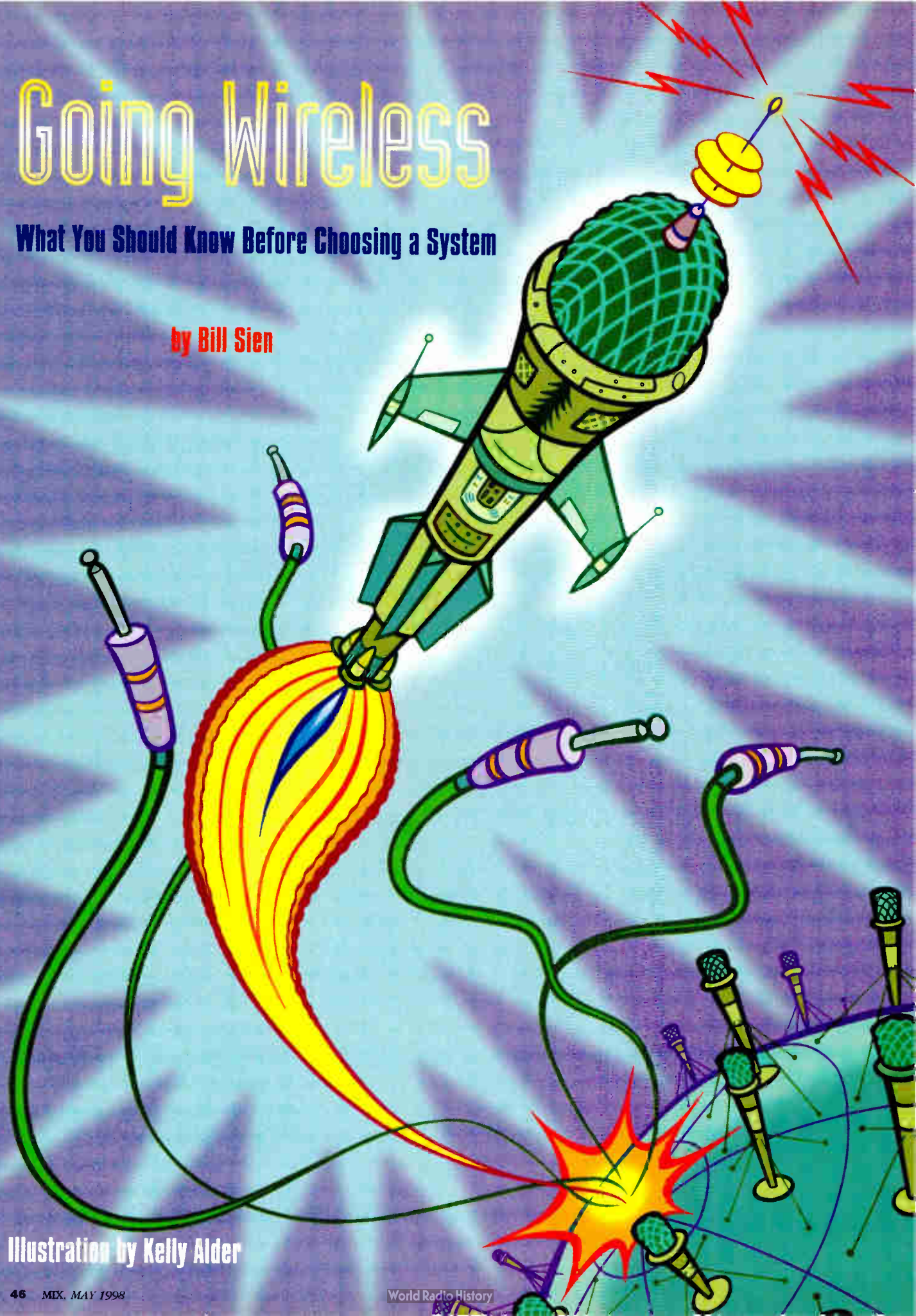


Illustration by Kelly Alder

There was a time when wireless microphones were luxury items reserved for the rich and famous, and even then they were only used as a last resort. In the beginning, cordless microphones had more snap, crackle and pop than breakfast cereal. They did, however, eliminate cumbersome cables, freeing performers to "do their thing" untethered. A generation later, RF technology has evolved and wireless microphones are now a serious option in pro sound applications; they are no longer difficult to use, unreliable or suffering from poor sound quality. Wireless mics are in daily use for television and motion pictures, onstage, in sports programming, concert sound and conference rooms, auditoriums and churches. And, yes, they are even becoming as common in the recording studio as they are on the nightly news. Wireless technology continues to expand beyond microphones and guitars to intercoms, MIDI systems and, more recently, in-ear monitors and even video. And you don't have to be rich or famous; there are now wireless systems in all price ranges.

IN THE BEGINNING

The road to successful wireless use has been bumpy. Early wireless microphones operated in the FM low band (26 to 50 MHz), and there were plenty of frequencies available at the time. At these lower frequencies, however, a quarter-wave antenna had to

be quite large, because antenna length is inversely proportional to the frequency. Dropouts and fades occurred over several feet due to the long wavelength, and RF output power was limited to about .001 watts, resulting in

minimal range.

Wireless microphones underwent a radical change by moving to the VHF high band (150 to 200MHz range). VHF allowed the quarter-wave antenna length to be reduced considerably.

DTV TABLE OF ALLOTMENTS FOR TEN MAJOR U.S. CITIES

| CITY | NTSC | DTV | MHz | CITY | NTSC | DTV | MHz |
|-------------|---------|---------|----------|---------------|--------------|---------|---------|
| Atlanta | 2 | 39 | 620-626 | Los Angeles | 2 | 60 | 746-752 |
| | 5 | 27 | 548-554 | | 4 | 36 | 602-608 |
| | 11 | 10 | 192-198 | | 5 | 68 | 794-800 |
| | 17 | 20 | 506-512 | | 7 | 8 | 180-186 |
| | 30 | 21 | 512-518 | | 9 | 43 | 644-650 |
| | 36 | 25 | 536-542 | | 11 | 65 | 776-782 |
| | 46 | 19 | 500-506 | | 13 | 66 | 782-788 |
| | 57 | 38 | 614-620 | | 22 | 42 | 638-644 |
| | 69 | 43 | 644-650 | | 28 | 59 | 740-746 |
| Boston | 2 | 19 | 500-506 | 34 | 35 | 596-602 | |
| | 4 | 30 | 566-572 | 58 | 41 | 632-638 | |
| | 5 | 20 | 506-512 | New York City | 2 | 56 | 722-728 |
| | 7 | 42 | 638-644 | | 4 | 28 | 554-560 |
| | 25 | 31 | 572-578 | | 5 | 44 | 650-656 |
| | 38 | 39 | 620-626 | | 7 | 45 | 656-662 |
| | 44 | 43 | 644-650 | | 11 | 33 | 584-590 |
| | 68 | 32 | 578-584 | | 25 | 24 | 530-536 |
| Chicago | 2 | 3 | 60-66 | | 31 | 30 | 566-572 |
| | 5 | 29 | 560-566 | | Philadelphia | 3 | 26 |
| | 7 | 52 | 698-704 | 6 | | 64 | 770-776 |
| | 9 | 19 | 500-506 | 10 | | 67 | 788-794 |
| | 11 | 47 | 668-674 | 17 | | 54 | 710-716 |
| | 20 | 21 | 512-518 | 26 | | 42 | 638-644 |
| | 26 | 27 | 548-554 | 35 | | 34 | 590-596 |
| | 32 | 31 | 572-578 | 57 | | 32 | 578-584 |
| | 38 | 43 | 644-650 | San Francisco | | 4 | 57 |
| 44 | 45 | 656-662 | 5 | | | 28 | 554-560 |
| Dallas | 4 | 35 | 596-602 | | 7 | 24 | 530-536 |
| | 8 | 9 | 186-192 | | 9 | 34 | 590-596 |
| | 13 | 14 | 470-476 | | 14 | 29 | 560-566 |
| | 27 | 36 | 602-608 | | 20 | 19 | 500-506 |
| | 33 | 32 | 578-584 | | 26 | 27 | 548-554 |
| | 39 | 40 | 626-632 | | 32 | 33 | 584-590 |
| | 58 | 45 | 656-662 | | 38 | 39 | 620-626 |
| | Detroit | 2 | 58 | 734-740 | 44 | 45 | 656-662 |
| 4 | | 45 | 656-662 | Washington | 4 | 48 | 674-682 |
| 7 | | 41 | 632-638 | | 5 | 6 | 82-88 |
| 20 | | 21 | 512-518 | | 7 | 39 | 620-626 |
| 50 | | 14 | 470-476 | | 9 | 34 | 590-596 |
| 56 | | 43 | 644-650 | | 20 | 35 | 596-602 |
| 62 | | 44 | 650-656 | | 26 | 27 | 548-554 |
| Denver | | 2 | 3 | | 60-66 | 32 | 33 |
| | 5 | 29 | 560-566 | | 50 | 51 | 692-698 |
| | 7 | 52 | 698-704 | San Diego | 3 | 26 | 542-548 |
| | 9 | 19 | 500-506 | | 6 | 64 | 770-776 |
| | 11 | 47 | 668-674 | | 10 | 67 | 788-794 |
| | 20 | 21 | 512-518 | | 17 | 54 | 710-716 |
| | 26 | 27 | 548-554 | | 26 | 42 | 638-644 |
| | 32 | 31 | 572-578 | | 35 | 34 | 590-596 |
| | 38 | 43 | 644-650 | | 57 | 32 | 578-584 |
| 44 | 45 | 656-662 | Houston | | 4 | 57 | 728-734 |
| 4 | 35 | 596-602 | | | 5 | 28 | 554-560 |
| 8 | 9 | 186-192 | | 7 | 24 | 530-536 | |
| 13 | 14 | 470-476 | | 9 | 34 | 590-596 | |
| 27 | 36 | 602-608 | | 14 | 29 | 560-566 | |
| 33 | 32 | 578-584 | | 20 | 19 | 500-506 | |
| 39 | 40 | 626-632 | | 26 | 27 | 548-554 | |
| 58 | 45 | 656-662 | | 32 | 33 | 584-590 | |
| Phoenix | 2 | 3 | | 60-66 | 38 | 39 | 620-626 |
| | 5 | 29 | 560-566 | 44 | 45 | 656-662 | |
| | 7 | 52 | 698-704 | Portland | 3 | 26 | 542-548 |
| | 9 | 19 | 500-506 | | 6 | 64 | 770-776 |
| | 11 | 47 | 668-674 | | 10 | 67 | 788-794 |
| | 20 | 21 | 512-518 | | 17 | 54 | 710-716 |
| | 26 | 27 | 548-554 | | 26 | 42 | 638-644 |
| | 32 | 31 | 572-578 | | 35 | 34 | 590-596 |
| | 38 | 43 | 644-650 | | 57 | 32 | 578-584 |
| 44 | 45 | 656-662 | San Jose | | 4 | 57 | 728-734 |
| 4 | 35 | 596-602 | | | 5 | 28 | 554-560 |
| 8 | 9 | 186-192 | | 7 | 24 | 530-536 | |
| 13 | 14 | 470-476 | | 9 | 34 | 590-596 | |
| 27 | 36 | 602-608 | | 14 | 29 | 560-566 | |
| 33 | 32 | 578-584 | | 20 | 19 | 500-506 | |
| 39 | 40 | 626-632 | | 26 | 27 | 548-554 | |
| 58 | 45 | 656-662 | | 32 | 33 | 584-590 | |
| San Antonio | 2 | 3 | | 60-66 | 38 | 39 | 620-626 |
| | 5 | 29 | 560-566 | 44 | 45 | 656-662 | |
| | 7 | 52 | 698-704 | Seattle | 3 | 26 | 542-548 |
| | 9 | 19 | 500-506 | | 6 | 64 | 770-776 |
| | 11 | 47 | 668-674 | | 10 | 67 | 788-794 |
| | 20 | 21 | 512-518 | | 17 | 54 | 710-716 |
| | 26 | 27 | 548-554 | | 26 | 42 | 638-644 |
| | 32 | 31 | 572-578 | | 35 | 34 | 590-596 |
| | 38 | 43 | 644-650 | | 57 | 32 | 578-584 |
| 44 | 45 | 656-662 | San Jose | | 4 | 57 | 728-734 |
| 4 | 35 | 596-602 | | | 5 | 28 | 554-560 |
| 8 | 9 | 186-192 | | 7 | 24 | 530-536 | |
| 13 | 14 | 470-476 | | 9 | 34 | 590-596 | |
| 27 | 36 | 602-608 | | 14 | 29 | 560-566 | |
| 33 | 32 | 578-584 | | 20 | 19 | 500-506 | |
| 39 | 40 | 626-632 | | 26 | 27 | 548-554 | |
| 58 | 45 | 656-662 | | 32 | 33 | 584-590 | |
| San Jose | 2 | 3 | | 60-66 | 38 | 39 | 620-626 |
| | 5 | 29 | 560-566 | 44 | 45 | 656-662 | |
| | 7 | 52 | 698-704 | Washington | 3 | 26 | 542-548 |
| | 9 | 19 | 500-506 | | 6 | 64 | 770-776 |
| | 11 | 47 | 668-674 | | 10 | 67 | 788-794 |
| | 20 | 21 | 512-518 | | 17 | 54 | 710-716 |
| | 26 | 27 | 548-554 | | 26 | 42 | 638-644 |
| | 32 | 31 | 572-578 | | 35 | 34 | 590-596 |
| | 38 | 43 | 644-650 | | 57 | 32 | 578-584 |
| 44 | 45 | 656-662 | San Jose | | 4 | 57 | 728-734 |
| 4 | 35 | 596-602 | | | 5 | 28 | 554-560 |
| 8 | 9 | 186-192 | | 7 | 24 | 530-536 | |
| 13 | 14 | 470-476 | | 9 | 34 | 590-596 | |
| 27 | 36 | 602-608 | | 14 | 29 | 560-566 | |
| 33 | 32 | 578-584 | | 20 | 19 | 500-506 | |
| 39 | 40 | 626-632 | | 26 | 27 | 548-554 | |
| 58 | 45 | 656-662 | | 32 | 33 | 584-590 | |
| San Jose | 2 | 3 | | 60-66 | 38 | 39 | 620-626 |
| | 5 | 29 | 560-566 | 44 | 45 | 656-662 | |
| | 7 | 52 | 698-704 | Washington | 3 | 26 | 542-548 |
| | 9 | 19 | 500-506 | | 6 | 64 | 770-776 |
| | 11 | 47 | 668-674 | | 10 | 67 | 788-794 |
| | 20 | 21 | 512-518 | | 17 | 54 | 710-716 |
| | 26 | 27 | 548-554 | | 26 | 42 | 638-644 |
| | 32 | 31 | 572-578 | | 35 | 34 | 590-596 |
| | 38 | 43 | 644-650 | | 57 | 32 | 578-584 |
| 44 | 45 | 656-662 | San Jose | | 4 | 57 | 728-734 |
| 4 | 35 | 596-602 | | | 5 | 28 | 554-560 |
| 8 | 9 | 186-192 | | 7 | 24 | 530-536 | |
| 13 | 14 | 470-476 | | 9 | 34 | 590-596 | |
| 27 | 36 | 602-608 | | 14 | 29 | 560-566 | |
| 33 | 32 | 578-584 | | 20 | 19 | 500-506 | |
| 39 | 40 | 626-632 | | 26 | 27 | 548-554 | |
| 58 | 45 | 656-662 | | 32 | 33 | 584-590 | |
| San Jose | 2 | 3 | | 60-66 | 38 | 39 | 620-626 |
| | 5 | 29 | 560-566 | 44 | 45 | 656-662 | |
| | 7 | 52 | 698-704 | Washington | 3 | 26 | 542-548 |
| | 9 | 19 | 500-506 | | 6 | 64 | 770-776 |
| | 11 | 47 | 668-674 | | 10 | 67 | 788-794 |
| | 20 | 21 | 512-518 | | 17 | 54 | 710-716 |
| | 26 | 27 | 548-554 | | 26 | 42 | 638-644 |
| | 32 | 31 | 572-578 | | 35 | 34 | 590-596 |
| | 38 | 43 | 644-650 | | 57 | 32 | 578-584 |
| 44 | 45 | 656-662 | San Jose | | 4 | 57 | 728-734 |
| 4 | 35 | 596-602 | | | 5 | 28 | 554-560 |
| 8 | 9 | 186-192 | | 7 | 24 | 530-536 | |
| 13 | 14 | 470-476 | | 9 | 34 | 590-596 | |
| 27 | 36 | 602-608 | | 14 | 29 | 560-566 | |
| 33 | 32 | 578-584 | | 20 | 19 | 500-506 | |
| 39 | 40 | 626-632 | | 26 | 27 | 548-554 | |
| 58 | 45 | 656-662 | | 32 | 33 | 584-590 | |
| San Jose | 2 | 3 | | 60-66 | 38 | 39 | 620-626 |
| | 5 | 29 | 560-566 | 44 | 45 | 656-662 | |
| | 7 | 52 | 698-704 | Washington | 3 | 26 | 542-548 |
| | 9 | 19 | 500-506 | | 6 | 64 | 770-776 |
| | 11 | 47 | 668-674 | | 10 | 67 | 788-794 |
| | 20 | 21 | 512-518 | | 17 | 54 | 710-716 |
| | 26 | 27 | 548-554 | | 26 | 42 | 638-644 |
| | 32 | 31 | 572-578 | | 35 | 34 | 590-596 |
| | 38 | 43 | 644-650 | | 57 | 32 | 578-584 |
| 44 | 45 | 656-662 | San Jose | | 4 | 57 | 728-734 |
| 4 | 35 | 596-602 | | | 5 | 28 | 554-560 |
| 8 | 9 | 186-192 | | 7 | 24 | 530-536 | |
| 13 | 14 | 470-476 | | 9 | 34 | 590-596 | |
| 27 | 36 | 602-608 | | 14 | 29 | 560-566 | |
| 33 | 32 | 578-584 | | 20 | 19 | 500-506 | |
| 39 | 40 | 626-632 | | 26 | 27 | 548-554 | |
| 58 | 45 | 656-662 | | 32 | 33 | 584-590 | |

A complete listing of NTSC and DTV frequency allotments for every U.S. city may be found in the FCC document 6th Report and Order on MM Docket No. 87-268; FCC 97-115, which is downloadable from the FCC Web page at www.fcc.gov/dtv. Note: all information is subject to change.



WHEN ALL YOU WANNA DO IS PLAY

Stack It...



Rack It...



Hang It...



Patch It...



It doesn't get any easier than that

Call

1-800-TAYTRIX

When All You Wanna Do Is Play

Pre-fabricated Studio Accessories

Stackit modular gobo system

Studio furniture -Acoustical panels

Cables and patchbays

<http://www.taytrix.com>

CIRCLE #023 ON PRODUCT INFO CARD

WIRELESS ON TOUR

WHAT TO EXPECT IN THE NEXT FEW YEARS

BY MARK FRINK

Despite licensing and regulation, nobody actually owns the air. At the Super Bowl last January, everything was planned and working just fine for a week. Then, during the dress rehearsal, someone turned on a broad-band wireless video transmitter—illegal and not FCC-type accepted—and “stepped on” all the wireless in the stadium. Every handheld mic, RF intercom, in-ear monitor, NBC’s communication and NFL Films’ wireless mics became unusable.

Uncoordinated transmissions can affect an entire production. Quick action by the AudioTek (Burbank, Calif.) crew identified the source and cleared the air at San Diego’s Qualcomm Stadium, but not without a few harried moments. Preparation, it seems, paid off.

The RF engineer on AudioTek’s 40-person audio crew was ex-Navy submariner James Stoffo, trained in a world where wireless is suspect and vulnerable. (Besides RF field services, Stoffo’s company, Professional Wireless Systems of Orlando, does rentals, repairs and tech support, including frequency changes.) It seemed the perfect opportunity to interview a man whose daily chores revolve around getting wireless to work in the most trying circumstances. *Mix* asked Stoffo to look into his crystal ball and pull out a few pearls for the casual user of wireless audio. “We are going to see a difference in the way wireless systems are manufactured and sold over the next year or two,” he predicts. “People who don’t respond to the coming changes will have unusable wireless.”

NEW UHF TRANSMISSIONS

“There are 1,600 TV stations scheduled to light off a parallel transmission of their programming in the new DTV format at a second, new frequency sometime before 2006, but primary markets are mandated to transmit by November of ‘98, or they may forfeit and another broadcaster pick it up,” Stoffo points out. “New



RF engineer James Stoffo at the Super Bowl

York, L.A., Chicago, Dallas, Atlanta—name all the big cities in America and there will be digital TV transmission on new frequencies before the end of the year.”

These are stops on every major tour. Even if the shed you’re playing is an hour from downtown, you’ll still be out of action at these new frequencies. “A 50-milliwatt RF microphone can’t compete with one 100-kilowatt television station,” Stoffo warns. “Some people just can’t believe that the FCC would let broadcasters come in and step on thousands of wireless mics. But you have to realize that wireless mics are secondary users of the airwaves and must steer around the broadcast of television and other licensed primary users.”

The 470 to 512MHz band is up in the air and may be reallocated to high-power business-band carriers that are 25 to 100 watts—enough to flatten a wireless mic. Above 750 MHz, high-power repeaters for state and federal governments are scheduled. It’s going to be important for touring applications to carry frequency-agile equipment of between 512 and 750 MHz, or at least make sure crystal-controlled, fixed-fre-

SENNHEISER
defining sound



*We've been listening to you.
We've heard what you said.*

Now come and hear the results.

Welcome to a dynamic revolution. Sennheiser's Evolution Series introduces completely new standards of microphone performance at remarkably affordable prices.

Meeting every possible requirement – from vocals to acoustic instruments, percussion and instrument amplification – the Evolution Series has been created after extensive research into the needs of today's musician. These remarkable microphones represent our state-of-the-art response to your explicit demands for superior performance, reliability and value. Evolution combines Sennheiser's immense experience in microphone design with the latest advances in manufacturing and material technologies.

- ⓔ Amazing SPL: in excess of 150dB on all models.
- ⓔ Outstanding feedback rejection.
- ⓔ Advanced shock-mount design minimizes handling noise.
- ⓔ Rugged road-proof construction.
- ⓔ Designed and built in Germany.

...and they sound great!

Dynamic microphones will never be the same. Visit your Sennheiser dealer and experience the Evolution revolution.

evolution
The Microphone Series

Sennheiser Electronic Corporation, 1 Enterprise Drive, PO Box 987, Old Lyme, CT 06371. Tel: 860-434-9190. Fax: 860-434-1759. Web: <http://www.sennheiserusa.com>
Sennheiser Mexico: Av. Xola 613, PH6, Col. Del Valle 03300, Mexico, DF. Tel: (525) 639-0556. Fax: (525) 639-9482. **Sennheiser Canada**: 221 Labrosse Ave, Pte-Claire, PQ H9R 1A3. Tel: 514-425-3013. Fax: 514-426-3953.
Manufacturing Plant: AM Labor 1, 30900 Wedemark, Germany.

World Radio History

CIRCLE 200 ON READER SERVICE CARD

quency wireless is not operating in frequencies scheduled for local DTV transmissions or other new broadcast services.

These changes will hit touring wireless the hardest because the acts are in different cities every week. Many manufacturers make frequency-agile equipment that can operate on 16 or more frequencies within a band of up to 40 MHz. A television band is only 6 MHz wide, whether digital or analog, so if your window is 24 to 40 MHz wide, there's probably a clear spot. "TV stations are rarely going to stack next to each other on adjacent channels because of the guardband that must be maintained between each," Stoffo points out. "You'll still have to punch in an intermod study to determine interaction at that frequency of the various broadcasters in the area, but at least you have a place to go." If you have fixed-frequency units on tour, you'd better carry at least one spare for every system.

More UHF than VHF DTV stations will be "lighting off" in the next few years. "For a long time everyone was getting away from VHF and the buzzword was UHF," Stoffo comments. "I think you might see people wanting to hop back down to VHF in a few years because that's where clear channels are going to be." Most VHF equipment is lower-end, generally for churches or schools, and it's not likely to interfere with professional systems at any great distance.

DIRECTIONAL ANTENNA

The other side of the equation is focusing in on your RF action to get the right signals into your receiver. One tip is to employ directional antennae, which have 10 dB of forward gain and 30 dB of backward rejection, to focus reception on the stage area where the transmitters are operated. Like a shotgun microphone, even if you don't need the forward gain, the rejection properties can be used to avoid interference. Though no one makes them specifically for wireless mics, antennae from ham radio and television suppliers can be modified. A directional antenna looks like a smaller version of the old TV aerials you'd see on rooftops back before cable and dishes, with a main axis and graduated-length cross-members.

"I never use an omnidirectional antenna, except for scanning—I have



RF antennae at Superbowl

an inventory of gain-antennae that's tuned to cover every possible frequency," Stoffo says. "If you're touring, get directional antennae tuned to cover your frequencies. If you have 16 wireless mics in the same group, you might only need a pair to cover those frequencies. If you have a directional antenna and you aim it at the transmitter, you're going to have a better-sounding signal and less of a chance of drop-out or interference than if you had an omnidirectional antenna. For a few hundred bucks, your performance may increase 50 percent by changing the antenna and no other component."

OTHER WIRELESS ACCESSORIES

Active antenna splitters can also contribute to the noise floor. "Instead of putting an RF amplifier in my splitter, I use a directional antenna, which has passive gain, along with a passive splitter, so there's no increase in the noise floor," Stoffo explains. "This gives the best signal-to-noise." Just by going to a passive-gain antenna and no RF amplification on the same system, the performance is going to improve. "I have dozens of directional antennas but only a couple of omnis, which I only use with my handheld scanner to sweep a site and check for interference."

Touring personnel may want to carry a scanner. A scanner is the

user's window into the RF world. "You can see signal strength at each frequency," Stoffo comments. "A really killer handheld scanner that can see from 100 kHz to 1 gig might cost you \$750." Scanners have FM demodulators, so you can listen to the offending signal. If you also carry a wide-band log-periodic directional antenna, you can then DF (direction-find) any problems. "When you know where interference is coming from, you can orient the directional antenna on your wireless so that its back, where its rejection is highest, is toward the interference," Stoffo explains. "Even with a crystal-controlled system, where you can't change frequencies, you can use a directional antenna to steer away from problems."

In addition, you'll want to carry low-loss cable for the antennae. "UHF is really lossy, so you have to have good cable, not RG-58," Stoffo says. He recommends RG-8 or RG-213—thick, low-loss poly-foam cable that is rated for 750 meg. "RG-58 loses about 14 dB per hundred feet, and some transmitters only put out 15 dB, so if you ran a hundred feet, there'd be nothing left." You can buy RG-8 from ham radio outlets. At Radio Shack, it comes with PL-259 connectors which are "lossy" at UHF, so you'll want to cut those off and crimp on BNCs.

Wireless operators will have higher RF hurdles in the future. With the advent of new UHF transmissions in the air, it's becoming a different world out there. Stoffo's company, Professional Wireless Systems of Orlando, publishes technical papers and puts on seminars, like the recent "Wireless applications and how DTV will affect wireless systems." Users with specific questions for Stoffo can get in touch with him at jsrfguy@aol.com.

"A lot of people in the audio industry don't know what's going on right now," Stoffo concludes. "If you own three wireless systems, chances are that one of them is going to stop working." You can make the equipment that you have work, but you need to do a little more planning. RF sweeps and frequency coordination will become more of a necessity because there will be more RF traffic. No longer can you simply put in fresh batteries and hope for the best. ■

STUDER

S-VHS

20-BIT TAPE RECORDER

1 IN PT: 98

- The V-Eight is an 8-channel, 20-bit digital recorder in the ADAT™ II format with S-VHS cassettes.
- Backward compatibility with 16-bit systems; up to 60 minutes of linear 20-bit audio recording.
 - Rugged, three-motor professional tape deck with gentle tape handling and rapid access.
 - Integrated Monitor Mix function permits simultaneous headphone and monitor mixdown.
 - Aux track I/O: additional input/output for audio in JOG/Shuttle mode.
 - Digital I/O: 8-channel Alesis™ optical I/O (ADIF); optional 8-channel AES/EBU-3.
 - Eminently designed for world-class studio recording.

STUDER

PROFESSIONAL AUDIO EQUIPMENT

H A Harman International Company

Nashville: 615/360-0465 New York: 212/807-0377 Los Angeles: 818/703-1100 Canada: 416/510-1347 Worldwide: Regensdorf, Switzerland +41 (0) 1 870 75 11
Email: studerinfo@harman.com Web: <http://lis.cemet.ch/studer>
World Radio History

Legal frequencies within the VHF band were 150 to 160 MHz and were shared with higher-powered (1 to 30-watt) two-way radios. Maximum output was limited to .05 watts for wireless microphones, with the result that many systems were operated in unauthorized portions of the VHF high band. In the late '70s, the Federal Communications Commission allowed those engaged in the production of television or motion pictures to operate between 174 and 216 MHz (television channels 7 through 13) as secondary users, meaning they could not cause an interference for a primary user (broadcast station). In general, secondary users could operate on any unused TV channel since in a given city, no two adjacent channels are used for TV broadcasting. In addition, the location of any potentially interfering source (TV stations) was clearly defined.

Later, the FCC set aside eight frequencies between 169 and 172 MHz for wireless microphone use. However, potential users were "unprotected from interference from other licensed operations in the band," and the primary licensed users included many business and government operations

with relatively high-power transmitters. Further, only two or three of these eight frequencies will work together in close proximity.

As airwaves became increasingly crowded, manufacturers began to design systems in the UHF band (450 to 900 MHz). On December 29, 1986, the FCC opened up more frequencies by authorizing wireless microphones to operate on VHF low-band TV channels 2 through 6 and UHF channels 14 through 69. The FCC also removed the previous limitations on the use of VHF frequencies. The output power of transmitters operating in the UHF band was increased to .25 watts, much higher than the power allowed in the VHF band.

MORE CHANGES IN THE LAW

Today, most professional systems operate in the UHF band. UHF offers much more available bandwidth, and the potential for RF interference is less. But change is again in the air. Congress is in the process of reclaiming portions of the UHF-TV spectrum in preparation for the introduction of digital television (DTV), and also as a method for balancing the Federal budget. The Balanced Budget Agreement

of 1997, signed by President Clinton this past summer, calls for the reallocation of the spectrum currently occupied by UHF channels 60 to 69 (746 to 806 MHz).

The FCC's January 6, 1998, ruling (ET Docket No. 97-157) allocates frequencies 764 to 776 MHz and 794 to 806 MHz to the fixed and mobile services, and designates this spectrum for public safety use on a primary basis. The remaining frequencies, 746 to 764 MHz and 776 to 794 MHz are allocated to the fixed mobile and new broadcasting services for commercial use on a primary basis. The FCC also assures the continued protection of all of these frequencies (TV channels 60 through 69) on a secondary basis for low-power TV and translator stations through the year 2006, the end of the projected DTV transition period. The FCC has made these changes in order to alleviate what it sees as a critical shortage of public safety spectrum, to make new technologies and services available to the American public and to promote more efficient use of this spectrum.

The ruling will have a negative impact on wireless users in this band even though the FCC will continue to allow

The world's finest digital recorder is the one you already own.



24-bit performance for your MDM! Record 16 or 20 bits with UV22...

Tascam TDFI...

...or 24 bits with Bit Splitting. Easy transfer between MDM formats!

...ADAT Optical



NOW, your modular digital multi-track can out-perform the world's finest digital recorders — simply add Apogee's AD-8000 converter!

The AD-8000 is a true 24-bit system with eight channels of the highest quality conversion you've ever heard — and it's packed with features.

Optional ADAT® and TDFI (Tascam®) AMBus cards connect



direct to your MDM. Convert digitally between installed formats, including AES & S/PDIF. Other interfaces also available.

Apogee's acclaimed UV22 delivers flawless translation of high-resolution 24-bit signals to 16- and 20-bit for MDMs, while SoftLimit adds "analog-like" punch into your recordings. Optional 2- and 8-channel 24-bit D/A cards complete the picture.

You already own the world's finest 24-bit ready digital recorder: your existing MDM, with an Apogee AD-8000. Try it today at your Apogee authorized dealer.



Apogee Electronics Corporation, 3145 Donald Douglas Loop South, Santa Monica, CA 90405, USA.

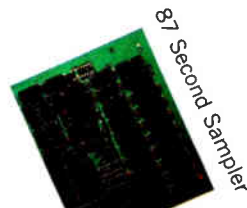
Tel: +1 310/915-1000 Fax: +1 310/391-6262. Email: info@apogeodigital.com.

UV22 & Soft Limit are registered trademarks of Apogee Electronics Corp.

ADAT is a registered trademark of Alesis Studio Electronics Inc. TASCAM is a registered trademark of TEAC Corporation.

CIRCLE #026 ON PRODUCT INFO CARD

It's All In There.



Recipe For Greatness:

Start with the TEC Award-winning Eventide DSP4000 Studio Ultra-Harmonizer® brand effects processor, the unit which revolutionized effects processing with its power and musicality. Its flexible algorithm "building block" architecture is now further enhanced with free PC software which lets you create totally new effects right from your PC screen. *Wait, you're just getting started.*

Add the hundreds of program presets from the world's only professional guitar processor, Eventide's GTR4000. Don't forget to include the custom "virtual pedalboards", the Artist's Preset collection, the ground-breaking Colouration and Blend Distortion programs and the GTR4000's Effects Templates, for unlimited versatility. *Now you're cookin'.*

Next, add all the unique programs for post-production, radio and television applications created by sound designer Jay Rose for the Eventide DSP4000B. Unique sound environments, fantasy voices, pre-programmed sound effects, and superb quality Timesqueeze® stereo time compression and expansion are all part of the package. *But don't stop yet.*

Also include Scott Gilfix's new Alchemy 101 collection, an amazing, never-before-heard library of 225 program presets and audio tools. *Wow! You're up to 1000+ program presets in all. But you're still not through.*

Top it all off with a versatile, internal 87 second sampler. Sounds captured by the sampler can be combined within many DSP4500 presets. Several samples can be



stacked within the unit and independently edited, pitch shifted and/or time compressed or expanded. Tap tempo looping, advanced stereo looping, and multiple looping capabilities are included.

Now you've got it: Eventide's great new, limited edition DSP4500 Ultra-Harmonizer. You just read what makes it so great. But what makes it a limited edition? Eventide has priced the DSP4500 to be an exceptional value. So exceptional that the number of DSP4500 units to be produced must be limited. *(You'd pay thousands of dollars more if you bought a DSP4000, all the add-in program preset cards and the internal sampler separately.)*

The Eventide DSP4500 Ultra-Harmonizer brand effects processor; it's *three* of the most versatile, most musical, most creative, most programmable signal processors ever built. It's over 1000 sonically impeccable program presets, plus the ability to create your own. It's the power of a built-in sampler. It's the greatest value ever in a professional processor for recording studios, live performance, radio and TV stations and post-production facilities. But most of all, it's the box that shatters all previous limits to give you that extra edge. Call Eventide at 201-641-1200 and we'll tell you where you can see, hear and buy the DSP4500.

Eventide
the next step

One Alsan Way, Little Ferry, NJ 07643 Tel: 201-641-1200 Fax: 201-641-1640
Email: audio@eventide.com Web: www.eventide.com

CIRCLE #027 ON PRODUCT INFO CARD

wireless microphone users to operate on these frequencies indefinitely. Until now, we knew the location of all the users of these frequencies, namely the TV stations. Under the new rules, there will be new additional users, many that will not be in fixed or well-defined locations. On the contrary, their location will be unknown until interference causes a problem. Furthermore, if past experience in the other bands is any indication, we can expect some users of two-way radios to operate without a license.

To further complicate the matter for wireless microphone users, each TV station will be given a second, new channel assignment during the DTV build-out phase for use along with the NTSC (analog) assignment. These frequencies are not well-known to most wireless users, so during the transition period, the potential for RF interference is quite high. The permanent Table of Allotments for digital television is still being worked on by the FCC's Office of Engineering & Technology and will in all likelihood be challenged, at least in part, by the Maximum Service Television group, which represents the network-owned and -operated stations, as well as affiliates.

One other recent development is a lesser-known change of the FCC rules that affects wireless microphone users in both VHF and UHF bands. On December 1, 1997, the FCC amended Part 15 of its rules to permit biomedical transmitters in health-care facilities to operate at increased power—and without a license—on the frequencies for DTV channels 7 through 13 (174 to 216 MHz) and 14 through 46 (470 to 668 MHz) on a secondary basis. For some time now, the FCC has permitted the operation of biomedical telemetry devices in the 174 to 216MHz band, 450 to 470MHz band and in the 512 to 566MHz band, though the FCC generally has not permitted unlicensed Part 15 devices within any television bands before. Biomedical telemetry devices permit patients to move around in health care facilities while their vital signs are monitored remotely.

FREQUENCY COORDINATION

So what's the solution for the wireless microphone user who needs multiple systems that only have an output power of .25 watts in the UHF band or .05 watts in the VHF band? First, it would be advisable to stay away from any of

the frequencies within UHF-TV channels 60 through 69 (764 to 806 MHz). Second, if operating near a health-care facility, check which frequencies, if any, are being used. Finally, and most important, do a thorough frequency coordination to ensure successful operation without RF interference.

Frequency coordination is the most important consideration aside from selecting the best wireless for the application. Depending on the RF environment and the number of systems, frequency coordination can be very complex and involves considerably more than just avoiding putting two systems on the same frequency (known as a direct hit). This task becomes especially complex when traveling to multiple cities. If you are renting and touring from city to city, the rental house that supplies the wireless should do the frequency coordination for you. If you are purchasing systems, your provider should supply you with compatible systems that will not cause problems. This may seem obvious, but it's surprising how many rental houses and suppliers don't have a grasp of what's involved in frequency coordination of multiple systems.

TL Audio
IVORY SERIES

5001 4 Channel Tube Mic Pre-Amp

5013 2 Channel Tube Parametric EQ

5021 2 Channel Tube Compressor

5050 Mono Tube Mic Pre-Amp & Compressor

5051 Mono Tube Voice Processor

- Tube Mic Preamp: Variable gain; 48v Phantom power; Low cut filter; Tube drive and peak LED's
- Tube EQ: Same as EQ1 - 4 bands with 4 frequencies per band; Bypassable & switchable pre or post compressor
- Tube Compressor / Expander Gate: Fully variable threshold, ratio & gain makeup; 4 attack / release times; Side chain insert
- Master Section: Output level control; VU meter reads output or gain reduction; stereo link

\$699

sascom DIRECT → Phone- (905) 827-9740 Fax (905) 469-1129

<http://www.sascom.com> E-mail: sales@sascom.com

CIRCLE #028 ON PRODUCT INFO CARD

World Radio History

" Euphonix is the future of mixing consoles - the specific combination of digital control and the high-quality analog signal path rivals traditional consoles that are noted for their sound and far surpasses other consoles that have sacrificed some sound quality in favor of control."

Mark Isham, Film Composer
Night Falls on Manhattan, Michael Hayes,
Gingerbread Man

" Given what we were looking for, along with dependability and signal quality, there was really only one choice for Westwind - the Euphonix CS3000."

Todd Langner of Westwind Media
Brooklyn South, Total Securities, Bella Mafia,
Under Wraps, Magnificent Seven

" The Euphonix sounds incredible and it has all the technology of tomorrow's console - it can do so many things that no other console can."

Chuck Howard of Curb Studios
Hal Ketchum, Wynonna, Eddie Arnold,
Blake & Brian

www.euphonix.com

CS3000

World Headquarters Tel: (650) 855 0400
Nashville (Central US) Tel: (615) 327 2933

Los Angeles (West US) Tel: (818) 766 1666
London (Europe) Tel: (171) 602 4575
World Radio History

New York (East US) Tel: (212) 302 0696
Tokyo (Japan) Tel: (03) 3288 4423

Euphonix
digital control audio systems

Producers may run the show, but the fundamental decision as to whether to go wireless or wired often rests with the talent and/or engineer. "You really want to ask the talent how comfortable they are with a wired or a wireless microphone," observes Todd Hemleb, owner of Pyramid Recording Studios and a 25-year veteran of live and studio A-V productions. "Even though most of them are used to wireless and prefer them, you'd be surprised how many still like to have cabled microphones in a fixed location, or at least a handheld wireless mic. For some people, a wired microphone provides a sense of security. I've noticed that doctors don't seem to mind the wire; on the other hand, business executives will almost always want a wireless. So the type of talent you're working with provides the first clue as to which type of system to go with."

The next issue to consider would have to be audio quality, though the differences in wireless vs. wired systems have become almost undetectable in recent years, for certain applications. Handheld wireless micro-

WIRELESS IN TELEPRODUCTION

BY DAN DALEY

phones can have as large a diaphragm as their wired counterparts, and while lavaliers are small and their frequency response on average is not quite comparable to a wired version, most provide more than sufficient frequency coverage for voice work.

Most wireless lavaliers are condenser-type microphones, highly sensitive to lower sound pressure levels but more vulnerable to pressure spikes. The sound pressure levels of lavalier-wearing talent can vary widely (a particularly enthusiastic show moderator, for instance, vs. a quiet, bookish author), so comp/limiters inserted at the mixer are advisable. On some larger-budget productions, the audio tech might want to use both lavaliers and an overhead wired boom microphone to increase both the reliability of the audio signal to tape and intelligibility of the voices. (Phase is a concern in this situation: The lavalier and booms should have

at least a 90° angle between them.) But in regards to the fundamental arbiters of signal quality—frequency response and the ability to handle dynamic range—wireless microphones have come of age.

Because wireless systems are RF-dependent, their transmitters and receivers are vulnerable to the effects of other low-powered radio devices, metal—which can absorb or deflect radio waves—and moisture, which is often detectable by tell-tale crackling. Hemleb cautions that, when placing small wireless microphones, make sure there is no conductive material in contact with them. "I had a dancer/singer once who was wearing an angel costume," he recalls. "The signal was weak, and I couldn't figure out why until I realized that the transmitter was touching the metal brace that was holding up her halo, siphoning off signal strength." Other metallic items to watch out for, especially when placing transmitters into pockets, are heavy pens, cigarette cases and pocket change.

—CONTINUED ON PAGE 58

Reliable Remote Mixing

• Large calibrated VU meters for easy viewing in any light

• Slate Mic with a 20Hz tone



• High-volume Headphone Output for monitoring in loud environments

• 400 Hz Setup Tone

• Stereo Panning on each channel

• Plenty of Output Level



• 6-Position Headphone / Monitor select

• Balanced XLR Outputs



• Balanced XLR Inputs with Trim controls

• Stereo Headphone Output

• External Monitor Input

• Auxiliary Input

• Switchable +4/-25 dB Output Level

• 20 dB Pad switch on each channel

• Low-Cut switch on each channel

Introducing the new Rolls MX442 Field Mixer. The MX442 includes a built-in limiter, operates in mono or stereo, and it runs on two 9-volt batteries with an expected life of between 8 - 20 hours of operation depending on usage. Each XLR input has switchable +48 volt phantom power available, and the unit is housed in lightweight, sturdy aluminum. Price: \$1,100.



ROLLS CORPORATION
5143 South Main Street
Salt Lake City, UT 84107

(801) 263-9053 • FAX (801) 263-9068
email: rollsrfx@rolls.com • www.xmission.com/~rollsrfx

CIRCLE #030 ON PRODUCT INFO CARD

World Radio History

**You Love Them
For Their Live
Performance.**

LOS LOBOS

Los Lobos with their Shure Beta 58A microphones.

**They Love
Shure
Beta Microphones
For The Same
Reason.**



SHURE®

The Sound of Professionals...Worldwide.®

Shure Brothers Incorporated, 222 Hartrey Avenue Evanston, IL 60202-3696
Phone: 847-866-2200 Fax: 847-866-2279 Web Address: <http://www.shure.com>
In Europe, Phone: 49-7131-72140 Fax: 49-7131-721214
Outside Europe and the U.S., Phone: 847-866-2200 Fax: 847-866-2585

CIRCLE #031 ON PRODUCT INFO CARD
World Radio History

Frequency coordination can be broken down into two parts. The first includes all the frequencies on which each of the systems will operate. The second is the local RF environment. This includes TV stations, two-way radios, personal communication devices and all radio frequencies operating in the area where the wireless will be used.

Looking at the operating frequencies, most people understand that a single system can operate without any trouble and that if a second system is introduced, it's important to put it on a different frequency. How far apart should the second frequency be from

the first? It depends on the receivers. Better receivers have better selectivity. This means they can discern the frequency to which they are tuned better than lower-quality systems. The IF filtering is superior in better receivers because they use multiple filters and have a very high "Q," resulting in a narrow range of RF reception. Better receivers can operate as close as 1/2-MHz.

When a third system is introduced, a more complex interaction occurs. Called a third-order intermod, it's the result of the way RF transmissions interact. When systems operate in prox-

—CONTINUED ON PAGE 236

—FROM PAGE 56, TELEPRODUCTION

The frequency-dependence of wireless microphones is their greatest vulnerability. In an increasingly wireless world, there are lots of other systems and devices operating in the ether. The frequencies of a transmitter/receiver set from the same wireless microphone manufacturer are matched, and multiple microphone systems require multiple frequencies. But what if those frequencies happen to be the same—or nearly the same—as those in use by any number of other nearby operations, ranging from hotel security to government operations? (Keep in mind that cell phones and some local television broadcasts operate in the UHF band, between 800 and 900 MHz; broadcast radio is in the VHF spectrum.) Many manufacturers, in response, provide frequency-selectable systems—up to 16 channels.

RF interference is characterized by symptoms like drop-outs, other transmissions picked up by the wireless receiver, thuds or thumps, and other sonic anomalies. There are also so-called dead spots in many venues, areas in which physical objects interfere with the transmitted signal. Sometimes low-hanging metal grids for lights or other objects can form a partial, unintentional version of a Faraday cage, which is a metal grid intended to keep RF out of an environment. Engineers suggest walking the areas to be shot with the microphone on, having a colleague monitor the receiver and checking for dead spots and for crossing frequencies from other systems.

Neighboring frequencies can be checked beforehand, in many instances using production guides published locally, an approach highly recommended by many engineers who have worked in the Washington, D.C., area, which they will tell you is an RF nightmare thanks to the plethora of unregistered frequencies in use by government security agencies. Another potential problem to watch for is another production using another room in the same venue, such as a hotel. Coordinating with colleagues is a lot easier than asking a CIA spook to switch channels. Mario

—CONTINUED ON PAGE 236

"...the meek shall inherit the earth."

VC3 PRO CHANNEL
\$399



VC6 MEEKBOX \$599



VC5 MEEQUALIZER \$599



VC4 STEREO ENHANCER \$599



VC1 STUDIO CHANNEL \$1099



VC2 TUBE CHANNEL \$1999



SC2 STEREO COMPRESSOR \$1999



SC3 DAD STEREO COMPRESSOR \$2799

JOEMEEK

Our Sound Comes From A Higher Source
Got Meek?



JOEMEEK distributed by PMI 23773 Madison St., Torrance, CA 90505
voice 310 373 9129 facsimile 310 373 4714 website www.joemEEK.com

CIRCLE #032 ON PRODUCT INFO CARD

ALESIS SIGNAL PROCESSING

A Different Slant on Reverb



As a new sports car beckons you to the open road, the Wedge's totally unique desktop design makes creating great reverb a breeze. It's the first reverb that's fun to drive.



Just push the Wedge's edit button and start adjusting your reverb with the four edit sliders. It's easy to get creative with the Wedge's powerful parameters like decay, frequency damping, swirl, early reflection room shape, width, density and diffusion.

For as long as effects processors have been bolted into racks, customizing your reverb sound has been about as much fun as setting the time on a digital watch. But the Alesis Wedge™ offers an ingenious new angle to the way you approach reverb and ambient effects.

Unlike racked effects, the Wedge is a dedicated Desktop Master Reverb, cleverly designed to be used on or near a mixing console where you do your most critical listening... in the sweet spot of your mix. And with four edit sliders to access several effects parameters at once, you'll find yourself tweaking aspects of your sound you would never dream of editing in a rackmount box. Result: more inspiration for recording and mixing, and less limitation on your creativity.

There's more to the Wedge than its great design, like all-new algorithms that represent the finest, most detailed, best-sounding reverb you've ever heard, especially in an affordable processor. Don't limit yourself to the rack; instead, think differently and try out a new slant on reverb. The Wedge. At your Alesis Dealer now.



Instead of using a snare drum to set up your reverb, the Wedge offers the innovative Impulse Audition™ feature, which sends a full bandwidth audio signal to help you get flawless reverb for every application.



WEDGE™
DESKTOP MASTER REVERB W/IMPULSE AUDITION

If you're on the net, check out the special Wedge page with audio files at www.alesis.com/wedge. For more information on the Wedge Desktop Master Reverb, see your Authorized Alesis Dealer or call 800-5-ALESIS. © Wedge and Impulse Audition are trademarks of Alesis Corporation.

Alesis Corporation

1633 26th Street Santa Monica CA 90404 800-5-ALESIS recept@alesis.com www.alesis.com

ALESIS

CIRCLE #024 ON PRODUCT INFO CARD

BJÖRK

STRINGS AND BEATS

The Icelandic singer/songwriter Björk can be quite enigmatic. Her lyrics combine the worldly maturity of an adult with the wide-eyed wonder and blunt honesty of a child. The *Trouser Press* guide to alternative music calls her “an elfin character whose range of pitch is only surpassed by her range of emotions: One moment she’s a little girl soprano; the very next, she’s growling like a crazed animal about to go for the kill.” Her music reflects her sense of extremes, too. Her third and latest solo disc, *Homogenic* (Elektra), offers a sympathetic merging of strings and beats, a symbiotic blend of classical and electronica. Purists from those camps might not approve of such a union—despite the fact that Björk tries to maintain the purity of each of her sources—but since the late '80s, when she first gained popularity as frontperson for The Sugarcubes, her music has always been groundbreaking and somewhat controversial. She is that rare artist who has devised a musical language that is hers alone.

On *Homogenic*, Björk acted as co-producer with collaborator Mark Bell from LFO. Self-production is not new to Björk—she co-produced many of the songs on her *Post* album, as well as one tune on *Debut*. The benefit of her producing is that she is able to maintain her own vision with minimal interference. Interestingly enough, Björk has professed respect for artists who make music for a mass market; she feels that she’s a bit selfish in wanting to make music mostly for herself. But it is her ability to communicate her thoughts and feelings that allows this sometimes eccentric artist to connect with so many listeners. She may or may not ever have a mass following of her own—stranger things have happened, to be sure—but hearing her musical evolution has so far been both fascinating and rewarding.



How did you work with Mark Bell?

I did the first pieces as very scruffy versions—sort of demos with my equipment—and then he would come and make them flourish, make them a lot more detailed.

Did you have a lot planned beforehand, or did you experiment a lot in the studio together?

I had a skeleton of the album ready, but it was a very rough sketch—the songs, the beats. I had done string arrangements just on the computer. It was perhaps five or six songs. The original idea was to have the strings on the left and the beats on the right and the voice in the middle, like when they first invented stereo. So with just the balance button in their own house, people could decide if they wanted more of the strings or the beats or both. That was one of these things which was a good theory and probably a

good way to get us going to the direction...It was like a good hint to where we were heading. We decided not to do that. Now it's very middle-based.

“The Hunter” has a very orchestrated feel, and I like the fact that you have these very frenetic snare drums dancing along with slower strings. It’s organized but feels very chaotic at the same time. Many of the songs have such contrasts, particularly with many of the textures.

I knew beforehand what kind of beats were going to be the core of the album. They were going to be like explosions, like distorted explosions. I guess the song that shows it most is a song like “Joga.” So what we did is we got really organized. I was touring then—this might have been early '96—and I would come back and we would create several more beats and go. And Markus [Dravs, programmer

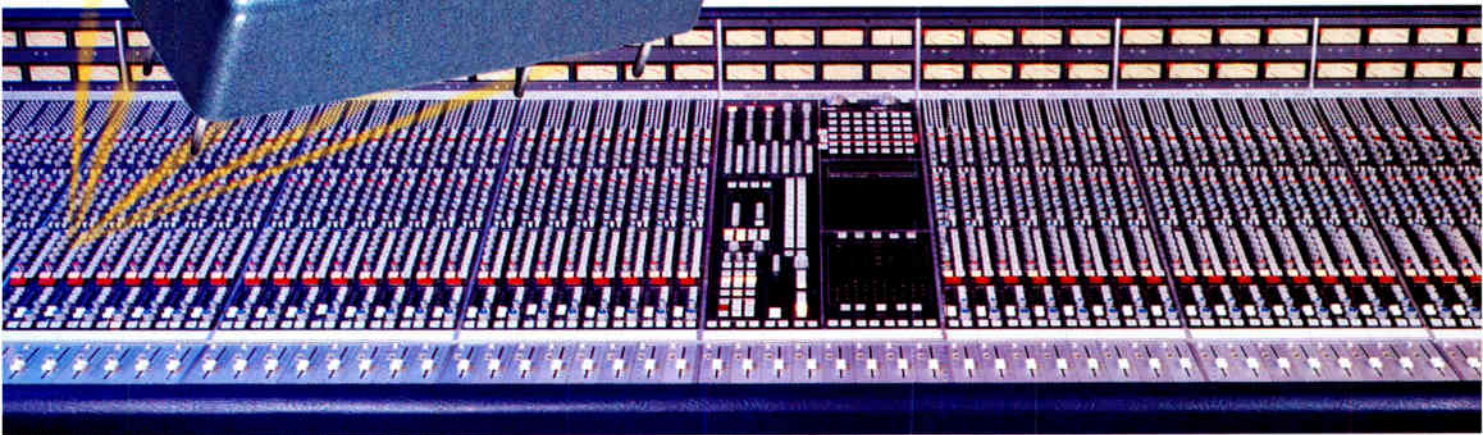
BY BRYAN REESMAN

SONIC BLUE

Introducing the THAT 2002 Modular VCA Upgrade for SSL Consoles



*Clarity
Transparency
Accuracy*



For over 10 years the engineers at THAT Corporation have been improving the sound of the world-famous 202 VCA. Each new 202 model has advanced the state of the art in sonic quality and performance...Well, the state of the art just took a big leap forward!

INTRODUCING THE BEST SOUNDING VCA ON THE PLANET - THE THAT 2002

With the lowest noise, lowest distortion and widest dynamic range of any 202-series VCA ever made, the THAT 2002 is not just about better technology or better specs - it's about better sound.

AVAILABLE AS AN UPGRADE FOR ALL 202 MODULAR VCAs

Regain that industry leading audio performance with the THAT 2002. Available as pin-for-pin upgrades for every 202 ever made. You and your clients will hear the improvement!

"THAT Corporation has outdone themselves with their new VCA module! With lower distortion and increased transparency, it is A&M's new standard for both the Recording and Mastering facilities."

Bob Borbonus, Asst. Studio Manager
A&M Recording and Mastering Studios

Give us a call or visit our web site for all the details.

THAT Corporation

MAKING GOOD SOUND BETTER™

THAT Corporation, founded by senior engineers from dbx, designs and manufactures high performance integrated circuits and products for the professional audio industry.

734 Forest Street, Marlborough, MA 01752 USA • Tel: 508-229-2500 • Fax: 508-229-2590 • www.thatcorp.com

The THAT 2002 is available to owners and operators of consoles from SSL, Neve, Sony, MCI, and Harrison.

CIRCLE #034 ON PRODUCT INFO CARD
World Radio History

THE MIX INTERVIEW

and engineer] would do research, and we slowly collected a library of a hundred beats that were like that. Then we would basically pick the ones we liked. *So you had a lot of different elements to work with.*

It was like these flavors—strings, beats and voices. Each thing had to have so many colors. It was almost important to be organized and scientific about it.

I've noticed, too, that the sound design seems very simple, but there are a lot of interesting little things going on. The basic elements add up to a lot more.

I did want it to be very stark. The album is very confrontational emotionally. It's the same thing when a mother tells her kid off. It's done with love, but it's: "Listen, there's a line there and don't cross it." That's the tone of the whole album. The noises had to be not nice. They had to say "wake up!" It's a warning, so people have to listen. It's like when you've said something ten times and people don't listen, and you say it one more time and you raise your voice just a bit. That's the idea of the album. *It's definitely very dramatic. In this country, people write more standard*

pop ballads, and you're taking that idea and making it very dramatic, especially with the strings.

You have become a very conservative country, and it's not too bad. Somebody has to be conservative.

Do you find that Europeans understand your music more?

The album is very confrontational emotionally. The noises had to be not nice. They had to say "wake up!" It's a warning, so people have to listen.

Yeah, definitely. But when I say that, I'm not saying I prefer Europeans; not at all. It's just two different points of view, and that's fair enough. There are a lot of things in America I don't understand, and that's probably why it excites

me. Like I go to New York, it's like the most alien place I've ever been. But I do love it; it turns me on so much. It pushes me to places I never...like I'm saying things and doing things and I don't even recognize myself. It's very exciting. I celebrate differences like this. *I've noticed that people here are more easily satisfied. If an artist here does something that's just a little bit different than what they normally do, people get very excited. Whereas what you're doing is radically different—you keep changing and redefining yourself on each record.*

I think countries are like human beings. They get very brave, and they make big jumps. And they tear themselves from all their past references, and sometimes it hurts maybe a little, but it's good. And then they rest, and they cuddle, and they heal. I'm not going to pretend I know about the States, because I don't, and it would be very hypocritical of me to pretend I do know, but it seems like you guys took a lot of jumps in the '40s and '50s and '60s—you invented rock 'n' roll, you invented space shuttles. Basically NASA and Elvis, isn't it? But I think you climaxed in the '50s and have become very stationary now and very

music products

V-RACK

rack-mounting dynamics and equaliser modules



33609/J

PRECISION STEREO LIMITER/COMPRESSOR

1081 CHANNEL AMPLIFIER

REBIRTH OF CLASSIC NEVE MIC AND EQ AMP



HEAD OFFICE – AMS Neve plc · Billington Road · Burnley · Lancs BB11 5UB · England

Tel: +44 (0) 1282 457011 · Fax: +44 (0) 1282 417282

NEW YORK – Tel: (212) 949 2324 · Fax: (212) 450 7339 HOLLYWOOD – Tel: (818) 753 8789

Fax: (818) 623 4839 TORONTO – Tel: (416) 365 3363 · Fax: (416) 365 1044

e-mail: enquiry@ams-neve.com – <http://www.ams-neve.com>

Toll Free: (888) 388-6383

CIRCLE #035 ON PRODUCT INFO CARD

State-of-the-Art, Discrete, Low Z Mic Preamp

Only \$41.67*

***when purchased in this convenient 12-Pack.**

Unity™ 2002-12 RQ

The RQ™ Series proves that high performance, state-of-the-art, microphone preamps can exist in groups larger than two! We use the same large geometry, Ultra low Rbb, discrete transistors as in our large format consoles. You could easily spend a lot more money for mic preamps, but since the RQ delivers a Noise Figure within 1.5 dB of perfect, you are not likely to find one for

Only \$49.99 per Mic Pre for the 8-pack

Unity™ 1002-8 RQ

Only \$43.75 per Mic Pre for the 16-pack

Unity™ 2002-16 RQ

any price that is **audibly** quieter. **Quiet is good.**

Only \$37.50 per Mic Pre when purchased by the full case

Unity™ 2002-24 RQ

Yet another benefit from our 32 years of designing mixers for professional users.

Prices are U.S. Suggested Retail Only. The MONITOR Magazine is a publication filled with the latest information musicians want to know. To receive 4 issues for only \$5 (price good in U.S. only), send check or money order to: Monitor Magazine, World Pacific Velocity



PEAVEY
Experience the Difference

conservative. Maybe in ten years you'll explode again.

Why did you decide to use a string octet so much on this record? What appealed to you about that?

I think with everyone—it doesn't matter what they do—if they have a period when they learn, then they have a period where they say, "Okay, I've learned, now it's my turn to make a statement about who I am." And this album was a little bit like that for me. I started off lyrically, say, with *The Sugarcubes*, and then on *Debut* and *Post*, my first two al-

bums, with arrangements a little bit, finding my own voice. Now this time around, it was my turn to go all the way, go to the whole structure, to the beats and everything. I think this is an attempt to find the core of me. I had to start from the beginning.

What I like most in music is beats, especially when they are done by the instruments that have got the most rhythm and most imagination—basically computers. And then I like strings. I've been trying to figure out why I like strings. They're cool. And with violins. I think our nerves move like the strings of a violin. That's my theory. And I

think when scientists have invented a good enough camera to put inside us and to photograph when we feel, they will see our nerves shiver a little bit. And when we really explode with emotion or heartbreak or we love so much, we will really go like this [imitates wildly throbbing strings].

But the human voice is still my favorite instrument, because you can't lie with it. It's so honest. You hear immediately what character a person is, what age a person is, and so on. What they've experienced, what they're feeling. I think we're all experts in the human voice without knowing it.

How did the song "Joga" evolve?

Well, I wrote the song about my best friend. Everybody should have one of those friends who you can call 24 hours and be abstract and they get it. We are basically emotionally married. I was in the middle of Iceland on Christmas, because I had overdosed on people, and I just had to be on my own. I was on my own for about a week, and we only had two hours of daylight. So I was doing very long walks, maybe ten hours a day over there in the ice and the mountains in the dark. I had been away from Iceland [for a long time], and I was missing it very much. And the person who was keeping me going was my friend. So it's sort of a love song to my friend but also to Iceland. I had a very magical moment where I walked for a very long time, and I came on top of a mountain and looked over a quarter of the island from that point. It was very strange weather—the heat had just increased about ten degrees over very few hours from minus to plus Celsius, so all the ice over an incredibly big area was melting. It was crackling like popcorn but echoing, a very strange noise. The clouds were very, very thick and very moist, like a blanket, but very low. And the cities—all my favorite little towns that I had been to as a girl—were mirrored in the clouds because they were so full of water. And the light from the light posts in all the cities was orange. Then above the clouds were the Northern Lights. It was just a very magical moment, both visually and emotionally, because this was the quarter of the country I loved so much. And to hear this sort of popcorn sound echoing over all this—it was really gorgeous. The beat [in the song "Joga"] is trying to be that, while the strings represent emotion.

Do you like the remixes and reinterpretations of your work that have been done?

Most of them, I've been really lucky,

"Eugen Beyer" founder of beyerdynamic, GmbH & Co. shown testing the World's First moving coil Headphones.

**A Bright Past...
A Brilliant Future**

Audio history. In 1937, beyerdynamic introduces the world's first moving coil stereo headphone, the legendary DT 48.

Audio future. In 1998, beyerdynamic introduces the world's first digital recording microphone, the MCD 100.

Established in 1924, beyerdynamic's legacy of innovation, fidelity and reliability is recognized and honored by audio professionals around the world.
73 years of audio excellence.

An ear to the past, an eye to the future.

beyerdynamic... *Fidelity in Audio.*™

beyerdynamic

for more information
1.800.293.4463
e-mail: salesUSA@beyerdynamic.com
56 Central Ave., Farmingdale, NY 11735

YAMAHA M3000.

LARGE FRAME CONSOLE AT A SMALL FRAME PRICE.

The Yamaha Sound Reinforcement Console line is legendary. From the PM1000 on, they have set the price/performance standard for the industry.

Now there is a new standard. The M3000.

With the diversity to serve as a front of house

or a monitor mixer or both simultaneously, it's ideally suited for fixed installations, houses of worship, theaters, night clubs and theme parks – not to mention concert and industrial gigs. Rental companies can reduce inventory costs! M3000 can mix FOH on Friday and monitors on Saturday. So there's no need to

stock both main and monitor consoles.

Regional touring companies can get PM features at an affordable price point.

Please take time to review the specs on the back page. We think you will agree that this level of performance along with the quality and reliability you have come to expect from

Yamaha will make the M3000 an invaluable tool for your work.

The legend grows!

Since you are already thinking of a perfect application for the M3000, call 1-800-937-7171 ext. 665 for more information.

8 VCA Groups

Yamaha pioneered VCAs in sound reinforcement consoles. Now we deliver them at an unprecedented price point.

Group/Aux Bus Diversity

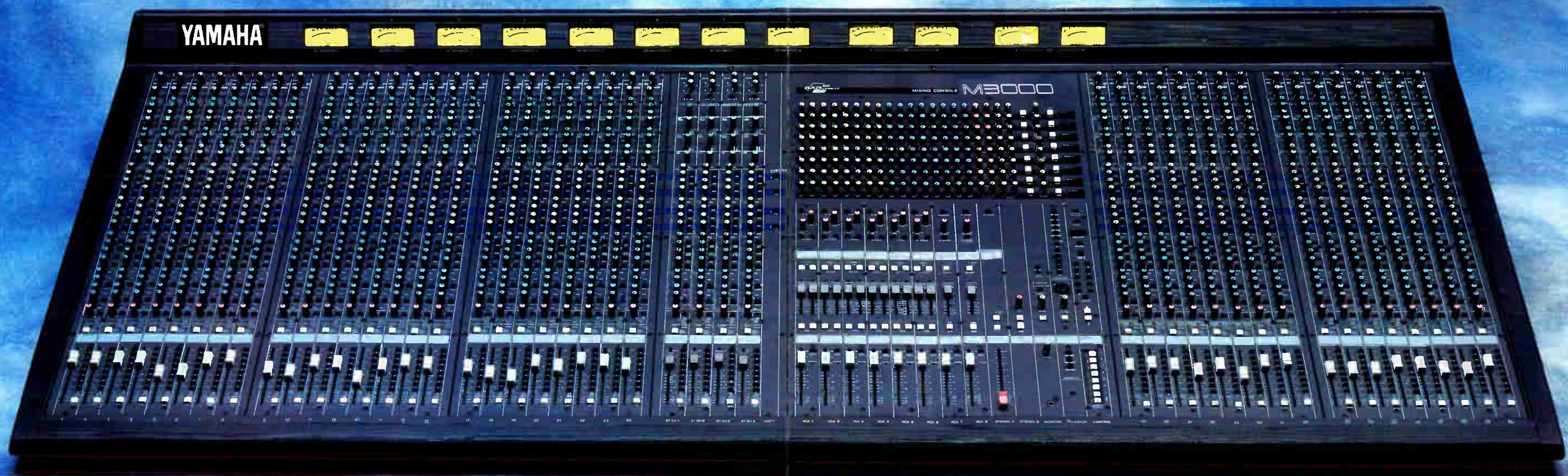
Mix busses can configure to become group or aux busses with the touch of a switch. Mix busses function to fit your mix requirements. For example, one moment M3000 has 8 group outs and 8 aux outs, the next it has 6 groups and 10 auxes. The next ...

20x8 Mix Matrix

The outputs of the 16 mix busses, the stereo bus and two sub in busses are routed to the 8 output Mix Matrix. This 20x8 matrix provides an exceptionally flexible system enabling you to address a wide variety of complex mix scenarios.

MIDI Mute Groups

Store and recall up to 128 scenes or patches for instant response to rapid performance transitions.



INTRODUCING

8 VCA GROUPS,

GROUP/AUX DIVERSITY,

A 20 x 8 MIX MATRIX

AND MIDI MUTE GROUPS

IN A 40 MONO/4 STEREO x 16 x 2 BUS MIXER

FOR **\$12,995** MSRP.

NO KIDDING.

GENERAL SPECIFICATIONS

| | |
|---|--|
| Total Harmonic Distortion (Master Output) | Less than 0.1 % (THD+N) @20 Hz–20 kHz, @+14 dB output into 600Ω Less than 0.01 % (2nd–10th) @20 Hz–20 kHz, @+14 dB output into 600Ω |
| Frequency Response (Master Output) | 0 +1, –3 dB 20 Hz–20 kHz @+4 dB output into 600Ω |
| Hum & Noise (20 Hz–20 kHz) Rs=150Ω Input Gain= Max. Input Pad= OFF Input Sensitivity= –60 dB | –128 dB equivalent input noise. –99 dB residual output noise. –64 dB (68 dB S/N) MIX OUT, Master level control and one Ch fader at nominal level. –81 dB (85 dB S/N) STEREO OUT, Master fader at nominal level and all Ch assign SW's off and all MIX to ST SW's off. –77 dB (81 dB S/N) MIX OUT, Master level control at nominal level and all Ch assign SW's off. –83 dB (87 dB S/N) MIX 1–8 OUT (FIX), Master level control at nominal level and all Ch assign SW's off. –90 dB (94 dB S/N) MATRIX OUT, Master level control at nominal level and all Matrix Mix controls at minimum level. |
| Crosstalk | –80 dB @1 kHz adjacent inputs, –70 dB @1 kHz input to output (Ch Input), –50 dB @1 kHz input to output (ST Input) |
| Ch Input PAD SW | 26 dB |
| Ch Input Gain Control | 44 dB variable |
| ST Input Gain Control | 40 dB variable (ST IN A), 30 dB variable (ST IN B) |
| Ch Input High Pass Filter | 12 dB/octave, roll off below 20–400 Hz at –3 dB point. |
| Ch Input Equalization +15, –15 dB maximum | HIGH: 1k–20 kHz (peaking, Q= 0.5), HIGH-MID: 400–8 kHz (peaking, Q= 0.5/3) LOW-MID: 80–1.6 kHz (peaking, Q= 0.5/3), LOW: 30–600 Hz (peaking, Q= 0.5) |
| ST Input Equalization +15, –15 dB maximum | HIGH: 20 kHz (peaking, Q= 0.5), HIGH-MID: 3 kHz (peaking, Q= 0.5/3) LOW-MID: 800 Hz (peaking, Q= 0.5/3), LOW: 30 Hz (peaking, Q= 0.5) |
| Oscillator/Noise | Switchable sine wave @100 Hz, 1 kHz or 10 kHz (1% T.H.D. @+4 dB output), or pink noise. |
| Scene Memory | Direct Scene Memory recall switches (1–8), Switchable Scene Memory recall (1–128) |
| VU Meters | 12 illuminated meters |
| Power Consumption | USA and Canada: 120 V AC 60 Hz, AT: 240 V AC 50 Hz, Other: 230 V AC 50 Hz |
| Dimensions (WxHxD) | 2042x265x877 mm |
| Weight | 115 kg |

INPUT SPECIFICATIONS

| Connection | PAD | Gain Trim | Actual Load Impedance | For Use With Nominal | Input Level | | | Connectors In Mixer |
|---|-----|-----------|-----------------------|---------------------------|-------------------|-------------------|-------------------|---------------------|
| | | | | | Sensitivity | Nominal | Max. before Clip | |
| CH IN (1–40) | 0 | –60 | 3 KΩ | 50–600Ω Mics & 600Ω Lines | –80 dB (0.078 mV) | –60 dB (0.775 mV) | –40 dB (0.775 mV) | XLR-3-31 type |
| | 26 | | | | –54 dB (1.55 mV) | –34 dB (15.5 mV) | –14 dB (155 mV) | |
| | 0 | –16 | | | –36 dB (12.3 mV) | –16 dB (123 mV) | +4 dB (1.23 V) | |
| | 26 | | | | –10 dB (245 mV) | +10 dB (2.45 V) | +30 dB (24.5 V) | |
| ST IN (1–40) [L, R] | A | –30 | 5 KΩ | 600Ω Lines | –50 dB (2.45 mV) | –30 dB (24.5 mV) | –10 dB (245 mV) | XLR-3-31 type |
| | | +10 | | | –10 dB (245 mV) | +10 dB (2.45 V) | +30 dB (24.5 V) | |
| | B | –20 | 10 KΩ | 600Ω Lines | –40 dB (7.75 mV) | –20 dB (77.5 mV) | 0 dB (0.775 V) | Phono Jack |
| | | +10 | | | –10 dB (245 mV) | +10 dB (2.45 V) | +30 dB (24.5 V) | |
| TALKBACK IN | | | 10 KΩ | 50–600Ω Mics | –66 dB (0.338 mV) | –50 dB (2.45 mV) | –20 dB (77.5 mV) | XLR-3-31 type |
| 2TR IN 1 [L, R] | | | 10 KΩ | 600Ω Lines | –2 dB (0.616 V) | +4 dB (1.23 V) | +24 dB (12.3 V) | XLR-3-31 type |
| 2TR IN 2 [L, R] | | | 10 KΩ | 600Ω Lines | –13.8 dB (158 mV) | –7.8 dB (316 mV) | +12.2 dB (3.15 V) | Phono Jack |
| CUE SUB IN [L, R] MATRIX SUB IN [L, R] | | | 10 KΩ | 600Ω Lines | –2 dB (0.616 V) | +4 dB (1.23 V) | +24 dB (12.3 V) | Phone Jack (TRS) |
| STEREO SUB IN [L, R] MIX (1–16) SUB IN | | | | | –6 dB (388 mV) | | | |
| CH IN (1–40) INSERT IN STEREO INSERT IN [L, R] MIX (1–16) INSERT IN | | | | | 10 KΩ | 600Ω Lines | –20 dB (77.5 mV) | |

OUTPUT SPECIFICATIONS

| Connection | Actual Source Impedance | For Use With Nominal | Output Level | | Connectors In Mixer |
|--|-------------------------|-------------------------|----------------|----------------------|---------------------|
| | | | Nominal | Max. before Clipping | |
| STEREO A OUT [L, R] STEREO B OUT [L, R] MIX (1–16) OUT MONITOR OUT [L, R] MATRIX (1–8) OUT | 150Ω | 600Ω Lines | +4 dB (1.23 V) | +24 dB (12.3 V) | XLR-3-31 type |
| CH (1–40) DIRECT OUT CH IN (1–40) INSERT OUT STEREO INSERT OUT [L, R] MIX (1–16) INSERT OUT | 600Ω | 10 KΩ Lines | 0 dB (0.775 V) | +20 dB (7.75 V) | Phone Jack (TRS) |
| PHONES OUT [L, R] | 100Ω | 8Ω Phones 40Ω Phones | 1 mW 3 mW | 20 mW 75 mW | Stereo Phone Jacks |

* 0 dB is referenced to 0.775 Vrms.
Specifications subject to change without notice.



Yamaha Corporation of America
6600 Orangethorpe Avenue, Buena Park, CA 90620
For more information, please call 1(800) 937-7171 ext. 665

YAMAHA

Yamaha PA Web Site—<http://www.yamaha.co.jp/product/proaudio/homeenglish/>

© 1998 Yamaha Corporation of America.

because I basically pick who does the remix, and usually it's people who I've listened to quite a lot and who I admire very much, and I may have gotten to know a little bit of their character. I know some personally, but not all of them. We will talk and together we will pick a song. A lot of the times, the people pick the song, what they find is the biggest turn-on. And if I pick the song, I will tell them why I thought of them. So it's done to experiment in areas of the song that I couldn't do myself because it's not me.

You have been remixed and covered by some intriguing artists. You have a metal band Carcass, you have Towa Tei, you have the Brodsky Quartet. They're very different, they're radical.

Yeah, I think on songs with a good structure the arrangements become invisible.

That means your material can translate to different formats. You also worked with Evelyn Glennie, and I'm curious about that. She's a classical percussionist, and she's deaf, isn't she? She does everything based on vibration.

She has about ten percent of her hearing. When I worked with her, I would stand close to her, and we would just completely improvise. Usually I don't like improvising because I was brought up by hippies, and I've had it with them going in circles for nine days and never getting anywhere and doing solos and that. But I think someone who's that disciplined, like Evelyn Glennie, can improvise. It has to be a very delicate mixture of discipline and freedom.

She was gorgeous. I went to visit her at a farm she has in England. She has a room full of instruments, many of which she made herself. In that song, there are parts she played on exhaust pipes that she found in the area. I just walked around the room and she let me pick the instruments I liked and then we just recorded. It was great.

I've heard you refer to what you do as a form of world music, in the sense that you recorded this in a Spanish studio, and you have an Icelandic string octet, a British producer, and a Brazilian string arranger. Do you feel you're making world music for the electronic community in a way?

I don't see myself anywhere, really. I find categories are just so hilarious. And for me to walk into one [record store] department that says classical music, basically German music for 300 years, I find that very funny. And then you go to another category, and there's Indian music that's been around for 2,000



PHOTO: PHIL POWNER

years next to African music next to music from Hawaii, Japan, Lapland and Uruguay, and that's called world music, like some sort of second-class hippie stuff. And I just don't get it. I don't get as well the whole arrogance of...you get England and the States, and how many people is that? 300 million or something? And the rest of the world is like five-and-a-half billion? And that's world music? And you find categories like rock, and then another one called jazz and another one called blues.

The human voice is still my favorite instrument, because you can't lie with it.

I think people feel comfortable with categories. Then there are artists like you to come along to break those boundaries, to confuse them more, and hopefully to make them think.

We'll see. I just find it very funny. I think some journalist was trying to make me into a world music eskimo, and I was just flattered, and I just decided to become one then. I find that very exciting. *How do you plan to translate this material to the stage?*

The string octet that plays on the album is touring with me. And Mark Bell as well. We've done quite a lot of concerts, and it's worked really well. We did Europe for three weeks, but I then got sick, so I couldn't play in America. *Another thing I noticed about Homogenic is that songs like "Unravel" and "Immature" are very ambient in feeling, although you have beats there*

to ground the songs so they don't float away. You like having contrasts on your record.

A lot of people say that. I think I'm just like that kind of person—I really like extremes. I like things to be pure, and I don't like the in-betweens. I am terrified of mediocrity. And I will listen to very experimental, eccentric, electronic stuff, and then I'll listen to Michael Jackson. I like very pure pop—so emotional it's mushy. And then I like very scientific, experimental music.

Did you sample a lot of instruments on this album?

No, not really. I prefer to let synthesizers be synthesizers. There's one song where this guy plays glasses instead of violins. I wanted one song ["All Neon Like"] to be like strings but even more fragile.

You do have backwards accordion on "The Hunter." What was the inspiration for that?

This guy [Yasuhiro "Coba" Kobayashi] just came and played accordion on the song. We played quite a lot with effects, especially on the beats, but we wanted to try a little bit on the accordion as well. Coba's an incredible accordion player. He learned from Astor Piazzola. I think he was voted the world's best accordion player for two years or something. He plays Mozart. It's outrageous. *As far as your lyrics, you're very inspired by love and relationships.*

I think I'm a bit narrow-minded, because I tend to look at everything through the eyes of love—if it's driving a car or eating a mushroom or walking down the street, loving a person, loving the weather, loving a city. And somehow all my songs in one way or another become love songs. ■

Bryan Reesman is a freelance writer living in Boston.

GINO VANNELLI

JUST CAN'T STOP

A few years back, Gino Vannelli—best known for the singles “I Just Wanna Stop” (1979) and “Living Inside Myself” (1981)—left Los Angeles for Portland, Ore., to be closer to his wife’s family. He opened a project studio, Inka Productions, in downtown’s Northwest section, and when *Mix* visited, he was finishing the final mix of his second release on Verve/PolyGram, tentatively titled *Slow Love* and due to be released next month.

were. Building a song like this is how a contractor plans a house—the tempos, rhythms and samples all needed to come from the blueprint, which is the chart itself. It’s not just the walls and trim, it’s the foundation and framing. The worst thing is programming and realizing that you don’t have all the materials.” (He recommends over-sampling so that you have a long enough menu to choose from.)

“I make most of my own samples, building a library and picking

Vannelli works with both Logic and Vision, but the house sequencer is Performer. All mixes are virtual, within Pro Tools, and monitored on a 36-channel Amek Angela. The stereo mix runs through an Apogee AD-1000, into a TC Electronic Finalizer then into the Rane Paqrat. “We’re mixing down to the Paqrat for 24-bit digital recording onto ADAT, which keeps the music more true to what you’re putting into it,” Vannelli says. Hafler-powered KRK 7000 monitors are supplemented by a Tannoy subwoofer, and a pair of Tannoy System 12 monitors sit mutely behind them.

“My preferred preamps and equalizers for voice are Summit,” he continues, “but I still like my old dbx 160 limiter because it has a time release that’s good for my voice.” He also uses an LA-22 on his vocal to compress certain frequencies. “On piano, we really enjoy our old Neve V72 preamps—they’re clear, yet they’re warm—and the ART MPA mic pre’s are good for backing vocals.” Effects are all Lexicon, with a PCM 80 and 90 plus a pair each of PCM 42 delays and LXP-15s.

Vannelli is divided on a favorite vocal mic. “On some songs I use the Manley Gold and on others the AKG C-12,” he explains. “The Manley is more clinical—you almost have to watch how your lips smack—and it took me awhile to get used to it. The C-12 has a hump around 90 Hz, which is nice for my voice. The Manley is brighter and quieter, but the C-12 is warmer and friendlier.

“I like to take my time,” Vannelli sums up. “This album is six months in the writing and a year recording. Instead of having a chart and running it in a few takes, you build the chart to put in the exact expression you originally envisioned. It’s tedious building a song this way, but once you get it, it’s right there.” ■



Doug Durbrow (l) and Gino Vannelli

Although the studio is in a converted office space, attention to detail is obvious: A sub-floor was installed, wall and ceiling treatments abound, and ASC Tube Traps are carefully arranged. “It’s an imperfect room, but when you know it, it fits comfortably, and that’s the whole idea behind a project studio,” Vannelli says.

After listening to a couple of mixes (engineered by Doug Durbrow, who did Vannelli’s most recent album, *Yonder Tree*, as well), I was surprised to learn that bass, drums and percussion were all done on a computer. “We use an architectural process,” says Vannelli. “Before we even came into the studio, we knew how long each song would be and what all the changes

the best of what’s available,” adds Vannelli, a drummer by trade. “I’ll start by making a list of every possible drum and percussion sample I might use, so that when I finally start programming, everything is ready. We start with the grooves, building on a beat, writing each section and then adding fills and embellishments. It’s difficult to be precisely human, but the ability to get a clarity, presence and perfection can make up for that.” Graham Lear, who played drums on *Yonder Tree*, came in to help find the groove for one of the new cuts, “Cry Baby,” picking a slow 12/8. From there, it was built on the computer.

BY MARK FRINK

The winners' choice just got a new partner.

**Post-production is complex enough
without those equipment-conflict detours.
Let the team of WaveFrame + TASCAM®
keep you on track... and on time.**

It's no surprise that 4 of the 5 Oscar nominees for Sound and the Emmy winner for Sound chose WaveFrame to edit on. Because WaveFrame is the only editing platform designed with them in mind.

WaveFrame's innovative editing commands speed post-production, leaving you time to make the decisions that will make your project a winner.

No other system gives you tools this effective at a price this good.

If you're doing audio work that goes with picture, you need tools that work every time — not that latest oh-so-cool plug-in. It's simple: You need WaveFrame.

Enter Tascam... with the perfect follow-through.

With the Tascam MMR-8 8-track recorder/player and the Tascam MMP-16 16-track player, you'll be fully prepared to record your project, then play it back directly or edit it on your WaveFrame — to keep right up with changes that bounce in from the producer and director.

WaveFrame + Tascam's MMR/MMP Series = 100% compatibility.

The Tascam MMR/MMP series offers the only digital disk recorders that are fully compatible with WaveFrame editors.

Which means that your project will play back on the stage just the way you edited it, and that your MMR recordings will play back with perfect accuracy on the WaveFrame for editing.

No extra settings. No translations. No lost time.

Just plug and play. For Real. We guarantee it.



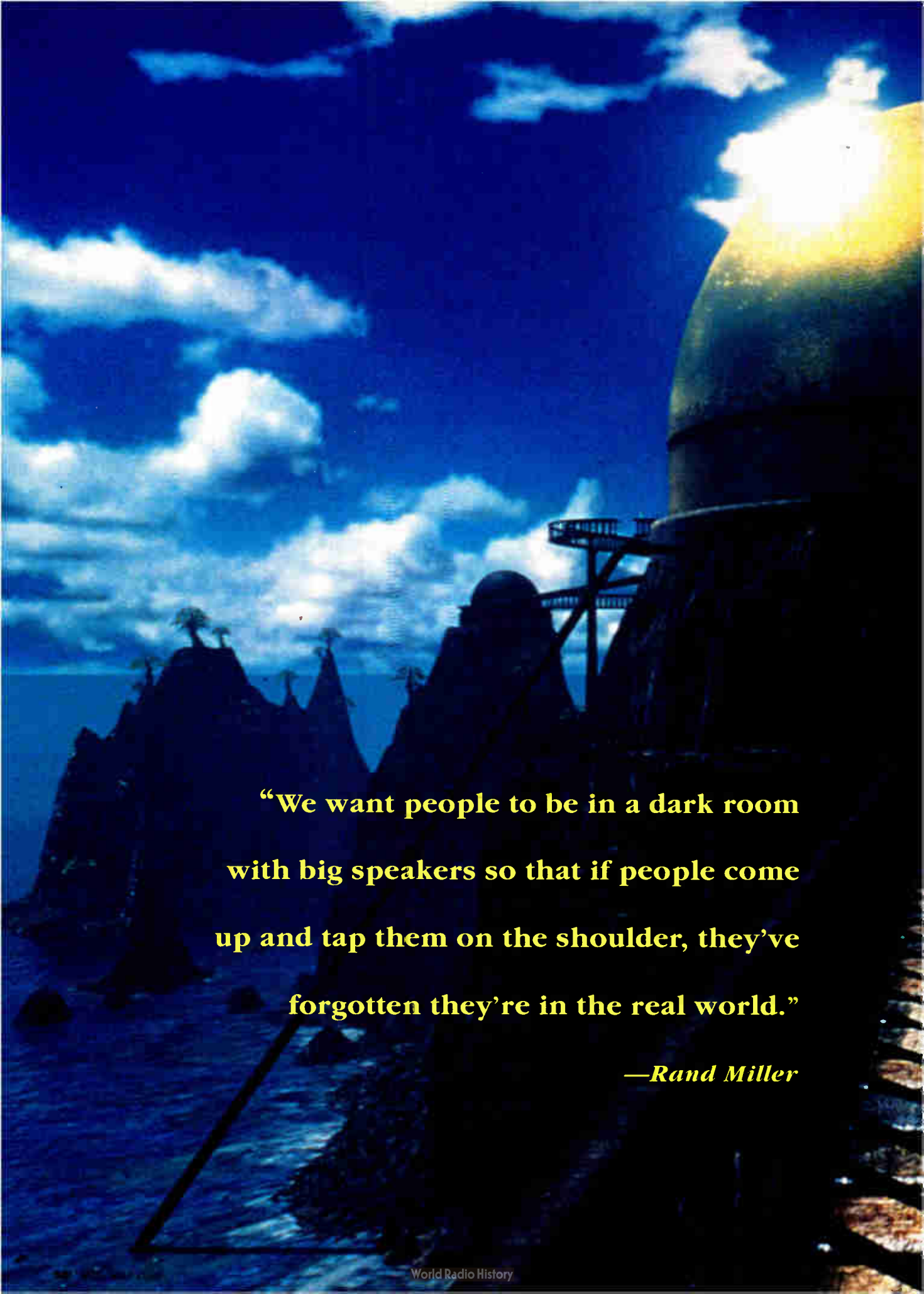
WaveFrame

TASCAM®

Advanced Systems Group, LLC, 5447 Telegraph Ave., Oakland, CA 94609
510/654-8300 Fax: 510/654-8370 www.waveframe.com

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640
213/726-0303 Fax: 213/727-7635 www.tascam.com

World Radio History
CIRCLE #042 ON PRODUCT INFO CARD



**“We want people to be in a dark room
with big speakers so that if people come
up and tap them on the shoulder, they’ve
forgotten they’re in the real world.”**

—Rand Miller

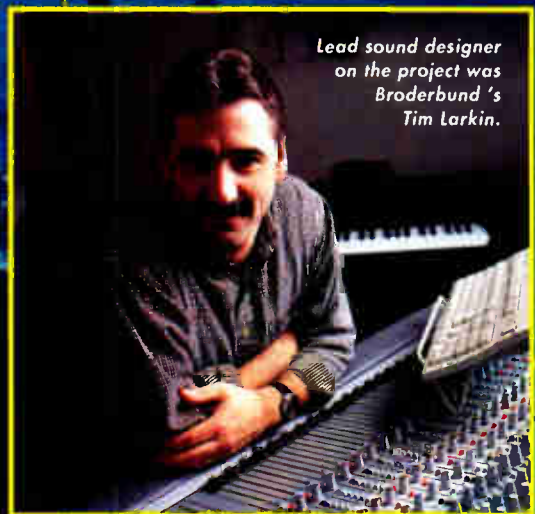
**SOUND
DESIGN
FOR**

RIVEN

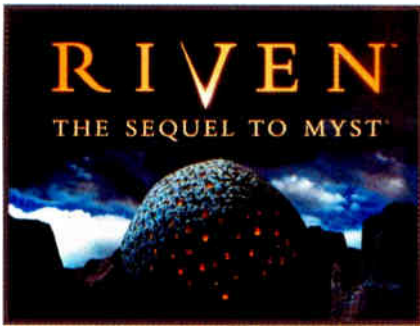
by Robert
Thomure

THEME FROM AN IMAGINARY LANDSCAPE

You are trapped on a series of beautiful, volcanic islands. You explore them with an unhurried, serene curiosity, despite the gnawing realization that there are daunting riddles and unseen dangers beyond your mind's reach. Fascinating flora and fauna abound, temples are adorned with glowing, incomprehensible iconography, and beguiling scenes entice you to investigate their secrets at your leisure. Paradoxically, you are a willing prisoner.



*Lead sound designer
on the project was
Broderbund's
Tim Larkin.*



THE SCOPE OF A FEATURE FILM

Like its predecessor, *Myst*, *Riven* is the brainchild of Robyn and Rand Miller and Cyan Productions in Spokane, Wash. Distributed by Red Orb Entertainment, a division of Broderbund Software Inc., this game contains more than 4,000 still images, 45 minutes of music and three hours of animation. *Riven* took more than 3½ years to produce and was released on five CD-ROMs in October 1997. (A DVD version is slated for spring '98.)

Lead sound designer on the project was Broderbund's Tim Larkin; Brian Walker assisted with file management, and Greg Rahn provided additional sound design. Cyan co-founder Robyn Miller composed all the music (as he did with *Myst*), and additional sound design and music sampling engineering were performed by Chris Brandkamp of Cyan. O'Donnell/Salvatori Music in Chicago also provided sound design assets, as well as live-action Foley and mixes.

Particularly challenging for the multimedia sound designer was the fact that *Riven* rivals a full-length feature film in its scope. But ask Tim Larkin about the project and he speaks glow-

ingly (and with more than a hint of nostalgia) of 16-hour workdays, long weekends, and lying awake at night racking his brain, thinking of ways to create a sound effect never heard before. Larkin, whose credits include work with Ella Fitzgerald, James Brown, the San Francisco Symphony and PBS, somehow managed to do trumpet sessions for three National Geographic specials and a full-length feature film while working on *Riven*. And this is a man who drinks no coffee.

THE STRANGE AND THE FAMILIAR

As Larkin explains, one of the basic goals of *Riven*'s sound design was to create a constant and totally immersing experience for the player, on the scale of a movie soundtrack. "Robyn Miller's passion is to create worlds," says Larkin. "So we got down to details of the last nut and bolt that was in a room, what are the walls like exactly, how big, what's outside, what's inside, getting down to minute details."

Richard Vander Wende, co-director of *Riven*, describes the philosophy behind the sound design: "One of the aspects about the sound that really excited us was that, beyond satisfying

Machines with bloated metal hulls hiss and rumble, turning with whining servos and groaning levers. They are connected by a labyrinth of pipes in every direction—down fissures in the rock, through the dividing seas, and over strange, jagged landscapes. Valves direct the mysterious power of machines that take you from one place to another, both over and under water, like a Jules Verne fantasy. Your ears, sometimes disturbed by an almost subsonic rumble, are more often caressed by soft tufts of wind, the murmur of water, bird song, animal calls and the buzzing of beetle-wings and other insects.

You are sitting alone at your desk, playing *Riven: The Sequel to Myst*.

EXPERIENCE THE EVOLUTION OF SOUND

PIONEER
The Art of Entertainment

TAD Technical Audio Devices
Professional Loudspeaker Components Division

PIONEER
The Art of Entertainment

Pioneer Electronics Service, Inc., 1925 East Dominguez Street, Long Beach, CA 90810
Telephone: 800-872-4158 • Visit Our Website • <http://www.tad-pioneer.com>

SPEAKER COMPONENTS FOR PROFESSIONAL SOUND SYSTEMS

CIRCLE #039 ON PRODUCT INFO CARD

Credits

Garbage

Beck

Smashing Pumpkins

Nirvana

Sonic Youth

U2

"Pro Tools takes our music into the next dimension"

- Butch Vig

Butch Vig has a few ideas about turning Garbage into platinum.

"Garbage records a lot of garbage...loops, guitar effects, vocals, and noise... With Pro Tools, we track everything into the system...then go in and tweak it out. We use a lot of Plug-Ins like D-Fi, GRM Tools, and TC Tools. The flexibility of the automation allows us to be extremely creative. As we work up a song, we're processing and mixing all the time, because it's a lot easier to experiment than with an analog board or tape."

No rewinding. No take limits. No wasted time on session recall. No wonder creativity soars.

"Recording should be fun, and Pro Tools has brought back the excitement of working in a studio again. I can't really see us ever turning back."

For more information about Pro Tools and Third-Party Development products, call 1.800.333.2137 ext. 357 for a free Pro Tools video, or to schedule a free demo.

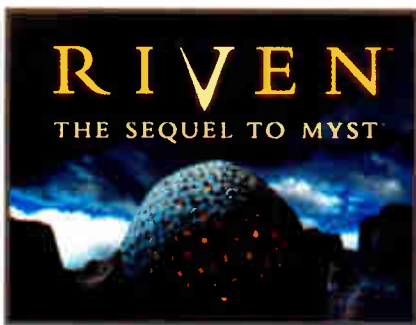
www.digidesign.com
www.avid.com

BUTCH VIG, PRODUCER | DRUMMER
Garbage



Foreground Photo: ©1998 Stephane Sedar
Background Photo: ©1997 Ellen Von Unwerth





the beginning. But when they saw that the relationship was working and they trusted my aesthetic judgment, they loosened the reins quite a bit."

PROCESS AND TOOLS

Three separate 16-bit, 22kHz stereo tracks were created for the final soundtrack and are combined in real time on the player's PC. The three stereo pairs

include music, foreground (sound effects and dialog synched to animations) and background ambience. The relative levels of these QuickTime audio tracks were programmed by Larkin in Apple's Hypercard, the chosen authoring environment for Riven. Separate mono mixes were also created for slower PCs, which would likely choke on three stereo audio sound files while

the obvious needs of the graphics. [sound design] allowed us to significantly broaden the world by defining all the things that you couldn't see. The other important goal for us with the sound effects was to achieve what we had tried to do with the graphics. Ideally, they needed to be a believable synthesis of the strange and the familiar. It's not an easy thing to accomplish, but when you get it right, it's great. The familiar makes it accessible, and the strange compels you to investigate."

"I was scared at first, to be honest, when I heard some of the descriptions of what they wanted," notes Larkin. "And having someone come in that they're not familiar with was tough in



True Tubes

TUBE-TECH LCA 2B STEREO COMPRESSOR AND LIMITER



Tube-Tech stands for uncompromised Danish design philosophy and craftsmanship. True to its heritage, the LCA 2B Stereo Compressor and Limiter has 100% transformer coupled circuitry and tubes that deliver the unmistakable sound of high quality vintage equipment.

The LCA 2B is a two channel unit with independent compressor and limiter for each channel. It boasts the best technical specifications such as a Frequency Response of 5 Hz to 50 kHz and a Noise Level of less than -85 dBu.

Tube-Tech...in a class by themselves. For a dealer near you, call 1-888-4WARMTH.

Distributed and supported by:

t.c. electronic
ULTIMATE SOUND MACHINES

CIRCLE #041 ON PRODUCT INFO CARD

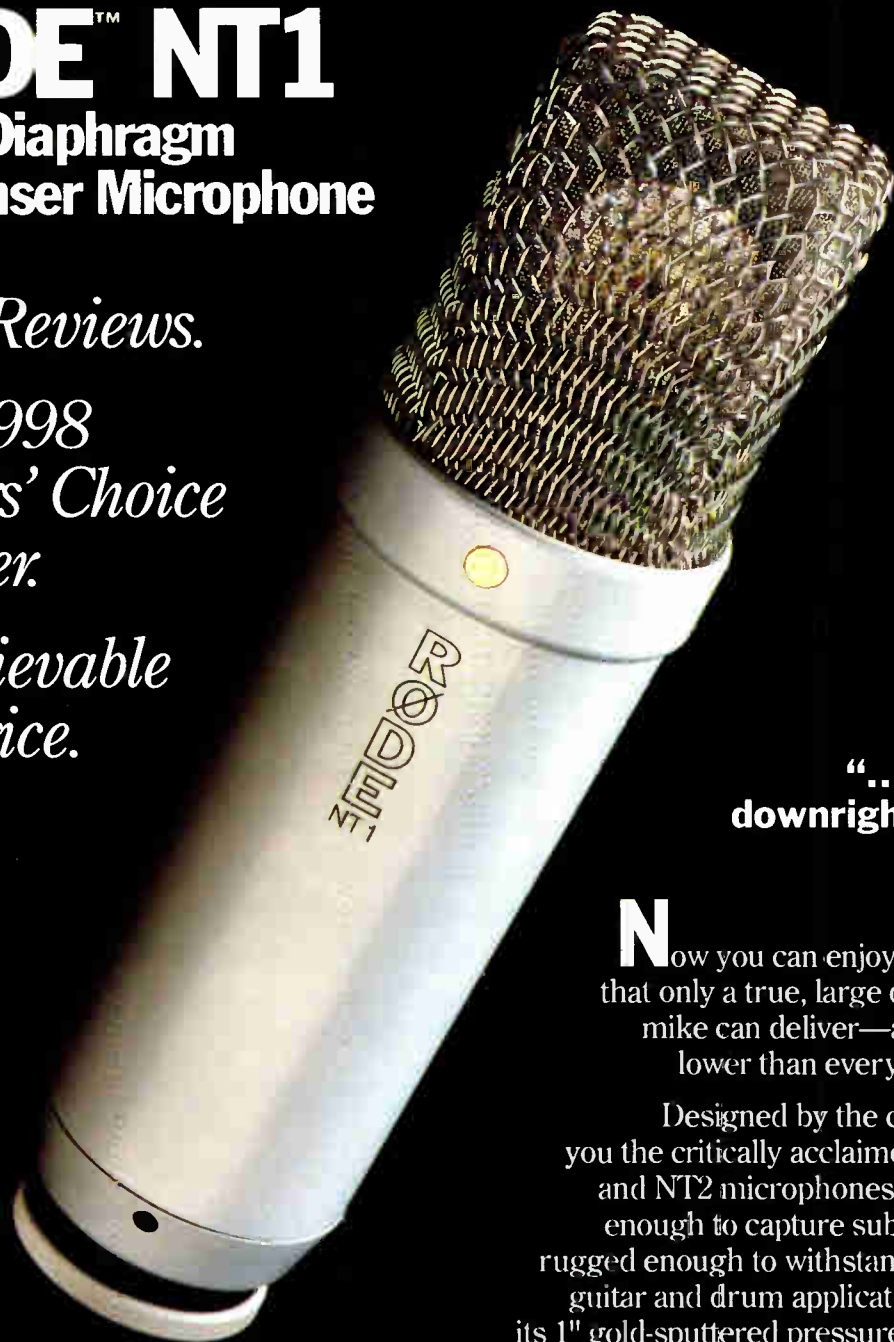
Pick the Winner.

RØDE™ NT1 Large Diaphragm Condenser Microphone

Rave Reviews.

*EM 1998
Editors' Choice
Winner.*

*Unbelievable
low price.*



**"...rich, sexy, and
downright delectable..."**

-EM

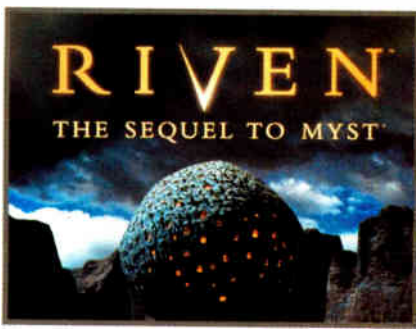
Now you can enjoy the rich warm sound that only a true, large diaphragm condense mike can deliver—at a price dramatically lower than everything else in its class.

Designed by the company that brought you the critically acclaimed Classic Valve Tube and NT2 microphones, The NT1 is sensitive enough to capture subtle vocal nuances, yet rugged enough to withstand high SPL in electric guitar and drum applications. Couple that with its 1" gold-sputtered pressure-gradient membrane, extremely low noise circuitry, internal shock mounting system—and yes, that precision sound—and you can easily see why the NT1 is the must-have workhorse for your studio.



P.O. Box 4189
Santa Barbara, CA 93140-4189
Voice: 805-566-7777
Fax: 805-566-7771
E-mail: info@event1.com
Web: www.event1.com

RØDE NT1 \$349



running all the graphics.

The team opted for IMA (Interactive Multimedia Association) compression, a cross-platform standard for 16-bit audio files that can reduce storage requirements by up to 75%. As Larkin notes, because IMA is a lossy compression scheme (4:1 ratio) there are a few compromises in the sound quality, mainly noticeable through headphones. However, the quality is excellent, near-CD even, through speakers. Minor artifacts are more than compensated for by the reduced sound file size, which in turn results in a smoother-running program.

For the sound effects, Larkin worked with compressed QuickTime movies as his visual reference, though

some ambiences were created using only a simple screenshot in PICT format as a visual cue. Most of the work was done in Macromedia's Deck II on a PowerComputing 210 Macintosh clone, which could support QuickTime video and 24 audio track capabilities. Digidesign's Pro Tools 4.0 and Mark of the Unicorn's Digital Performer were also used on specific sounds. Work was divided between Broderbund and Larkin's home studio; in fact, many of the more interesting and original sound effects were created by mixing and processing recorded elements created with objects found in Larkin's home. Larkin also used a Kurzweil K2000 to create custom ambient sounds, and a variety of software (including Alchemy, Sound Designer II, Digital Performer and BIAS Peak) to process, pitch-shift, time-compress and otherwise morph, stretch and create new sounds out of individual sound file elements.

Larkin paid especial attention to ambient sounds and transitions. "You couldn't just create an ambience for one section and a totally different ambience for another," explains Larkin. "They had to link together." For that reason, two-second crossfades link the

end of one ambient sound and the start of another as the player navigates through Riven's various environments.

SOUND EFFECTS AND AMBIENCES

Larkin focused on making the ambient sounds dynamic and believable, so that the player wouldn't notice loop points or repetition. "You never know how long a user would be in a given area," he explains. "So you've got to make these ambiences sound random, like you're in a real environment, not like you're hearing this loop of birds chirping. So I would load a lot of these samples into the K2000, whether an ambient pad or the sounds of birds, and just play them to set a tone or rhythm or a randomness."

Random sounds occur, even if the player doesn't "move" from a particular spot, though the basic background sound continues to loop. "For example, on Jungle Island there are about 20 animal sounds that come in and play at random," says Larkin. "I'd start with an ethereal pad, really subtle, and then started placing the birds, placing the crickets, so that when it comes around to the loop crossover points, after a minute or so you wouldn't know

NEW FBX FEEDBACK EXTERMINATOR[®] PLUS

More features than ever at a new low price!



The new **FBX-1020 and 2020 PLUS Feedback Exterminators[®]** are now being shipped. PLUS means *more features* at the *same low price*.

- 12 patented FBX filters per channel.
- New algorithm kills feedback faster than ever.
- FBX works in setup *and* during the performance.
- New two-stage filter reset, for more precise control.
- 20-bit digital conversion, 24-bit processing.
- ClipGuard™ Adaptive Clip Level Control™: maintains optimum signal-to-noise ratio; expands dynamic range; input/output signal peaks up to 27 dBV; eliminates digital clipping forever!
- Turbo Setup Mode: Lightning-quick, low-level setup.

Thousands of FBX-Feedback Exterminators around the world are providing more gain, increased clarity, and automatic feedback control in concert halls, churches, touring sound systems, sports arenas, court rooms, schools, paging systems, and distance learning centers.

Put the PLUS advantage to work for you! Get the industry standard in feedback control from the company that invented it: **Sabine's new FBX-1020 and FBX-2020 PLUS Feedback Exterminators.**

SABINE[®]
ADAPTIVE AUDIO

MADE IN USA

Alachua, FL 32615-8544 USA
Tel: (904) 418-2000
Fax: (904) 418-2001
Fax-Back Product Info:
(904) 418-2002

www.sabineinc.com

*FBX and FBX Feedback Exterminator are registered trademarks of Sabine, Inc., and are the brand names of its line of automatic feedback controllers. Covered by U.S. Patent No. 5,245,665, Australian Patent No. 653,736, German Patent No. 69118486.0, U.K. Patent No. 0486679, and Canadian Patent No. 2,066,624-2. **Patents pending.

CIRCLE #043 ON PRODUCT INFO CARD



congratulations!



james taylor and frank filipetti

on winning two Grammy awards for "Hourglass."*

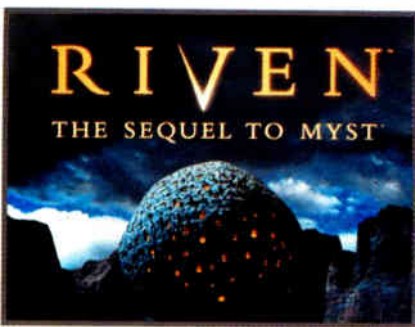
best pop album. best engineered album (non classical).

from your friends at **YAMAHA** pro audio.

If **you** would like a copy of the Hourglass session notes, call Yamaha (800) 937-7171 ext.669. www.yamaha.com and www.yamaha.co.jp/product/proaudio/homeenglish/index.html
©1998 Yamaha Corporation of America, Pro Audio Department, P.O. Box 6630, Buena Park, CA 90622-6600. Yamaha is a registered trademark of Yamaha Corporation.
* ©1998 Sony Music Entertainment Inc./"Columbia" Reg. U.S. Pat. & Tm Off. Marca Registrada

CIRCLE #04 ON PRODUCT INFO CARD

World Radio History



where it looped. It became more of a performance than merely piecing different ambiances together."

In addition to a sense of real-world

randomness, Larkin also strove to achieve a certain depth in the soundscapes he created. "You've got to make them feel that they've got stuff going on behind them, on the side, on top," he notes. To that end, he paid a lot of attention to panning and the dynamics of stereo image placement, even to the point of doing what he calls "unnatural pans," all in the interest of bringing the player more into the experience.

"It was really important to Robyn [Miller] that every place we created ambience for was 'warm'...a peaceful place, a place that you wanted to stay," Larkin recalls. Creating this "warm" feel-

ing involved judicious use of wind sounds. "It was a real challenge to get these wind sounds to every once in a while come out of nowhere," says Larkin, who roamed the Internet in search of every conceivable wind source on CD libraries and then painstakingly created 30-second sound files from many wind fragments.

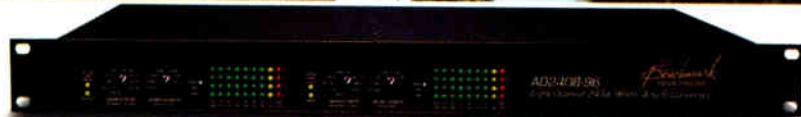
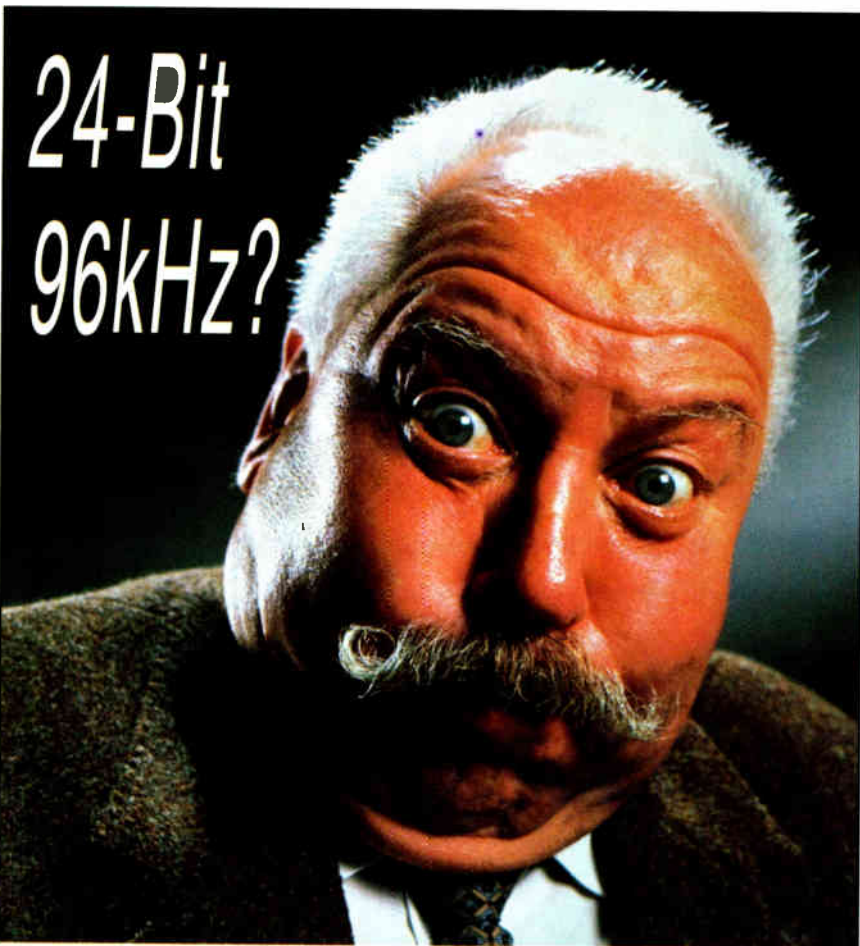
Mechanical sound effects also played an important role in Riven, particularly because of the abundance of machines that have no real-world counterparts. Even the simplest lever throw or button push was mixed in stereo, from at least four to as many as eight tracks. According to Larkin, the challenge for the sound effects creator was to come up with brand-new sounds for machines that don't exist in reality, yet sound believable and true to their intended structure and function.

"There are a lot of Victorianesque-type machines in Riven," Larkin notes. "I always think of *20,000 Leagues Under the Sea*. There's a lot of brass, a lot of metal, a lot of rusted metal. When you make a sound for it, you have to ask, 'How is this thing powered?' Since it's on a volcanic island, most of them are steam-powered."

How did Larkin deal with the fact that many of these made-up machines are somewhat incomprehensible or ambiguous in purpose to the player at first? "You can subliminally suggest sci-fi," he points out. "But you can't put it on the surface, because then it becomes unreal. And everything had to be believable."

As well as using Broderbund's sound facilities, Larkin created custom sound effects in his home studio. The search for just the right sound could take some surprising paths. "There are many things that turn in Riven, such as fire marble domes and jungle eyes," Larkin says. "To get the sound of something turning was really difficult. I ended up recording my son's Big Wheel. Between different pitch-shifting and time compression, I got the sounds for all these different spinning things."

Larkin's Neumann U87 came in handy for recording source material. One particularly challenging example was for the "map room," in which the player can press different buttons to cause large 3-D relief maps of the different islands to suddenly pop up; the maps are made up of a series of large metallic pins. "I'm lying awake at night trying to figure out how to make this sound," Larkin recalls. "At one o'clock in the morning, it hits me, so I come



Absolutely!! It's the AD2408-96, and it has eye popping performance. Eight channels with sample rates up through 96 kHz, selectable word lengths, redithering, THD+N of -112 dB at -1 dBFS, dynamic range of 120 dB, and metering on all channels. Intrinsic clock jitter is typically 9 pico seconds and the AD2408-96's PLL provides ultra clean lockup to an AES reference. Numerous I/O options are available including AES/EBU, AES3id (BNC), SPDIF. Priced under \$5000. Call Rory Rall today for more information.

Benchmark
...the measure of excellence!

BENCHMARK MEDIA SYSTEMS, INC.
Phone 800-262-4675, FAX 315-437-8119
<http://www.benchmarkmedia.com/>

CIRCLE #045 ON PRODUCT INFO CARD



DPR-422 Dual Compressor / De-Esser



DPR-944 2+2 Parametric Compressor & Gate



DPR-522 Advanced Dual Noise Gate

There are a few things you'll miss with the Opal Series

Like noise, distortion, lack of headroom, limited facilities, and no pedigree.....

It's obvious that the better you protect your sound, the better your mix will be. When you buy an Opal Series processor by BSS Audio you're getting not only the best in audio quality, but a heritage and proven track record that has benefitted artists, sound companies, studios, broadcasters, theatres and clubs the world over.

From this pedigree, BSS engineers have brought you a range of products designed to solve your sound problems without adding either impurities or complexity in operation. And by exploiting the latest advances in component technology and manufacturing techniques, we can now bring you this thoroughbred processing power for less than you'd think. Don't miss out on an Opal - call your BSS Dealer or Distributor for more information.



Audio Processing with things missing

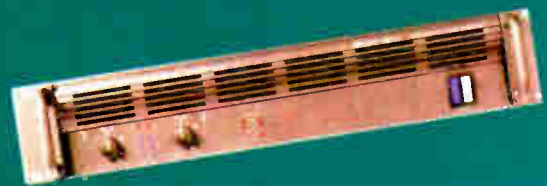
BSS Audio, Linkside House, Summit Road, Potters Bar, Herts, England EN6 3JB
 Tel: +44 (0)1707 660667 Fax: +44 (0)1707 660755 e-mail: info@bss.co.uk Internet Site: www.bss.co.uk
BSS Audio USA, Harman Pro North America, Inc, 1449 Donelson Pike, Nashville, TN 37217 USA
 Tel: (615) 360 0277 Fax: (615) 360 0480

A Harman International Company

CIRCLE #053 ON PRODUCT INFO CARD

World Radio History

TOROIDAL TRANSFORMER PRODUCER



Mei Ah Electrical & Industry (HK) Ltd. is an integration of three established manufacturers who have been in this field for over 10 years. Since our integration in 1994, we have become the largest toroidal transformer manufacturer in the world.

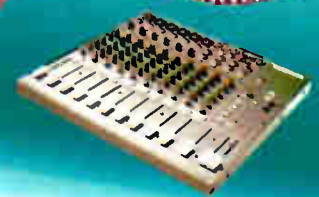


ISO9002 Approved

Mei Ah have a workforce of 2,000 staffs and strong engineer team. In order to keep up with the market and increase our own efficiency, we have made great investment in equipment, plants and human resources. In our own China factory, we have 100 toroidal winding machines, 28 toroidal steel core winding machines, 68 bobbin winding machines, 31 injection moulding machines, 10 computer controlled milling machines, 1 in-circuit tester and 1 SMT production line.



We also welcome other OEM products.



MEI AH ELECTRICAL & INDUSTRY (HK) LIMITED

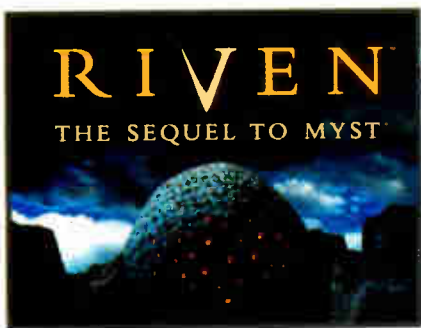


Office: RM E2, E3, E8, 15/F, Bldg. E, Wah Lok Indus. Ctr.,
31-41, Shan Mei St., Fotan, N.T., Hong Kong.

Tel: (852) 2698 1820(10 Lines), 2609 2302, 2609 2889

Fax: (852) 2609 3086(2 Lines), 2609 2321, 2694 8854

E-Mail: maei@hkstar.com



down to the garage, and I get nails. I got about 30 or 40 takes of me throwing these nails and catching them in my hand, and grasping them close together. So I took all these takes and formant-based pitch-shifted them, and got this deeper sound. And I probably had about 20 of these tracks mixed together of just these nails falling into my hand. And I ended up using that mixed in with the sound of roller coaster brakes."

Animal sound effects also play an important role in the sound design, and provide clues in the gameplay. Like the machines, they involved a lot more than simply grabbing tracks off CD libraries. In the case of the "sunners," amphibious beasts found on Temple Island, Larkin used the sounds of hippos, hyenas and walruses. "I would take the breath from a seal, and a certain grunt from a camel, and then pitch it or time compress it to make it work, while mixing it with other sounds. They're really complex sounds."

"The wahrks [underwater whale- or shark-like creatures on Garden Island] were taken from elk," Larkin continues. "Several different sounds were mixed and pitched way down, so that you got this kind of eerie, modulating sound." There was even a call for "the sound of a lobster bubbling." Larkin created that effect by mixing the sound of a bubbling desktop fountain—those little devices intended to relax business people—and the sound of a "stuffed up Gecko" (his term: a sort of a reptilian wheeze).

CONCLUSION

Because of the unpredictability of end-user playback system capabilities and the complex nature of the ambiences and sound effects, the final mixes were checked in a number of monitoring environments.

"It's like mixing for TV—you don't know what the end-user will have," Larkin notes. "So I did mixes where you would be able to hear all the elements on a Mac speaker, as well as if

AUSTRALIA
AR Audio Engineering
02 9810 5300

BELGIUM
EML
011 23 23 55

CANADA
Audionova
888 247 8500

DENMARK
StageGroup
38 60 73 97

EIRE
Seadna Productions
01 497 0661

FRANCE
SCV Audio
01 48 63 22 11

FINLAND
U.S.E.
9 7594180

GERMANY
SEA
05903 93880

GREECE
Even Studio
041 554353

HONG KONG
Top Plot International Ltd
2419 1868

ITALY
Audiosales
0521 690200

JAPAN
Onkyo Tokki
03 3237 1201

KOREA
Fine Trading
02 326 2032

LEBANON
Etek
01 249666

NETHERLANDS
Iemke Roos Audio
020 6972121

RUSSIA
C.S. Company
095 573 7444

SINGAPORE
Ultra Sound Agency
284 8123

SPAIN
LMC Audio Systems
93 471 14 40

SOUTH AFRICA
Tru-Fi Electronics
011 4624256

SWEDEN
TTS
031 525150

SWITZERLAND
Soundhouse
041 240 4231

TAIWAN
Splendid Sound Technic
02 278 2347

USA
SCV America
1800 720 4452

UNITED KINGDOM
SCV London
0171 923 1892



PRO-SERIES



Digital Processors



Graphics



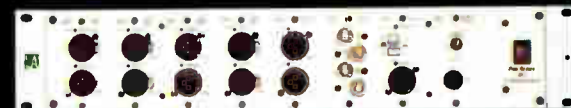
Parametrics



Compressors



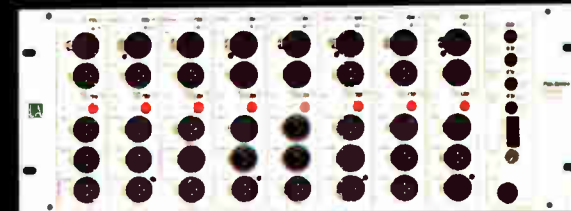
Conference Mixers



Interfacing Systems



Distribution Amplifiers



Mic Splitters



DI's and Accessories

The better choice.

6-24 Southgate Road London N1 3JJ Tel: +44 (0)171 923 7447 Fax: +44 (0)171 241 3644

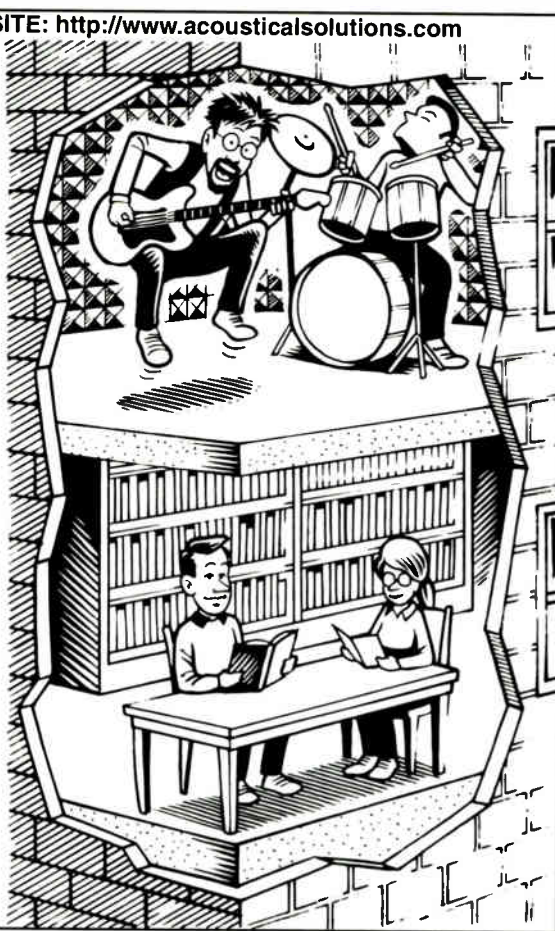
email: sales@laudio.co.uk LA Audio is a division of SCV Electronics Limited

web: <http://www.laudio.co.uk>

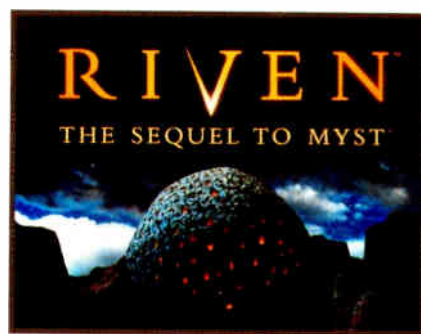
VISIT OUR WEB SITE: <http://www.acousticalsolutions.com>

Sound and Noise Control Products with Solutions

CALL FOR
A FREE CATALOG
AND SAMPLE
1-800-782-5742



CIRCLE #048 ON PRODUCT INFO CARD



you had a subwoofer system where you're going to get some low end. I had several sets of speakers and went through all them."

After months of looking at isolated animations and still shots, and laboring over each separate ambient and sound effect mix, Larkin finally knew success was at hand when he attended a screening at the Cyan headquarters. Also present in the Spokane conference room were Broderbund's Senior Production Manager Dennis Leahy and CEO Joe Durrett. As Rand Miller navigated the complexities of the game, Larkin was first able to experience Riven on a large screen with big speakers and hear all the elements of the soundtrack working as a whole. "Everything you had done came together," he recalls. "All of a sudden, you were in the jungle—everybody felt it. All eyes were glued to the screen. And you don't usually stare like that at a computer screen."

"On the plane back, [Broderbund CEO] Joe Durrett told me that had he been asked six months ago how important sound was in a computer game, he would have replied 'not much.' After hearing Riven, he said he was in total awe."

With all the pressures of production of a high-visibility product like Riven, *Mix* wondered if Larkin had fun doing the sound design. But as he reports, with its great development team, working on a product that pushes the multi-media envelope and breaks new ground was "a complete gas from start to finish!"

Mix asked Larkin one final question: "Are you a gamer?"

There was a pregnant pause. "I hate to say this," he confessed, "but I never got off the island in *Myst*. But I'm playing Riven and really enjoying it." ■

Robert Thomire, recently downsized out of a cushy job with a major Bay Area software company, now struggles like the rest of us as a freelance sound designer, composer and writer.

In Your Dream... you're producing a session while reclining leisurely on a stack of goose-down pillows, surrounded by agreeable musicians with golden, perfectly-tuned instruments and super models who feed you fresh tropical fruits, fan you with palm fronds and massage your feet...and any piece of professional audio or midi equipment you could possibly desire can be rented day or night, and delivered to almost anywhere in the world and in perfect working condition...

Oh, did we mention we're nice people, too, sensitive to your tight budgets and

Dreamhire

PRO-AUDIO RENTALS

New York City: (212)-691-5544 / (800)-234-7536 Nashville: 615-321-5544 / (888)-321-5544 London: 011-44-181-451-5544

deadlines? Call us on it. You'll think you'd died and gone to heaven.

CIRCLE #049 ON PRODUCT INFO CARD

Get ready to burn.



WaveLab

Nothing gets your audio into shape and on CD faster than WaveLab 1.6. It's the only professional PC mastering tool that lets you run 6 plug-ins simultaneously. Editing with WaveLab isn't just fast, it's instantaneous. You can even process audio without recording to disk. And, for unheard of flexibility and expression, all plug-in parameter movements can be automated and recorded during playback. Best of all, WaveLab edits and masters in 24 bits to give your sound files an ultra-high 192dB dynamic range.

WaveLab 1.6 comes with 8 real-time plug-ins including dynamics processing, time and pitch correction, parametric EQs, reverb and more.



We'll also include the "Grungelizer" plug-in free, which adds vinyl record noises and other audio "ageing" tools that add character to your recordings. Other available mastering plug-ins include Steinberg's Loudness Maximizer for added sonic "punch" and the first all-digital phase-coherent aural enhancement system called Spectralizer.

WaveLab also features a powerful audio database that lets you build your own sound file libraries and tailor them to your specific needs. When you're ready to master to CDR, WaveLab's exclusive drag and drop utility allows you to assemble your songs for burning without even leaving the WaveLab environment. Steinberg WaveLab 1.6. Comparisons ultimately fail.

steps ahead
Steinberg
NORTH AMERICA

Steinberg North America: 9312 Deering Avenue, Chatsworth, CA 91311 5857 USA Phone: (818) 993-4161 Fax: (818) 701-7452 Fax On Demand: 1800-888-7510
Steinberg Canada: 5891 Marlee Avenue, North York, Ontario, Canada M6B 3J5 Phone: (416) 789-7100 Fax: (416) 789-1667 All trademarks are registered by their respective companies.
Minimum system requirements: Windows 95/NT 4.0 or higher, Pentium 90MHz processor or better for the real-time engine. Some plug-ins require a 133MHz processor or better.
To download a demo program, visit our website at <http://www.steinberg-na.com> or call Steinberg for a free CD ROM demo. (\$5 shipping and handling charge.)

CIRCLE #050 ON PRODUCT INFO CARD



Groove Tubes

12866 Foothill Blvd. • Sylmar, CA 91342
Tel: 818-361-4500 • Fax: 818-365-9884
www.groovetubes.com
e-mail: GrooveTube @ AOL.com

Each GT PS2M power supply can support any two GT tube microphones with 100% isolation. Just one supply works for Stereo and/or MS recording!

CIRCLE #051 ON PRODUCT INFO CARD

World Radio History

ANDY WALLACE

MIX MASTERS

with the ¼-inch 4-track TEAC. Previously I had actually rigged up my own 4-track using two 2-track machines—I swapped heads and put them beside each other. It was a homemade job, but it worked and I was my hand's hero.

They could overdub, they were in heaven!

Yes. But in 1970 I got a proper 4-track and just started recording. I cut my teeth on that, as a songwriter, putting together demos and getting them to sound as good as possible. I got a record deal as a solo artist and went out to L.A. to do a record for Paramount. The record never really came together, but it got me to L.A. at a very fertile time musically. Rents at the time were dirt cheap, and I found a storefront, realizing I could set up my 4-track there and actually sell studio time. From then on I was in deep, engineering every day.

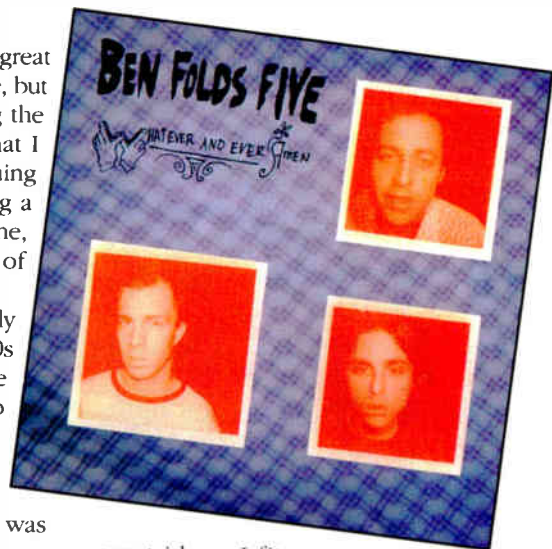
I learned to engineer by the seat of my pants—experimenting and using my head. That studio became Hit City West, which no longer exists. In late '79 I sold my interest in it—I decided to make a career shift, and I came to New York. I was doing a lot of independent

production, and the studio was a great place and a wonderful experience, but I'd gotten so involved in owning the studio and dealing with all of that I felt it was keeping me from pursuing what I wanted. I still miss having a studio; I've always loved having one, but I don't miss the distraction of running it—it's a tough business.

Also, I was out of step musically for the time and place. In the '70s in Los Angeles I was doing more of what sounded like the club records in the '80s in New York. L.A. was very much Eagles and Linda Ronstadt, and it wasn't the right place for the kind of music I was working with.

You were doing dance music?

Kind of rock dance music, and there was really no market for it at the time out there. There were a number of reasons why I came East in 1980, but one of them was hearing the early club records, hip hop things, like Planet Rock. So I came East and got involved in the dance record thing. That's where I really first connected, working with people like Arthur Baker and Shep Pettibone—I did a lot of records with them. These guys were brilliant—great editors,



great ideas. I fit right into the pocket, because I was an engineer and also a competent player. [Ed. note: That's Wallace playing the piano solo on the "Into the Groove" remix from Madonna's *Immaculate Collection*.]

These days you don't do much recording unless you are also producing.

Although I'll often have another engineer accompany me for part of the process, I still do most of my own engineering. But I don't [just] engineer for anyone but myself.

Unique family

RQ Series

- Over 35 years of experience
- Open natural sound
- High standard of construction
- Excellent sales support

You expect all of the above when you buy a Calrec Broadcast console. And you get it.

You get the same in your rack.

Calrec Audio Rack Mount Signal Processors, available in four formats.

RQQ 2200 Twin mono equalisers and filters

RQP 3200 Pre-amplifier, EQ, Compressor and Expander/Gate

RQP 4400 Four stereo microphone Pre-amplifiers

RQD 6400 Twin stereo compressor and limiter

For Further Information Contact : Independent Audio
Telephone : 207 773 2424 Fax : 207 773 2422 e-mail ia@gwi.net



Calrec Audio Ltd.
Nutclough Mill, Hebden Bridge,
West Yorkshire, HX7 8EZ, UK
Telephone : +44 (0) 1422 842159
Fax : +44 (0) 1422 845244
E-mail : enquiries@calrec.com
Website : www.calrec.com



The Panasonic DA7 Mixer. Taking Digital Further.



Panasonic introduces the WR-DA7 digital mixer, and sets an entirely new standard in quality, flexibility, ease-of-use, and affordability—all for under \$5000.

ADTV
ADVANCED DIGITAL TELEVISION & VIDEO

World Radio History

1-Step Functionality
24 Bit A/D and D/A
Moving Faders
Surround Sound
Automation & Memory

Panasonic
Broadcast & Digital Systems Company
For more information call:
1-800-777-1146

On the booklet of the Ben Folds Five CD, they say you "often took the initiative and muted or 'ducked' missed notes and unsavory textures." Isn't it unusual for a band to be so accepting of having a mixer mute their parts?

It really does vary, but I think that a lot of the people that come to me are interested in my input on arrangements as well as sonics. So it's not that uncommon that I'll say 'Try this,' and if they're open-minded...well, I go for whatever will make the best record. Presumably they're not hiring me and going to the expense of doing this just to have me engineer. They also want my input, so it's not uncommon that people would be open to suggestions like "Let's try leaving this part out in this chorus."

Ben Folds Five is a trio with no electric guitars; you're known for your work with walls of rock guitars—why did they chose you to mix the record?

I don't really know, you'd have to ask Ben. I do know that Ben is very concerned with not being perceived as a typical piano trio—he wants a powerful rock thing going on sonically, and that may have been part of his interest. Prob-

ably also he'd spoken to people about me and hopefully heard good things—like me being a good guy to work with, getting the job done and basically going for the music. I'm not going to make my impression on something; I'm going to make as good a record as I can with whatever that takes musically.

Is there at least electric bass on the record?

Yes, electric bass, and the piano is almost invariably amped, through a Marshall, as well as miked—there are pickup mics on the soundboard. That's generally the sound he wants—that kind of thick, in-your-face, almost wall of sound, as opposed to very clearly well-defined.

Acoustic sound plus amp sound.

Yes, the bass as well. The bowed bass was often also run through an amp—sometimes with a great deal of distortion.

On "Brick," is Ben's voice really just completely dry?

I don't recall. I use a number of different space-sized reverbs, so there are apt to be very small amounts of something on a sound that might appear to be dry on initial listening. Then again, I've been know to mix some-

thing completely dry if it felt right.

What are some of those ambiances?

It varies. I'm not one to go in and spend three days fine-tuning parameters that I never knew existed before on a certain reverb. I generally try to find a setting in the ballpark of where I want to go, then adjust a few parameters—usually reverb and decay times. I'm partial to the Lexicon 480. And to Lexicon PCM 70s. I like some of the longer reverbs on the 480—church and hall setting—and I use the PCM 70 for smaller, shorter sounds.

The mix between bass drum, piano and bass on "Brick" seems like it would have been difficult to achieve—lots of low end flying around.

Yes, particularly with bowed bass, which is apt to expand and get louder and quieter, with certain frequencies that resonate more than others—it's a little more organic and alive. And sometimes when you're dealing with piano, the low ends will fight. That can happen with acoustic guitars also, especially closely miked acoustic guitar—you'll really have to fiddle with the bass on it to find not necessarily what sounds the best when the instrument is solo'd, but something that works with the other in-

The Focusrite ISA215 MicPre / EQ: The most economical way to get Rupert's legendary sound.

The ISA 215's (generally pronounced two-one-five) circuit design is still identical to that which legendary designer, Rupert Neve built for Sir George Martin's Air Studios. While never previously advertised, the hand-built, two-channel 215 is one of the most widely renowned mic-pre/equalizers in the world of music. Its distinctive sound is central to

countless hit records. The ISA 215 offers the ideal front end for any studio and a brilliant way to impart legendary Focusrite sound to today's digital recordings. So if your music deserves that elusive million-dollar sound your choices are clear. The original desk for about five-hundred thousand or the ISA 215 from Focusrite for about five.

Focusrite is distributed in the USA exclusively by Group One, Ltd. Tel: 516.249.1399, Fax: 516.753.1020, Internet: <http://www.g1ltd.com> or <http://www.focusrite.com>.

Distributed in Canada by Sonotechnique PLJ Inc. Tel: 514.332.6868 or 416.947.9112

Focusrite
audio engineering



CIRCLE #054 ON PRODUCT INFO CARD

INTRODUCING THE **NEXT** DIGITAL MULTITRACK RECORDER YOU WILL BUY



Fostex D-160 16-Track Digital Hard Disk Multitrack Recorder

Standard Features & Functions of the D-160

16

DIGITAL TRACKS

8

VIRTUAL TRACKS

ABSOLUTELY

NO

COMPRESSION

2.55

gb

HARD DISK

SCSI-2

EXPANDABILITY

adat

OPTICAL

INTERFACE

MIDI

CAPABILITY

- 16 TRACKS OF 16-BIT, 44.1 kHz (CD QUALITY) OR 48 kHz UNCOMPRESSED DIGITAL AUDIO
- 8 VIRTUAL TRACKS THAT ALLOW MULTIPLE TAKES ON ANY PERFORMANCE
- 99 VIRTUAL REELS ALLOW INTELLIGENT PARTITIONING OF THE HARD DRIVE
- REMOVABLE 2.55 GB HARD DISK (STORES 30 MINUTES OF 16-TRACK RECORDING)
- SCSI-2 INTERFACE FOR QUICK BACKUP AND RESTORE
- ADAT™ DIGITAL LIGHTPIPE™ INTERFACE (SIMULTANEOUS 16-CHANNEL) ALLOWS YOU TO USE THE D-160 AS A DIGITAL EDITOR WITH AN EXISTING ADAT INSTALLATION
- FULL MIDI IMPLEMENTATION WITH MMC & MTC ALLOWS FULL EXTERNAL MIDI CONTROL FOR TIME-BASED CORRECTION/MANIPULATION

Virtually every studio in the country uses digital gear for capturing or mastering their audio. That's why it's so important that any new equipment you purchase be compatible with your existing gear.

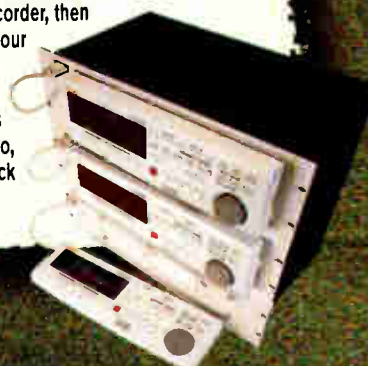
The Fostex D-160 is designed to be used as the main recorder in your studio — it has a wealth of features that make it the number one choice for recording and editing. And, since it is a hard-disk based system, the D-160 also functions brilliantly in conjunction with your existing recorders as a digital editing workstation. The D-160 interfaces directly with your ADATs to move 16 channels of digital audio simultaneously between systems. For the first time you can edit, cut, copy, paste, and move any combination of tracks, allowing you unlimited freedom in arranging your material.

For time code, the D-160 has full MIDI implementation and, with the addition of the optional Time Code/Sync Card, can read and output SMPTE code, making it a natural as a post-production recorder/editor.

Need balanced input and output? The optional Balanced I/O Board provides eight balanced inputs and 16 balanced outputs, all at +4dBu, through three 25-pin D-sub connectors, for interface with pro recording equipment.

If you haven't made the leap to 16-track digital yet, you can't do better than the Fostex D-160. If you already have a digital recorder, then the D-160 is the best way you can upgrade your studio, providing full non-linear editing without trashing your current investment.

Look at all the advantages — whether this is your first purchase or you have a full studio, the D-160 really is the next digital multitrack recorder you will buy.



Fostex

FOSTEX CORP. OF AMERICA • 15431 BLACKBURN AVE. • NORWALK, CA 90650
TEL: 562-921-1112 • FAX: 562-802-1964 • <http://www.fostex.com> • e-mail: info@fostex.com

ALL TRADEMARKS ACKNOWLEDGED

CIRCLE #056 ON PRODUCT INFO CARD

MIX MASTERS

struments. Like posing people for a picture: It's not quite the same as taking a solo portrait. You have to get a grouping that works, and decide what aspect of each individual subject works well in the composition.

What format do you mix to?

Half-inch 30 ips, Ampex 499 at plus 6, no noise reduction, and I go to DAT for a safety.

Listening to Rage Against the Machine I was sure you monitored on headphones while mixing.

No, I don't. But I do listen at a lot of different volume levels during the course of a mix. I also position myself in various places in the control room, and one of the things I'll often do is stick my face right up there between the speakers—not at a very loud level, but enough that I can zero in on things and hear in a dramatic way what's going on with the stereo field.

Stereo placement is very important to your mixes.

I'm a stereo freak. I spend a lot of time on it in the mixes, depending on what's appropriate, of course. Once I get the mix to where I feel it's really rocking

ANDY WALLACE SELECTED CREDITS

MIXING

Nirvana
Nevermind, From the Muddy Banks of the Wishkah

Rage Against the Machine
Rage Against the Machine, Evil Empire

Everclear
So Much For the Afterglow

Ben Folds Five
Whatever and Ever Amen

Rancid
And Out Come the Wolves

Sonic Youth
Dirty

Limpbizkit
Three Dollar Bill Y'all

Jane's Addiction
Kettle Whistle

Vast
forthcoming LP

PRODUCING/ MIXING

Jeff Buckley
Grace

White Zombie
La Sexorcisto

Bad Religion
Stranger Than Fiction

Sepultura
Chaos A.D.

Rollins Band
The End of Silence

Cola
What Knot

Blind Melon
Soup

and has all the right things happening in the right places balance-wise, I spend time doing little ear candy things. Sometimes they are very subtle. I try to provide things so that upon repeated listening there will be some new things to find that are cool—not necessarily a

trick or a gimmick, but something that will continue to augment whatever I'm trying to get out of that mix on further and further subterranean levels.

More depth.

I really try to put a lot of that into all the mixes. It's usually appropriate on some

"The MSS-10 sounds shockingly good" BRUCE BOTNICK

The MSS-10 Mic Preamp gives you a whole new perspective—natural sound from your microphones that is full of life, with transparency, openness, clarity, warmth and body.

"If you really want to hear what your best microphones sound like, plug them in and prepare for the sweet truth."

MIKE SOKOL, *EQ Magazine*, 10/97

"Rarely will you hear such a quiet preamp, or one with such a complete frequency response and low distortion that it seems to open a window on the microphone. Like fitting the best possible lens to a camera, (it) reveals just how much of the raw material we work with gets lost through anything less."

DAVID FOISTER, *Studio Sound*, 6/97

We Listen That's the MSS-10 secret. Don't just take our word that it sounds incredible, listen for yourself with our **60-day money back guarantee!** Call today (800) 582-3555.



"The preamp is completely 'colorless', and very open; it allows the microphone's output to be fully heard."

Grammy winning Producer, Mixer Mr. Botnick used his MSS-10s on: *Air Force One, Deep Rising, The Edge, L.A. Confidential, The Doors—Box Set, Beauty and the Beast—Original London Cast Recording*



CIRCLE #056 ON PRODUCT INFO CARD

1151 W Valley Blvd, Alhambra CA USA 91803-2493 Phone (800) 582-3555 or +1 (626) 281-3555 Fax +1 (626) 284-3092 www.martinsound.com

ENGINEERED FOR THE STUDIO.

BUILT FOR THE STAGE.

Audio-Technica 40 Series technology goes from studio to stage.

The new AT4054 and AT4055 cardioid capacitor microphones put premium 40 Series performance in the palm of your hand. Based on the same advanced technology used in the critically-acclaimed AT4050, their true capacitor, large-diaphragm design provides extremely smooth, warm and true-to-life audio reproduction.

Both microphones feature a unique protective capsule design with performance optimized for live-sound use. Exceptional transient response and sound pressure level capability ensure clean output even in high SPL situations. The AT4054 features a tailored low-frequency roll-off while the AT4055 remains flat, providing the right choice of mic for different applications.



AT4050



AT4054/AT4055 capsule

Whichever model you choose, count on sparkling realism *plus* reliable performance. Both are engineered for the studio, built for the stage... and at \$499 each, they're priced for your budget as well.

Call, write or fax today for more information.



audio-technica®

Audio-Technica U.S., Inc.
3221 Commerce Drive, Shon, Ohio 44224 330/686-2610
Fax: 330/686-0779 E-mail: prod@at.com www.audio-technica.com

Audio-Technica Limited
Old Lane, Loughborough England LE11 2TJ 441
Fax: 0114 270 4555 E-mail: sales@audio-technica.co.uk

CIRCLE 407 ON PRODUCT INFO CARD

MIX MASTERS

level, even in a really in-your-face, two guitars, bass and drums situation. There are still things you can do with a subtle reverb. I try to get that blend of things—rough, in-your-face, not slick—but at the same time there can be little things that provide extra aural interest that aren't so up front that they make the mix sound slick.

That concentration on the stereo image must help when you have to balance so many guitars.

It helps with everything. How wide apart I put toms or cymbals in the stereo drums—all of that is really critical, and I try to fine tune that stereo field and to use it as much as possible. Sometimes I'll put a little phase thing on an instrument to get it to sound even further off to the side—as long as it doesn't fall apart in mono. A partially out-of-phase signal may sound even wider.

Using a phase shifter?

Either a phase shifter, or I'll just flip the phase button on the console 180 degrees. Or I'll just delay something, like the difference between the bass amp and the direct signal, a few milliseconds.

So you might use stereo bass.

I'll put anything in stereo. Which is not to say that I'll put everything in stereo. Sometimes I'll get a record where everything is recorded in stereo, and I'll reduce those stereo recordings of individual instruments back to mono in



order to get a more distinct instrumental stereo spread. All those things in stereo can be effective sometimes, but it gives you sort of an overall mono-ish sounding mix. Sometimes it's better to get more up front with something placed off to the side.

So what's the truth about how much replacing of sounds you do?

There seem to be rumors about that, and a number of artists have been surprised that I wasn't replacing their drums. I rarely, rarely replace drums. I will bend over backwards to use whatever performance is on tape, although I will move things around a bit if something's out of time. I try not to do that carelessly, but if something is bothering me and just doesn't sound right, I'll do what I can to make it right. I'm not inclined to replace drum sounds, but it's funny—the word on the street must have gotten out there that I do.

Was there any replacing of drums on Nirvana's Nevermind?

No, there was not.

Okay, if you don't use samples, how do you get such great bass drum sounds? A lot of rock records don't have that powerful bass drum bottom, but on records like Rage and Nirvana you find a way to make the bass drum large but still not turn muddy when everything is playing.

While I rarely replace sounds, I have no qualms about seriously working on them. I have no formulas: sometimes I'll use a gate fairly hard, or I might use it

GREENE STREET RECORDING STUDIOS



CHUNG KING STUDIOS



ADL

Anthony DeMaria Labs

Sales: (818) 340-0228
Technical Info: (914) 256-0032
Fax: (818) 340-4331
www.ADL-TUBE.com

MASTERFONICS



STARSTRUCK STUDIO



Sometimes
warm
is
COOL.



ADL 300G
Stereo Tube Direct Box

ADL 1000
Mono Tube Compressor

ADL 1500
Stereo Tube Compressor

MTS-6
Modular Tube System
Shown here with TPM-1
Tube Preamp Modules

AMEK DIGITAL

DMS

GET MORE
MUSCLE FROM
YOUR
MIXING CONSOLE

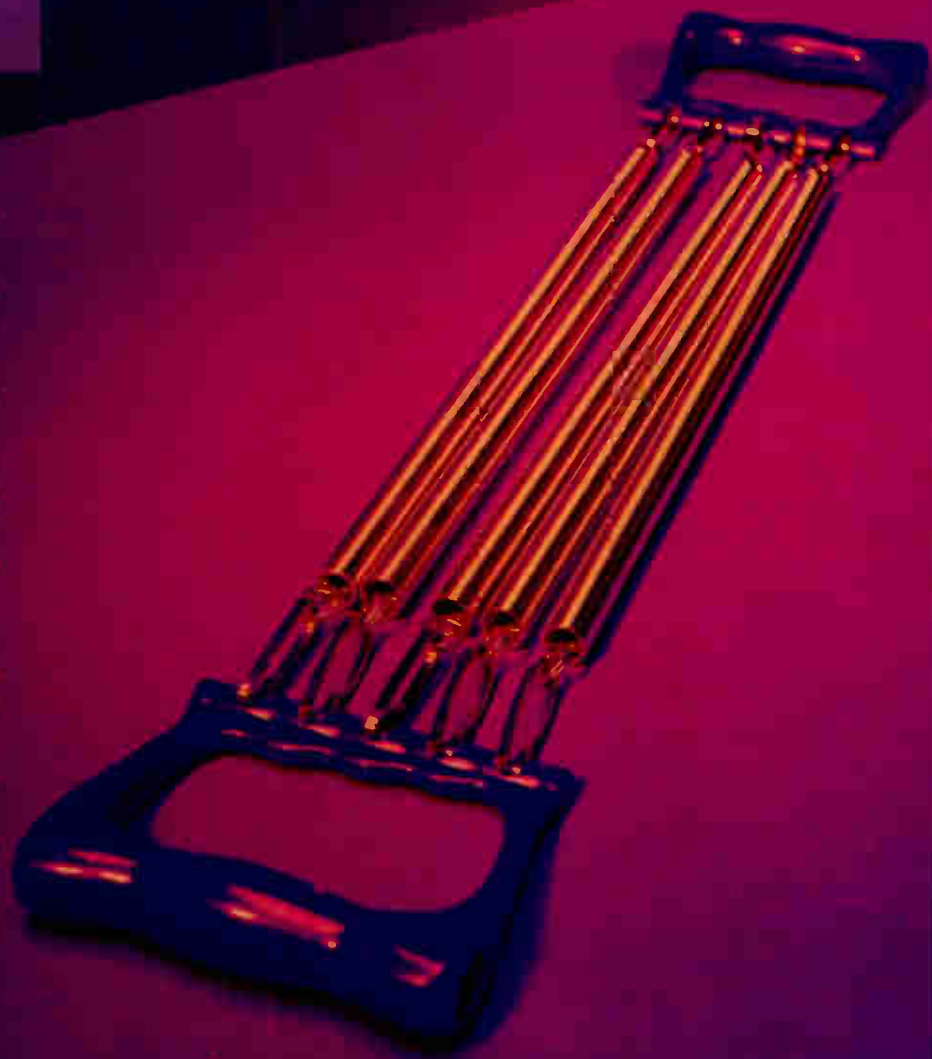
The AMEK Digital Music System is
the most powerful digital processing
processor ever designed. It's not just
the 24-bit word length or greater processing
depth or even high sample rates.

It's the digital signal processing
in an architecture designed to the
precision of the original. In the system
architecture, you can adjust the
gain of the processor.

Without that feature it would
be a simple, standard signal processor.
You may not realize it, but
it's not the gain of the processor
that's the real key. It's the gain and
the signal processing in the AMEK
DMS. It's the digital processing in the
system architecture. So you can
adjust the gain of the processor.

Letting you to work with the

gain of the processor in the system



1992 THE AMEK DIGITAL MUSIC SYSTEM IS THE MOST POWERFUL DIGITAL PROCESSOR EVER DESIGNED. IT'S NOT JUST THE 24-BIT WORD LENGTH OR GREATER PROCESSING DEPTH OR EVEN HIGH SAMPLE RATES. IT'S THE DIGITAL SIGNAL PROCESSING IN AN ARCHITECTURE DESIGNED TO THE PRECISION OF THE ORIGINAL. IN THE SYSTEM ARCHITECTURE, YOU CAN ADJUST THE GAIN OF THE PROCESSOR. WITHOUT THAT FEATURE IT WOULD BE A SIMPLE, STANDARD SIGNAL PROCESSOR. YOU MAY NOT REALIZE IT, BUT IT'S NOT THE GAIN OF THE PROCESSOR THAT'S THE REAL KEY. IT'S THE GAIN AND THE SIGNAL PROCESSING IN THE AMEK DMS. IT'S THE DIGITAL PROCESSING IN THE SYSTEM ARCHITECTURE. SO YOU CAN ADJUST THE GAIN OF THE PROCESSOR. LETTING YOU TO WORK WITH THE GAIN OF THE PROCESSOR IN THE SYSTEM.

softer like an expander, or sometimes I don't use it at all.

A lot has to do with EQ—I'm not shy in that department. I particularly like the SSL EQ on drums, especially the E Series EQ. When I'm setting up on a console that has both E and G, I'll generally have the drums on the E modules. There's no frequency I can say I always use—I'm as apt to take something out as to add it. And a lot of it has to do with how it sounds relative to other things that are in there. I'll start, perhaps, by soloing something and getting it in the direction that I want, based on what's on tape, but it's fine-tuned with other things in.

I am apt to notch things. For instance right now I'm mixing an album for an Irish artist named Sinead Lohan. A lot of her tracks were recorded live with acoustic guitar and vocals. The EQ I add to her acoustic guitar may boost a frequency in the vocal bleed that I may then cut back on the vocal track, even though I wouldn't have made that same decision listening to the lead vocal in solo. That same thing applies to the kick drum. If there's a frequency

getting in the way of certain things I'll trim it out of one area or another. I don't just boost; I'll always look for things I can cut out first.

Do you make major changes in sound for different parts of the song?

I ride things a lot—automation has been a blessing for me. Particularly on *Evil Empire* there was a lot of drum track riding.

So you are most likely to use console EQ and compression on drums?

Yes. I do use some outboard EQ; the ones that we have here that I draw upon are API 550As and the GML 8200 stereo equalizer, which is primarily a parametric program equalizer that I'm apt to use on individual instruments because it's really sweet-sounding. And old Neve equalizers are always lots of fun.

Any processors you like for guitars?

No, I don't use tons of processing other than EQ and compression. Occasionally I'll flange something. As far as EQ, sometimes I'll plug in an individual EQ, but more often than not I'll work with the SSL EQs.

A lot of rock records don't have much bass on them, but your basses are always very audible. How do you deal with the problem of all that low fre-

quency stuff knocking around? Trying to make the bass and bass drum groove in that seems like a real art.

Sometimes with bass, and also with guitars, fine tuning midrange has a lot to do with it. You can't be careless with it—you don't want to start pouring midrange on and having everything sound boxy—but choosing certain midrange frequencies can help give presence and apparent definition without necessarily having to bring something up louder in the mix, which could then cause the whole low end to run away.

Sorting out definitely seems to be one of your talents.

It's a big part of what I do. I can very quickly bang together a basic track mix of a band that rocks, and often that will become the core of a mix, and the final mix will have that basic vibe and sound. But the big time-consuming thing for me initially is learning the tracks. I spend a lot of time listening to all the tracks, because I want to hear if there's some funny little thing that happens in the hi-hat or some special little lick or subtle snare roll—I really try to pick those out. I try to learn the subtleties of what's on every single track



ATHAN CORPORATION

MTR-90 MOTOR & IDLER MODIFICATION

Get the Ultimate Performance.

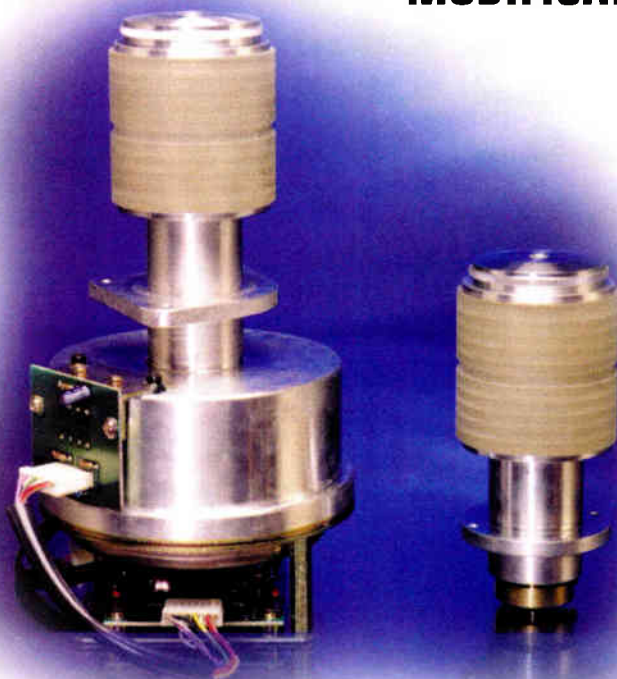
Turn Your MTR-90 into a Mastering Machine with MTR-90 Capstan Motor & Idler Assembly Modifications.

- Lower your Flutter Specs
- Eliminate High Frequency Bounce
- Smoother tape travel across the heads
- Prevent improper head wear
- Reduce component flutter from .034% to .005% @ 15 ips
- Improve transport stability
- Accurate location readings

ALSO NOTE:

Our exchange program reduces down time!

Call 650.589.5206 for references, more specifications and information.



ph: 650-589-5206 / fax: 650-742-9091 / e-mail: athancorp@aol.com / 50 LINDEN AVE. #10, SO. SAN FRANCISCO, CA 94080

CIRCLE #060 ON PRODUCT INFO CARD

This will be the most imitated speaker on the market.

Again.

Eighteen years ago, Meyer Sound rocked this industry by introducing the most sophisticated loudspeaker yet--The UPA-1 featuring the first trapezoidal cabinet (US patent # 271,967) and the first professional loudspeaker with dedicated control electronics*. It was eventually imitated by almost every other loudspeaker manufacturer.

Today, the Self-Powered UPA-P radically improves upon its classic predecessor by perfecting every aspect of loudspeaker design: High SPL, low distortion, high efficiency, linear response, precise coverage, consistent performance, and unbeatable convenience.

The new UPA-P is a revolution. Only the progressive thinking and uncompromised engineering of Meyer Sound could produce a system this powerful, this flat, this compact.

Flat phase response +/- 35 degrees from 600Hz to 16 kHz. Great response for a studio monitor, unheard of in a high power PA product... until now.

An integrated, powerful 2-channel amplifier for over 1000W peak power (350 Watts/channel). No amp racks, no complex and costly wiring, less truck and storage space, faster installation time.

133 dB peak SPL at one meter.

A new constant directivity CQ™ horn, the culmination of years of research in our own anechoic chamber, guarantees the most accurately defined high-frequency coverage (Pat. pend.)

Only 77lbs total weight.

An Intelligent AC™ system that automatically adjusts to the operating AC line voltage from 80 to 265 VAC.

CE and UL Approval.

Do the math. The Self-Powered Ultra Series is surprisingly affordable and costs substantially less than conventionally amplified systems.



UPA-1P

The Self-Powered Ultra Series

*You owe it to yourself
and your business to hear this system.*

**Meyer
Sound**

CIRCLE #064 ON PRODUCT INFO CARD

Meyer Sound Laboratories, Inc. - 2832 San Pablo Avenue - Berkeley, CA 94702-2204 - (510) 486.1166 - fax (510) 486.8356 - www.meyersound.com

*John Meyer holds numerous patents including a low distortion driver/horn combination which is utilized in the UM-1P, and one for the perfectly aligned phase response through crossover (zero-pole crossover) utilized in both the UPA-1P and UM-P.

and where all the little good bits are. The next thing that takes time is coming up with a plan—figuring out what to feature where.

What piece of gear can't you live (or mix) without?

[Laughs] My ears. But that's not the answer you're looking for, right?

I can tell you the things I rely on. Obviously, I mix on SSL; I have mixed on Neve—the whole White Zombie album was mixed on Neve—but SSL is my preference by far.

I like to use near-field monitors, but

I also like to have big monitors. Even if they don't sound too good, I refer up on them occasionally just to understand how some of the very low stuff works when it's loud. For near-field I generally use NS-10s, and also lately I've been augmenting them with Genelec 1031As—I use them side by side about equally, although I organize my specific balances on the Yamahas.

For effects I like the 480, and I have to have PCM 42s or the Roland SDE 3000s if I can't get PCM 42s. I like them because, in addition to being high quality, they're straight ahead—I'm not a big user of multiprocessors. I like creating

my own thing with my own collection of reverbs and delays rather than a pre-programmed thing.

For utility I like the [Eventide] H3500—if I need to sample something and move it around fast, it's a handy thing to have. I also like having Yamaha SPX 90s. They have an interesting sound—I won't call it trashy, but something about the reverb is kind of cool.

A rumor that a number of people have told me, which I find amusing, is that I'm the guy with mountains of outboard. In fact, I use very little—even the normal amount that's in the room here very often goes unused. You can be almost certain I'll have patched in four or more PCM 42s with maybe a Primetime 2 in there, and I'll usually keep the Eventide handy and an SPX 90 or two.

For the occasional outboard EQ or compressor—that's apt to be anything depending on what's around, although I am partial to some of the older things like the LA2s.

Are you a perfectionist with pitch changing on vocals?

I'm certainly aware of it and won't hesitate to do it if it bugs me, but I do try to let things be what they are. I'm not a fan of picking something apart and making it perfect. That's the big danger of a Pro Tools situation—it's hard to know when to stop. So I don't automatically pitch correct. As long as it doesn't bother me, I leave it.

A lot of what I do—initially in a mix, but also in production and especially in pre-production—is to remove the negative stuff. And then I spend a lot of time trying to make as good a picture as I can with exactly what the artist has given me, because I'm a big bug on maintaining the artist's vision.

I think that's obvious from your work—I don't think you can listen to a record and identify an Andy Wallace mix.

That's good. I don't want to go in there and do all the things that I'd do if I were the artist. My thing is to really try to understand their vision and view and then to make that as full-tilt as possible. After that, to whatever degree other people such as A&R or management want the vision to go in a certain direction—such as, "We want to make sure the song will really work on the radio"—then obviously that comes into play as well. But my first and foremost desire and drive is to capture and maintain the artist's picture of what they want. ■

Maureen Droney is Mix's Los Angeles editor.

Full Sail is one of the most extraordinary educational experiences in the world, offering hands-on training in thirty-two cutting-edge studios. Full Sail's powerful list of lab equipment includes the **SSL 9000J**, **Neve Capricorn**, and **Neve VR** super consoles, **Studer 48-Track** Digital and Analog Recorders, **Arri 35mm** and **16mm** film cameras, **Quantel** and **Avid** digital video editing systems, and **Silicon Graphics** and **Intergraph** graphics workstations. The only thing more impressive than our gear is the long list of successes, credits and awards that thousands of Full Sail grads have earned.

If you're serious about your dream, we'll take your dream seriously.™

FULL SAIL

Real World Education®

School of Audio•Film/Video•Digital Media
 3300 University Boulevard Winter Park, FL 32792
 Financial aid available to those who qualify. Job placement assistance.
 Accredited by ACCSCT and SBICU.

1 800 226 7625
 fullsail.com

CIRCLE #062 ON PRODUCT INFO CARD

"...more features and higher-resolution
D/A converters..."

Mix Magazine

"...more back panel ports than in a
wine cellar."

EQ Magazine

"...the price vs. performance ratio is
key and Panasonic has the secret."

EQ Magazine

"...One word: wow!"

Radio and Production

SV-3800



.....
50,000+
and growing!
.....

When Panasonic first introduced the 3000 Series Pro-DAT Recorder/Players, we believed that we created the finest solutions for professional use whether in high-end recording facilities or local studios. Now that over 50,000 have been installed, we're happy to know that the professionals obviously agree.

Better sound, greater flexibility, easier use, all combined with uncompromised quality make Panasonic the leader in the field. No other DAT solution is used in so many places, and in so many ways as Panasonic.

Why wait any longer? The best DAT solution is here. Look for the SV-3800 at your Panasonic dealer, and join the professionals who know great audio when they hear it.

Panasonic/RAMSA Audio—50,000 professionals can't be wrong.

RAMSA

World Radio History

For more information, call: 714-372-7377

Panasonic

GARTH RICHARDSON

MR. CRUNCH



PHOTO: DOUG OLSON

Garth Richardson began his career in the time-honored way—cleaning the toilets at a recording studio. By the time he was 16 years old, he had put in countless hours as a “gofer” and, appearances of nepotism notwithstanding, had earned his position as second engineer on a project being produced by his father, Jack Richardson, the Canadian producer responsible for dozens of albums by bands such as Poco, Alice Cooper, Badfinger, the Brecker Brothers and the Guess Who. Garth Richardson’s first sessions became Bob Seger’s *Night Moves*.

Today, Garth has built a solid reputation in his own right. Known as “Mr. Crunch,” he has produced and engineered several of today’s coolest musical acts, including Rage Against the Machine, Red Hot Chili Peppers and Catherine Wheel. He was recently given a Canadian Juno award for Producer of the Year for his work with The Melvins and Jesus Lizard.

One thing for sure that he picked up from his old man along the way is the “interpersonal” aspect of producing a band. Talking to both father and son reveals a common thread in their approaches. *Mix* caught up with Garth Richardson for lunch at Subeez, a

trendy café in Vancouver’s Yaletown district.

What is your biggest strength as a producer?

A lot of producers that come in want to do their ideas, not the band’s ideas. I always try to make sure that I’m helping them make their record and not my record. People tend to make the same-sounding record over and over, with different bands. Bands are smarter now than they were in the ‘60s, because they write the songs and they have a vision, so it’s my job to help them get there.

How much did you bang out with your dad, and what did you learn from him?

I would go right from school downtown to the studio and clean toilets and wash floors and clean glasses and go and get the food from the age of about 12. I learned how to deal with the people. I learned to be very honest and caring and to work hard. The place was called Nimbus 9, and the studio was called Soundstage. Part of Pink Floyd’s *The Wall* was done there, the first Peter Gabriel solo album was done there, Alice Cooper’s *Welcome to My Nightmare* was

done there. I knew from the age of about ten that this was what I wanted to do.

Were there any specific things you learned from your dad about recording?

The one thing that he did teach me was that you had to have good songs, you had to have good sounds. If you had a shitty guitar player with a shitty sound, that sound came through the speakers. He taught me to look at songs in many different ways: whether it should be slowed down or sped up, or different key, strings, horns, that type of stuff. He taught me to be very patient and focused. Whatever you had to do to make it right you would do. Whether you had to sing the melody into the singer’s ear because he just couldn’t sing, or whether you had to teach the drummer to play drums.

You had to be in charge because you were basically the hub of the session. You determined if it went fast or slow, who was playing what when. He taught me just to care, I guess. People today care more about how many planes they have, how many cars they have, and they totally lose sight of the fact that they’re there to do a job. I know so many people that call in on the

BY TIM MOSHANSKY

VALSE

Opus posth. 70 Nr. 3

Moderato $\text{♩} = 108$

dolce e legato

dynaudioacoustics

Ultra Precision Studio Monitors

World Pacific History

phone to see how their band's doing. *Who else inspired you in your earlier years, besides your father?*

Band-wise I would have to say that Gentle Giant had a huge influence on me. I loved Alan Parsons. I really loved Ted Templeman and all of those Doo-bie Brothers albums, and of course George Martin and The Beatles were a huge influence. I grew up with Hendrix and Zeppelin.

How is your family connected to (producer) Bob Ezrin?

Actually, my dad is Bob's mentor. He used to play piano and write charts for him. A funny story was Shep Gordon, who manages Alice Cooper, wanted my dad to produce him. Bob was working for my dad at the time, who sent him to New York to check it out. Bob told Shep and the band that they would do it, without telling my dad about it. So Bob came back and said, "I told them that we'd do it" and my dad said, "You're fired." Then my dad said, "Okay, you said we'd do it, let's do it together." That was the first thing that Bob had really done, and he went on to do Kiss's *Destroyer* and Pink Floyd's *The Wall*.

When I first moved to L.A., I was 25 years old, and Bob was kind of like a father to me there. He was always there for me. Getting to work with Bob recently on the Catherine Wheel album was a real thrill for me.

What made you move to Vancouver?

I like the West Coast. There really isn't, in my mind, much of a music scene back east. I like to be close to L.A. It's a two hour flight, so I can fly home and see my family. Plus my lovely wife wanted to live here. In L.A. we lived through the fires, the riots, the earthquakes and the floods.

My two homes in L.A. are Sound City and A&M. They have old vintage Neves there. Sound City is where I did the first Rage Against the Machine record.

How long did it take you to record Rage Against the Machine's first record?

Thirty days. We cut it almost all live. Zack lost his voice on the first track, so when his voice came back, we set him up inside with me, close-miked, and I blasted the main monitors so it would feel like he was doing it live. No one wore cans, and we blasted it back through the Meyer P.A. system. The one song that was cut totally live on that record was "Settle for Nothing." After that, he lost his voice.

You're known for your heavy guitar sound and using more than one amp

JACK RICHARDSON

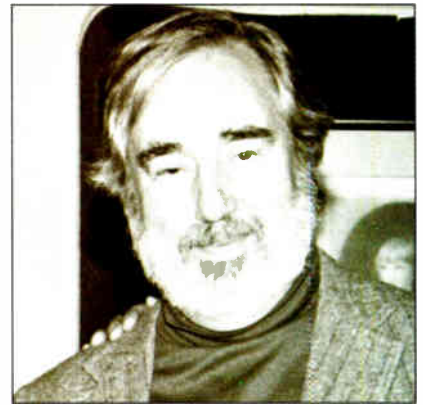
THE VOICE OF EXPERIENCE

Jack Richardson's diverse background includes playing and recording many styles of music, from symphony to country to jazz to polkas to rock 'n' roll. He also has a penchant for arranging and restructuring material.

Richardson was one of the first in Canada to record with multiple 24-track machines when Max Webster teamed up with Rush to record the Canadian rock opus "Battlescar." He says his people skills have enabled him to succeed with a variety of artists and talents over the years.

Richardson also observes that the industry is made up of very different players from when he started out. "I think in a lot of cases, the competency of the actual players involved is very questionable, and I think the record companies have lost all control of the cost thing," says Richardson. "I know I've talked to Garth, and he's talking of \$300,000 budgets, and up. I could make about eight albums for that. It seems as if the image has taken over a much greater priority from the actual ability of the players to play. I'm not saying it's all like that, but it's just a general observation. I feel that with all of the new instruments and technology, there's more manufacturing than creative performance. In the past, musicians would spend a lifetime becoming capable and competent, and now someone just switches on a machine and makes flawless music with sequencing, sampling and editing."

As a producer, Richardson puts a lot of work into problem-solving, finding new ways to get sounds onto tape. "One of the things that had always bothered me when doing guitars [is that], in order to get that huge wall of sound-type of texture to it, you invariably had to bring the guitar player back in and do it two or three or four times. You always ran the risk there that you did with a lot of guitar players who couldn't re-create exactly what they had done on the last take. You never got a totally accurate depiction of the original track, in most cases."



Richardson knew there must be another way of doing it, and he eventually relayed his "problem" to a technician who worked at one of the studios he worked in. He developed a guitar splitter box that would take a guitar signal and split it, with no signal loss, to six different amplifiers, so that he could dial in specific textures from any of the amps in combination with each other, thereby avoiding the need to do multiple passes on a track. From there, he says, depending on what result you are trying to achieve, there are many options of recording those six separate signals. You can record each one onto a separate track, or combined onto one, or split into discrete stereo signals, or put onto one track if you wanted a really significant, huge guitar sound.

Today, Jack Richardson teaches at a recording college in Ontario, and he still likes to do one or two albums a year, just to stay close to the music. He admits it's hard for people starting out to all of a sudden become "producers" without a track record and a lucky break. "There are very few staff production positions," he observes. "If you're dealing with an artist that does have a fairly high profile, they're certainly going to be reluctant to go with someone fresh out of the box. To become a producer, you have to be self-made, you have to be self-starting from the standpoint of going out and finding a group that you have faith in and work with them until you can get them down on tape of some kind and hopefully make a deal. There are very few opportunities out there. You have to make your own." ■

at once. How do you get such good guitar sounds?

I have a box that can split one guitar signal into six different cabinets and heads at the same time. Sometimes I use one cabinet and sometimes I use

six. It's actually so much easier to get a sound because you can have them on all the time or off all of the time. You can pick from several different amps and not always have to unplug, stand-by, plug in, etc.

SOLIDTUBE

EXPERIENCE THE WARMTH



AKG Acoustics,
the leader in studio
microphones for over
50 years, proudly brings
you the latest in tube
microphone technology,
the **SOLIDTUBE**



A full complement of
accessories is included
with every **SOLIDTUBE**.

AKG Acoustics, A Division of Harman Pro North America, 1449 Donelson Pike,
Nashville, TN 37217, phone: 615-360-0499, fax: 615-360-0275
AKG Acoustics GmbH, Vienna/Austria/Europe, <http://www.akg-acoustics.com>

CIRCLE #061 ON PRODUCT INFO CARD



H A Harman International Company

PRODUCER'S DESK

About ten or 12 years ago, my dad wanted to use more than one amp for recording rather than overdubbing, so he got one of the techs from Phase One Studios in Toronto to build him this box. It's called the Guitarsplitter, from a company called Systematic Sound. Kirk Elliot, the guy that makes them, now lives in Vancouver. Bob Rock has them, Bruce Fairbairn has them. It really is a godsend.

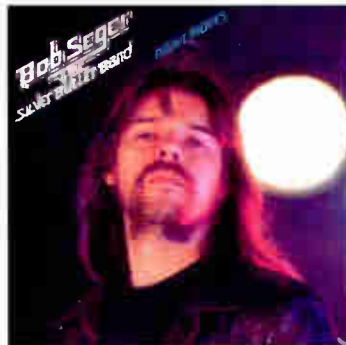
How many mics do you normally use on each amp?

Usually there are about three to five mics used for each cabinet. I'll use 57s, 421s, 414s and some 452s, and then maybe back a few feet I'll have a couple of 87s, just to get that warmth. You have to put baffles in the room to separate the amps. Sometimes you're running six Marshalls at the same time, and it gets so loud. We did one record with a band named Kerbdog, and we started off with about 25 cabinets and amps. It took about two days just to go through 'em all, but we got the best sound that we have ever gotten. We used old Les Pauls, old Strats and Teles, different strings, different pickups.

What other miking techniques do

you use?

So many bands are used to playing live, and they have a full-blown monitor system and a full P.A. system, so I try to make them feel like they're playing live.



Like I'll have the drummer play through a giant P.A. system so when he's playing the drum tracks, he can feel his kick, his tom toms and his snares. Every song may not be like that. Each song has to have its own sound. Some songs we won't use the P.A., we'll use all old tube mics, and some songs we'll use very standard, boring mics. Some songs we'll use 40 mics for a five-piece kit. The sound has to be right for the song. *What's the favorite record that you've worked on?*

I have a bunch of favorites. I did three Melvins records, which were an absolute joy, the Rage record, the Jesus Lizard record. I just finished working on the Catherine Wheel album which really doesn't have any "crunch" on it, because I want people to understand that I don't just do "crunch" records. We had a lot of keyboards on the album. I had the pleasure of co-producing the record with Rob Dickenson from the band, Tim Friese-Greene and Bob Ezrin.

What was the reason behind doing a co-production, and how did that work out? The whole thing went smoothly. The band's manager wanted to draw from each guy's positive strengths. We also had Randy Staub mixing for us. It was

acoustic

Then

was the 60's & 70's - Great performers like Jefferson Airplane, Frank Zappa, Grateful Dead, Led Zeppelin were making music history. It was their great sounds and the great times at the Fillmore, the Avalon, Woodstock and the Whiskey A-Go-Go! The era was Electric, Psychedelic, Erotic!

Now

the most aggressive product launch in music history - **Over 30 New Models**

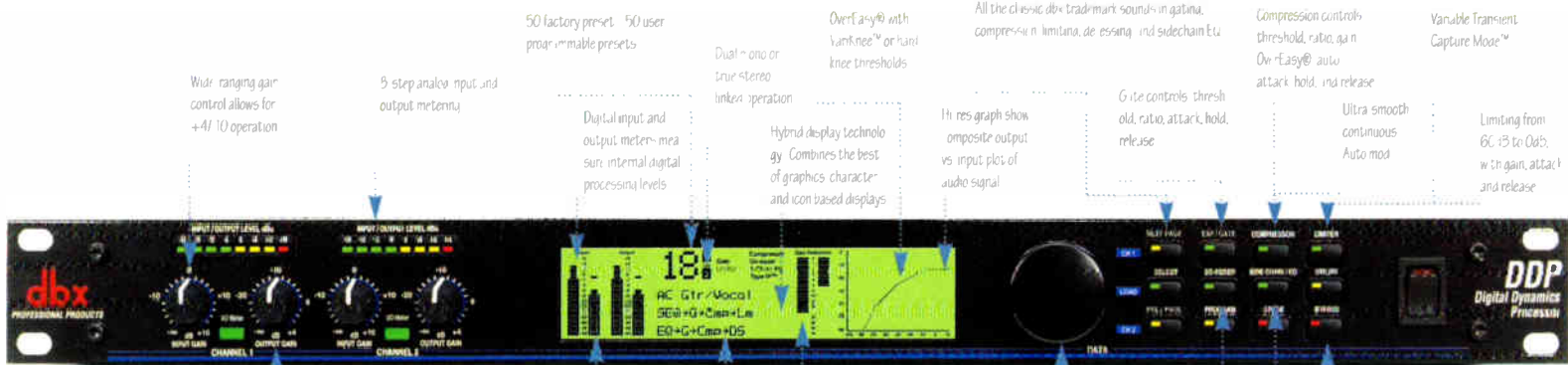
- Sound Reinforcement
- Contractor / Installation Series
- Studio Producer Series

Forever acoustic™

An American Rock & Roll Legend

18521 Railroad St., City of Industry, CA 91748
(626) 964-4700 Fax (626) 965-5224

The compressor that forgives, but never forgets...



IT FORGIVES

• New dbx technology, the TYPE IV™ Conversion System with TSE (tm) (Tape Saturation Emulation) gives you the pleasant overload characteristics of analog tape without the harsh distortion of most digital input systems. No more dancing around with the input levels to protect the integrity of your audio.

• Ultra-wide dynamic range 24 bit A to D converters with TYPE IV™ make your signal sound better than you ever thought possible. Capturing the full dynamic range of your analog signal and coupling it with the powerful dynamic range of this patent-pending dbx process, TYPE IV™ will make your digital signal sound like it came from the quietest high-quality analog source you could imagine.

• With the extensive metering of the DDP, you can see EXACTLY what is going on with ALL parts of your signal: input, internal processing, and output, with peak and VU, as well as gain reduction for both sides of the stereo image.

• And speaking of stereo, you can work in stereo with dbx's True RMS Power Summing™ for phase-coherent tracking, or in dual mono mode, without the two channels interacting at all, making the DDP a great processing value.

IT NEVER FORGETS

• The DDP works right out of the box. It comes with 50 factory setups that are guaranteed to knock your socks off. There are presets for every application you can think of, and then some. dbx engineers are musicians and recording engineers. We know what a compressor is supposed to sound like, and we know it better than anyone else. We invent our compression. We eat, sleep and breathe compression.

• Want to duplicate that perfect compressor set-up? Each processor in the chain has all the parameters you would expect. After you set the parameters the way you want them save it as a processor preset, available to be recalled any time. These building blocks allow you to save entire setups just for the way you like to work. It doesn't matter that you are doing a live gig one night, then mixing the tracks in the studio the next night, the DDP will be there, just the way you left it.

• When you save a preset, you also save the information that makes it work behind the scenes, too. Digital output (optional), sample rate performance, MIDI setup, as well as any of the other utilities, like sidechain setup and monitor, EQ settings, and SysEx functions.

• When you make changes to any parameter, you can see where your adjustments are affecting the signal, simply by looking at the Hi-Res graphical display, which shows the processing curve in real time as you make your adjustments.

Check out the DDP at your local pro audio outfitter, and experience DIGITAL performance you'll never forget.

Gate

Start with the gate. Set parameters for threshold, ratio, attack, hold, release, and output gain. See the effect of your settings on the graphical display, as well as on the gain reduction and audio level meters, they all interact in real time with your manipulation of the parameters. Start with a threshold setting of about -60dB to clean off the noise in between the vocal takes. You can save your final gate settings as a "gate preset" building block and recall it into any other setup you do.

Compressor

Then move to the compressor. The effects of the gate settings are still visible on the graphic display, so let that help you determine where to set your compressor threshold. The parameters you change here will also affect the curve on the graphical display in real time. Move through all the regular parameters, like threshold, ratio, attack, release, and output gain. For vocals use a threshold of about -25dB, a ratio of about 3:1 or 4:1, and a slow ATTACK and fast release for the most natural sounding effect. Your compressor settings can also be saved off as a building block to be called up into any other preset.

Limiter

On to the limiter. Changes you make to the limiter settings are also seen on the graphical display. Adjust the level up or down to suit your needs. The flat top line of the display moves up and down as you adjust the level. You can also set the speed at which the limiter lets go of the signal as it goes below the threshold. This is truly smooth limiting, with patented dbx PeakPlus™ algorithms, so rest assured that where ever you set your threshold level, your tape will not distort, and your signal will not get butchered as it goes across the threshold. And like the other parts of the processor, your limiter settings can be named and saved for later recall.

De-esser

De-essing works the same way: see the effects of your settings displayed on the graph. Parameters here are the common ones: threshold in frequency, 800Hz to 8kHz; and amount in percent. Other available processing includes EQ - both in-path and sidechain, for special-effect types of processing. When you are editing any of the building blocks, its icon is visible on the display, and the parameters are shown on the graph, so it's always easy to know where you are. Parameters are easy to see in this page driven operating system. When it's as complex as this, it's nice to know somebody was thinking when it was put together.

and More

You can also work in stereo, or set up a completely different and independent processing chain for the other channel. Also, notice that the audio meters are capable of showing both peak and average levels for input and output. Optional digital output with the TYPE IV™ Conversion System with TSE™ (Tape Saturation Emulation) provides up to 24-bit output in either AES/EBU or S/PDIF formats with the trademark digital processing of TYPE IV™. The DDP also has full MIDI/Automation capability, with separate midi in and thru jacks. Entire processing setups may also be saved into one of 50 user defined presets, or use one of the 50 factory setups.

dbx Professional Products • 8760 South Sandy Parkway • Sandy UT 84070 USA
 Phone (801) 568-7660 • Fax (801) 568-7662
 email: customer@dbxpro.com • URL: http://www.dbxpro.com



Save The Planet It's the Only Market We're In.

CIRCLE #066 ON PRODUCT INFO CARD

Must everything beautiful be fast?



Yes.
You want your studio to look great, but you want it quickly and you want to be able to take it with you if you move.

Modular means movable. It also means faster and easier installs and a higher degree of sound isolation. Call us: 1-800-749-1460 See how fast beautiful can be.

ACOUSTIC SYSTEMS
modular sound isolation
www.acousticsystems.com

the science of silence

CIRCLE #067 ON PRODUCT INFO CARD

24 BIT kHz

dCS

Analog-to-Digital Converters
Digital-to-Analog Converters

\$299
per month*

Canorus Inc.
240 Great Circle Road, Suite 326
Nashville, Tennessee 37228
Tel 615 252 8778 Fax 615 252 8755
www.canorus.com

*Based on a 48-month closed-ended operating lease of a dCS 902 ADC or a 902 DAC. APR is 12.5%. Leasing is available to qualified credit customers only. Financing arranged through Media Capital Associates.

CIRCLE #068 ON PRODUCT INFO CARD

five or six really talented people working together, and it's a great record. It's kind of like Pink Floyd meets Talk Talk meets the Catherine Wheel.

What techniques do you use to get unusual sounds onto tape?

I've now been getting into a lot of pedals, like guitar pedals and using them as effects as opposed to buying the new \$10,000 piece of gear. I'll put something through an old Big Muff pedal or a Dynacomp. Too many people are caught up on specs, like you can't do this because yada yada. That is the biggest piece of horseshit. I use all kinds of miking techniques. Like I'll take drum mics and have them pointing down on the floor. I'll put mics behind amps to get a sound. On one of the Melvins records we had Buzz go through seven pedals directly to the console and bypassed all of the amps. There is no such word as can't.

You work on a lot of projects from unknown bands for a lot less than your usual rate.

When I first moved to Vancouver I really tried to help out a lot of young bands because they don't have any money, and they don't know how to make records. It's important to help out people because they're the same people going up when you're going down. Also, it keeps me on the street because then I hear the new sounds and I know what's going on. I mixed the new Damn the Diva record because I knew the guys from playing hockey with them, and they really needed a major favor. So I said, "Look guys, if it sells we all make money, and if it doesn't sell no one makes money." Again, they are a band that could be huge.

Where do you see yourself ten years from now? Would you like to own your own studio?

I would never own my own studio. It's too much headache, it's so hard to keep up with the times. I have become a bit of an avid gear collector, though. I have a bunch of old amps and pedals that I take with me. Ten years? I wouldn't mind actually teaching someday, like my dad. Play golf a lot. I would like the luxury of only having to work three days a week. The bottom line is, once you've been bitten by this bug, you can never do anything else. You can wear what you want to wear, you can say what you want to say, you can smoke and drink on the job and you get to listen to really good music and hang out, and actually pay rent. I'm the luckiest guy in the whole world. I love what I do. ■



*Brooks & Dunn
Endorse AKG's
WMS Wireless
Systems Exclusively!*

THE AKG WMS300 WIRELESS ADVANTAGE



AKG WMS300 WIRELESS SYSTEMS TOGETHER WITH CMA AND ACMA "ENTERTAINERS OF THE YEAR" BROOKS AND DUNN; A COLLABORATION OF ARTISTRY, QUALITY AND PERFORMANCE.

■ AKG's WMS300 is a UHF wireless

microphone system dedicated to meet the

demanding needs of the touring professional,

comfortably priced for the Music Award

Winners of the future ■

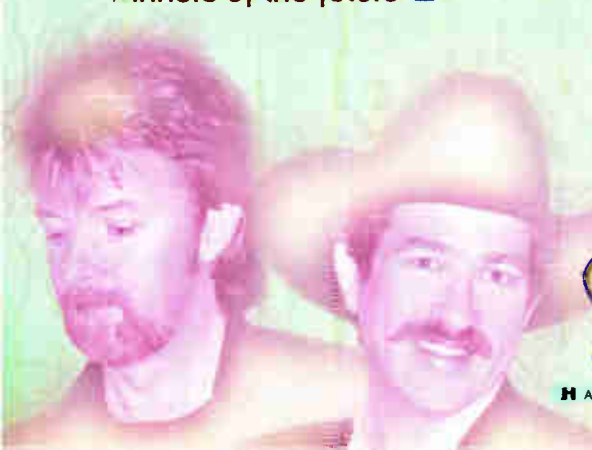


C420/B + WMS300/PT

WIRELESS BODY
PACK-PT300

UHF RECEIVER
SR300

C5900WL/300



A Harman International Company

World Radio History

AKG Acoustics, U.S. • 1449 Donelson Pike • Nashville, TN 37217
Phone: (615)360-0499 • Fax: (615)360-0275
AKG Acoustics GmbH • Vienna/Austria/Europe
<http://www.ake-acoustics.com>

CIRCLE #D69 ON PRODUCT INFO CARD



Tapeless Tracking

Engineers

Sing the Praises of

DIRECT-TO-DAW RECORDING

BY PHILIP DE LANCIE

It's only been a decade or so since the term "digital audio workstation" entered the industry vocabulary, but you need simply stroll the floor of an AES convention to see how much has changed in that time—how much the DAW has become an integral part of the recording business. But while DAWs have been accepted in the mainstream for editing and mastering applications, their use as an alternative recording medium for tracking instruments and voices has been widespread mostly in "project studio" settings. Traditional recording studios and professional audio post and broadcast facilities still rely largely on analog or digital tape formats.

As CPUs become more powerful, hardware interfaces more professional, and software capabilities more impressive, DAWs are making inroads into traditionally tape-based applications. To explore the pros and cons of taking tape out of the loop, we spoke with engineers in several fields about the process of recording directly to DAW, the equipment they use, and how a DAW-based recording environment affects their working methods and end results.

IN THE STUDIO

"The Fairlight MFX3^{plus} is my hands-down favorite recording medium. It's my first choice for any project," says Herb Tassin, a Nashville-based indepen-

dent engineer whose contemporary country projects include both major-label records and artist/song demos. "I'm in the middle of a record for a great new duo on Warner Bros. called Crawford West. The producer, Bob DiPiero, has extensive experience working on hard disk and has been enthusiastic about doing all the tracking, overdubs and mixing using the MFX. I've also used it on many other projects, including Billy Gibbons of ZZ Top, Vince Gill, Rodney Crowell and Faith Hill. I really can't think of an example where working directly to the MFX wouldn't be my first choice. But I'm a freelance engineer, and if the producer prefers another medium, then that's what we'll use."

Tassin is enthusiastic about both the system's convenience and its capabilities. "I get incredible editing and DSP power," he says, "virtually unlimited tracks, and no rewind/fast forward time. The MFX also has superior real-time waveform graphics. Since I can see the waveform graphic of the original track, I can perform punch-ins quickly and flawlessly without having to review my in and out points. And if I record over something accidentally,

DUBEYTUNES STUDIOS'
NEWEST ROOM (SAN FRANCISCO),
FEATURING A PROTOOLS 24
SYSTEM WITH PRO CONTROL
HARDWARE CONTROLLER.
STUDIO PHOTO BY BILL SCHWOB;
PHOTO MONTAGE BY TIM GLEASON.

Tapeless Tracking

I just cut back the repaired section to uncover the original track."

Overdubs are the recording stage where Tassin feels the advantages of working directly to the Fairlight are most evident. "You can subtly shift words or phrases backward or forward in time," he says. "A line that was sung with great emotion but that the artist feels is uncomfortably ahead of the beat can be instantly and seamlessly slid back into the pocket."

The bottom line for Tassin is that "working on the MFX helps me do better work faster. I can perform creative tasks on the MFX that would be cum-

setup also includes a separate unit with two Iomega Jaz drives, a Yamaha CID-R drive and an Exabyte drive for backup.

"I'm an old analog freak," Becker says, "so I'm pretty picky about using digital systems of any kind. I've tried a lot of the multichannel digital systems, and after doing a lot of listening I just really like the way the SADiE stuff sounds.

"For live orchestra recording," Becker continues, "I record stereo straight into the SADiE with a nice set of mics and an Apogee A/D 1000 preamp. We'll record three or four performances over that many nights, and then we can go ahead and directly edit the best parts together."

Becker has also used the SADiE extensively on tour with Neil Diamond. "On the road," he says, "we were

recording and a half-hour editing. So it's a dramatic savings."

POST HASTE

If speed is a big factor in music recording, it's even more of an issue in the high-pressure world of audio for broadcast and film, where deadlines are tight. Direct-to-DAW has strong appeal for audio post and voice-over facilities such as One Union in San Francisco. Specializing in sound for television and radio commercials, as well as voice recording and ADR (automated dialog replacement) for feature films and television, the two-room facility has been in business for three years. Film clients include Pixar, the computer animation specialists that created *Toy Story*. Voice recording and ADR for Pixar's upcoming feature *A Bug's Life* is currently

You can shift words or phrases backward or forward in time. A line that was sung with great emotion but is ahead of the beat can be instantly and seamlessly slid back into the pocket. —Herb Tassin

bersome if not impossible to do on more traditional gear." Tassin does not feel that this power to fine-tune comes at the expense of sound quality. "Before I press the Record button," he says, "I want to be absolutely happy with the sound coming from the monitors. The MFX gives me back exactly what I send it, without compromising warmth, imaging or transient response. I love the way it sounds. And I've made believers out of more than a few self-confessed digital skeptics. But some producers still prefer to track on 2-inch, for all the usual benefits attributed to analog, and that can sound great too."

ON THE ROAD

West coast music engineer Bernie Becker agrees with Tassin that recording to a DAW does not necessarily mean compromising the sound. Becker works both as an independent and as owner of Bernie Becker Recording and Mastering in Van Nuys, Calif. Because he spends a lot of time on tour or recording remote, his DAW of choice is a three-year-old SADiE Portable. The small 8-channel unit includes analog and digital ins and outs and weighs only about ten pounds. His

recording a stereo mix of the concerts straight into my SADiE, as well as multitracking to four DA-88s. After the concert, we would take the SADiE back to the hotel room where we had a little monitoring setup. Sometimes we would pick off a song to use for a radio promo for the concerts, or we would just listen to the show for reference. Neil was also working out one new song to be added to a boxed set that was being released. At the hotel, we could take the song from the SADiE mix of the show and try out new things, like editing out a chorus or try new parts by overdubbing onto the SADiE."

Becker likes the immediacy that recording direct adds to the production process. "It gives me the ability to be able to edit right away," he says, "without taking the time to dump a tape onto the system. With a live performance of one or two hours, that can save a lot of time." Another big plus, he says, is the ease of editing. "If I'm recording dialog for movies or radio spots and I go to 2-track, I might normally spend an hour recording and five hours editing. Since I started recording straight into the SADiE, I spend an hour

under way at the facility.

"We are 100% digital, all Pro Tools-based, with a TDM farm for DSP," says One Union owner and facility director John McGleenan. "Next month we are upgrading to Pro Tools 24, which we loved when we heard it demoed. We actually don't even have an analog master tape machine here, except for one 2-track which we keep in the storeroom and pull out from time to time because CBS still supplies elements for their shows and commercials on 2-track."

One Union does use DATs for initial voice recording on animated projects, McGleenan says. "We just put in a pair of timecode DATs and let them roll, because the minute the voice session is finished the tapes go out the door to Pixar. But everything else we do gets recorded to our workstations first. Working direct to the workstation is faster and cleaner. We put some bells and whistles in front of it, such as tube compressors or tube mic preamps, to give us a warmer starting point to digitize. If we were going to analog, I probably wouldn't be so worried about warming it up first. But if you compare going to DAT with going to the work-

Nobody Does Decks Like Denon



Let's face it. When it comes to selecting CD and MiniDisc products for studio applications, it doesn't make any sense to work with consumer decks in a +4 dBu environment. Denon, the first name in digital, has developed the DN-C680 CD Player, DN-M1050R MiniDisc Player/Recorder and DN-T620 Combi-Deck specifically for these demanding applications.

DN-M1050R MiniDisc Recorder/Player

- AES/EBU, SPDIF, Balanced and Unbalanced Analog I/O
- PC Keyboard Port
- +/- 9.9% Pitch Control
- Optional SMPTE, FS Converter and Hot Start
- External Control (Serial RS-232C/422A, 9-pin, Parallel 25-pin)

DN-T620 Combi-Deck (CD & Cassette Deck)

- Variable Pitch +/- 12%
- Record CD to Cassette
- XLR Balanced I/O
- Dolby B Noise Reduction
- Wired Remote Control Terminal
- Cue To Music (CD)
- Auto Repeat (Cassette Deck)

DN-C680 CD Player

- AES/EBU, SPDIF, Balanced and Unbalanced Analog Out
- Optional SMPTE Kit and FS Converter Kit
- Variable Pitch +/- 9.9%
- External Control (Serial RS232C/422A, 9-pin, Parallel 25-pin)
- Auto Cue Function/Jog Shuttle Wheel

Denon Electronics Division of Denon Corporation (USA), 222 New Rd., Parsippany, NJ 07054, (973) 575-7810
Denon Canada, Inc., 17 Denison St., Markham, Ontario, Canada L3R 1B5, (905) 475-4085
Laborator, S.A. de C.V., Zamora Nc. 154, 06140 Mexico, D.F., (52-5) 286-5509

Visit our web site: www.del.denon.com

DENON

The First Name In Digital Audio

World Radio History
CIRCLE #070 ON PRODUCT INFO CARD

SOUND ADVICE.

"I highly recommend it." -Electronic Musician Magazine, Dec. '97

"Highly recommended." -Recording Magazine, Oct. '97

"At the head of the pack." -Keyboard Magazine, Sept. '97

"#1 Selling Music Software." -Music and Sound Retailer, Oct. '97

"Cakewalk, to me, represents the future." -Jon Anderson, Yes, Solo Artist

"My most essential tool." -Aaron 'Stipko' Stipkovich, Producer,
Remixer-*Mayfield, K's Choice, Bloodhound Gang, 311, No Doubt*



1997
Post Magazine
Professional's
Choice



1997 Mix Magazine
Technical Excellence
and Creativity Award



1997 Music and
Sound Award



1997 Boot
Magazine's
Kick-Ass Award



1996 New Media
Awesome Award

#1 Music & Sound Software. from \$99 to \$399*

The experts agree. Cakewalk is the hottest MIDI and digital audio software available. Used and recommended by more musicians and studio professionals than any other brand, Cakewalk is the #1-selling music and sound software. That's because Cakewalk delivers features you can't find anywhere else:

- Record, edit, mix, and master up to 256 tracks of digital audio and MIDI.
- Run simultaneous audio effects in real time with DirectX-compatible plug-ins.
- Control and automate studio gear.
- Export audio in RealNetwork's RealAudio format for streaming over the Internet.
- Protect your work with the stability of a native 32-bit application for Windows 95/NT.

Whether you're creating music and sound in the home or studio, Cakewalk has a solution that's right for you.

So, take some sound advice and pick up Cakewalk 6. Available at music and software retailers everywhere.

1.888.CAKEWALK



www.cakewalk.com

*estimated street prices

CIRCLE #071 ON PRODUCT INFO CARD

World Radio History

Tapeless Tracking

station, I don't think there is any difference in sound, except that when we get Pro Tools 24 we will have higher bit resolution."

For McGleenen, the speed and editing capabilities he gets working direct-to-DAW result in smoother, more productive sessions. "Because of the workstation functionality, the minute we record we can start working with the audio, building the mix by adding each element as we go," he says. "And you can do whatever your client asks of you in real time. We'll take a syllable from one reading and cut it into another take literally as our producers are telling us what they want, and then we can play it back to them straight away while the talent is still there. Try doing that with tape!"

McGleenen also credits the workstation's flexibility with saving him some of the drudge work inherent in the commercial business. "You can create multiple alternate versions of a commercial, or you can have one commer-

cial with 50 or 60 different dealership tags at the end of it. In a tape medium I would have to mix the spot all those times, whereas now I can just stack alternate pieces on the same channel."

ADR AND FOLEY

Sound One in New York City is more of a traditional film mixing facility than One Union, but DAWs are also used there for direct recording of ADR and Foley. The company uses Sonic Solutions systems for much of the more complex editing work, but chief engi-

neer Jonathan Porath says that it is "not that common in big film facilities to find a Sonic or Pro Tools system used for direct recording." Instead, Sound One relies on the Akai DD-1500, which Porath says is very popular in Europe. "The DD-1500 has been our main recorder and editor for Foley for the last three years," Porath says. "We used it on films like *In and Out* and *Picture Perfect*. We are now also starting to use it for ADR on the new Brian Di Palma film *Snake Eyes*. [The DD-1500 is] a 16-track recorder with a screen-based interface that records to hard drive or magneto-optical. On screen you see all your tracks, and you can arm them, punch in and punch out. The machine is extremely fast, and it behaves just like a tape machine, even though you have a lot of basic editing functions on it at the



neer Jonathan Porath says that it is "not that common in big film facilities to find a Sonic or Pro Tools system used for direct recording." Instead, Sound One relies on the Akai DD-1500, which Porath says is very popular in Europe.

"The DD-1500 has been our main recorder and editor for Foley for the

same time. And it has a very powerful remote that feels like it was designed by people who work in the business." Using the DD-1500, Porath says, "has made our operation faster and much more productive. Our setup times are much faster, and we have very little down time."



Burlington A/V Recording Media, Inc.

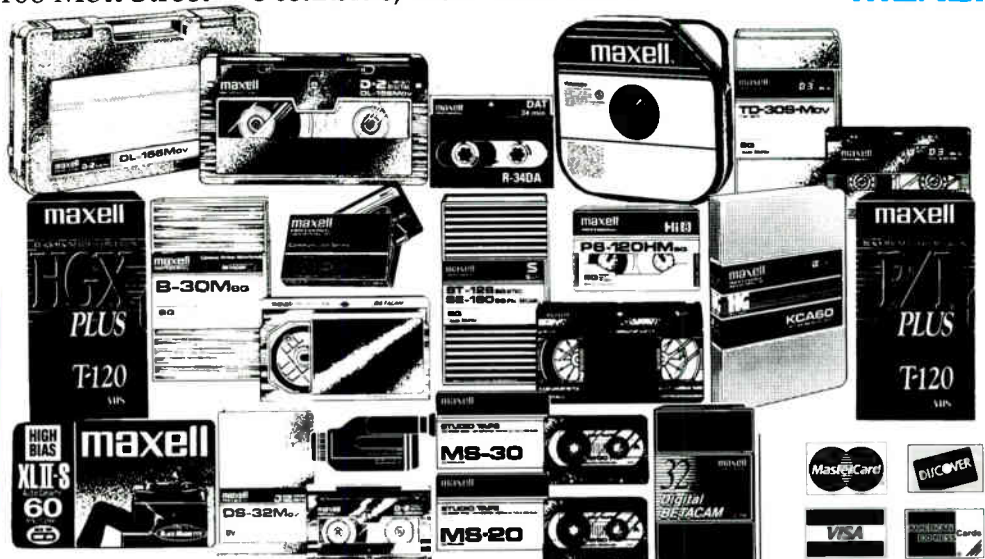
106 Mott Street • Oceanside, New York 11572



maxell

- Shipped From Stock
- Priced Right
- Immediate Delivery

USA & Canada
1-800-331-3191
NYC Area:
516-678-4414
Fax: 516-678-8959



Visit our Website: <http://www.burlington-av.com> • E-mail: sales@burlington-av.com

Call or Fax for FREE CATALOG!

Tapeless Tracking

SAFE TRACKS

The benefits of DAW recording in terms of speed and functionality would mean little, of course, if confidence in the integrity of the recordings were undermined by problems with the reliability of the recording media. Are disk-based media actually as safe to record to as tape? "I probably have more faith in my workstation now than I would have in tape," McGleenen says.

"You can pull down a multitrack tape in September that you worked on in February, and you will probably hear print-through. But with storage on a drive, you can go back three years later and have it play back exactly the way it was."

"Years ago there were problems with corrupt files," McGleenen acknowledges, "or you might crash and lose your session. But those days are fairly well behind us." The trade-off, he says, is that he has "had to become a lot more knowledgeable about computers, even down to system configuration, hard-disk defragmentation, SCSI

chains and other issues that I didn't use to need to know about. Preventative maintenance in all these areas stops us from having a lot of problems, but we have to spend a lot of time managing these systems, which is a cost of doing business."

Becker agrees that reliability is no longer an obstacle. "I feel extremely confident recording into the SADiE system," he says. "I've never had any failure whatsoever recording straight to the internal hard disk. Any errors that I have encountered have always occurred on a removable medium like a Jaz drive or an MO drive. So internal or external SCSI hard disks are absolutely the most reliable for direct recording."

But even though Becker would "trust going into a studio session with a bunch of musicians and recording directly to SADiE," he does not advocate throwing caution to the wind. "I always learned to record to two sources," he says. "So if I am going straight into the workstation, I might also run a DAT as a backup. And I always try to back the drives up to Exabyte before any editing, if possible."

Backing up is also a regular part of Tassin's routine. "I use an Exabyte Eliant 820 high-capacity 8-mm tape drive to back up projects on the MFX," he says. "If anything, I feel more confident about storage, since I always have multiple copies from backing-up every day during a project."

MULTIPLE FORMATS

A related issue for Tassin is format interchangeability, because his work is independent of a specific facility, and he may not be the only engineer on a given project. "If I'm tracking on the MFX," he says, "I'll usually make a 48-track safety via my Otari UFC-24 format converter, because the 48-track is standard in the record-oriented studios here, and that gives the producer the flexibility to continue overdubs anywhere he or she chooses."

Interchangeability is also an important consideration at Sound One, where elements recorded and edited on the DD-1500 are later used on the mixing stage. Sound One generally records to removable SCSI hard drives, with backup on MO disks. The company's mixing stages are equipped with Akai DD-8s, which can read eight tracks off the DD-1500 MOs, allowing elements to be brought directly into the mixing environment without first being transferred to another format. "Using Akai machines in recording, ADR and Foley

GLYPH TECHNOLOGIES, INC.

**(Not) Just Ones and Zeros...
It's your art, your life.**

Choose only premium digital media storage.
Comes complete with herculean service and crushing technical support.

Contact us for dealer information.
607/275-0345
800/335-0345
email: info@glyphtech.com

GLYPH Technologies, Inc.

www.glyphtech.com

CIRCLE #073 ON PRODUCT INFO CARD

FIRST WE MADE CD RECORDERS AFFORDABLE



NOW WE'RE GIVING AWAY THE DISCS

No other pro audio CD recorder sounds better. No other pro audio CD recorder is easier to use. And no other pro audio CD recorder is backed by HHB's award winning technical support.*

No wonder the HHB CDR800 is so hot.

And it's about to get even hotter. Buy an HHB CDR800 CD Recorder and you'll now receive a pack



of 10 HHB CDR74 Gold blank discs, absolutely free. That's more than 12 hours free recording on the most advanced Phthalocyanine, audio - optimised CD-R discs that money can buy.

There's never been a better time to record your work on CD-R. Call HHB about the CDR800 today.

* Winners of the Professional Recording Association Award for Technical Achievement, 1997.

ALSO FROM HHB · COST EFFECTIVE, HIGH PERFORMANCE DIGITAL RECORDING MEDIA



DAT Tape



CD-R



MiniDisc



MiniDisc Data



Magneto - Optical



ADAT



DTRS

HHB Communications USA · 626 Santa Monica Boulevard, Suite 110, Santa Monica, CA 90401, USA · Tel: 310 319 1111 · Fax: 310 319 1311 · E-Mail: sales@hhbusa.com

HHB Communications Canada Ltd · 260 King Street East, Toronto, Ontario M5A 4L5, Canada · Tel: 416 867 9000 · Fax: 416 867 1080 · E-Mail: hhbcna@istar.ca

HHB Communications Ltd · 73-75 Scrubs Lane, London NW10 6QU, UK · Tel: 0181 962 5000 · Fax: 0181 962 5050 · E-Mail: sales@hhb.co.uk

Visit HHB online at: <http://www.hhb.co.uk>



CIRCLE #074 ON PRODUCT INFO CARD

World Radio History

we're not the experts... you are.



grandma's
music & sound

albuquerque, new mexico

<http://www.grandmas.com>

1-800-444-5252

CIRCLE #075 ON PRODUCT INFO CARD

Tapeless Tracking

creates an integrated in-house system for us," says Porath, "so we can move MOs around very fast." Even so, the Akai DD-8s don't talk to the Sonic Systems that are being used to edit music and dialog, meaning some transfers still have to be made.

Another consideration in interfacing is the question of how the DAW fits in with existing gear. At Sound One, direct recording posed more of a problem in ADR than Foley because, as Porath explains, "most of the traditional ADR controllers don't really talk to newer equipment." But the company was eventually able to figure out new ways to get the different generations of equipment to work together, allowing what Porath says has been a "very successful" switch-over so far.

Aside from the DD-1500's crossfade limitation of two seconds, Porath says he has yet to find any downside to Sound One's switch to direct DAW recording. McGleenan agrees, saying that One Union's transition was "painless," while Tassin warns: "You have to find something else to do with all those leftover boxes of razor blades."

Becker is just as enthusiastic but notes a few areas where the new technique can trip up the unwary. "When you record to a tape machine," he says, "you can always lock the tracks so there is no way of accidentally losing something; you always know where it is. With a hard disk system, it is so easy to edit and move stuff, you have to be more careful about not making mistakes, or moving things accidentally without knowing it."

Another potential problem area has to do with ensuring that the host computer is up to the demands placed on it by the audio system. "The more processing power that you are demanding of the computer, really pushing it to its limits, the more you need to start listening for any infraction on your audio quality," Becker says.

Lastly, Becker points out that "you can't always just put up a new reel of tape. You can insert a new Jaz drive or optical disk, but my preference is to always record to a hard drive. So you always need to plan ahead for the limitations of your hard drives."

SHOPPING TIPS

The hard-drive capacity issue, Becker

Relive the Magic.

There's a reason why the classic microphones have endured for over 50 years. It's what happens when you put one on the mic stand and plug it in. And that's all you have to do. The classic microphones have a built-in character that makes things easy, so easy that it feels like magic.

There are two ways you can relive that magic. If you have a small fortune and can find a classic mic that works--that's one way.

The other way is with the Lawson L47--a new large diaphragm condenser microphone that we hand-craft in the USA with all the look, feel, and sound of a true classic. Magic included.

Experience the magic for yourself with our ten-day, no risk trial.

- Lawson L47 Gold Series mics feature:
- U47/M49 1" capsule reproduction
 - 3-micron gold sputtered diaphragms
 - 6072 vacuum tube (or solid state)
 - Internally shock mounted capsule
 - Continuously variable multi-pattern
 - 30' Mogami cable
 - Jensen transformer
 - Shock-proof carrying case



Lawson, Inc. • Direct to You
2741 Larmon Drive, Nashville, TN 37204 USA
615-269-5542 • FAX 615-269-5745
Visit us at www.LawsonMicrophones.com to see how others are reliving the magic!

CIRCLE #076 ON PRODUCT INFO CARD

have you heard?

There's good news coming from ENSONIQ. The latest release of PARIS[™] includes all the cutting-edge components you need to record, edit and mix digital audio at a professional level - Mac and PC! Right out of the box, PARIS gives you the most complete integrated digital audio solution on the market today...for a whole lot less. It's a complete recording studio, with...

Integrated Control - Every PARIS system includes a 16 channel dedicated control surface that interacts seamlessly with the PARIS software.

24-Bit Precision - 24-bit inputs*, outputs*, file path and effects processor.

128 Track Playback - Go beyond the typical 16 tracks, using our new transparent submixing technique.

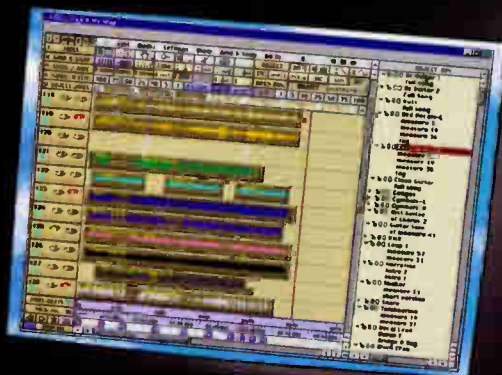
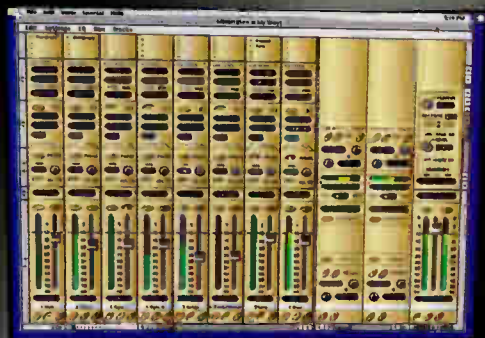
World Class Effects - Each PARIS system includes 12 real-time, 24-bit effects, including reverb, delay, chorus, compressor, expander and more.

64 Bands of Parametric EQ - Plus, an additional 448 virtual EQs, with transparent submixing.

I/O Expandability - The new MEC (Modular Expansion Chassis) includes 9 slots making it easy to increase the input/output capacity of your system. New MEC modules: 24-bit 8 inputs, 24-bit 8 outputs, AD, AT, SMPTE.

For more information and a list of Authorized ENSONIQ Dealers nearest you, visit the PARIS website today: www.paris.ensoniq.com

*with optional MIX module.



ENSONIQ

LEARN THE WORLD'S NEW TECHNOLOGY

ENSONIQ Corp. 155 Great Valley Parkway, P.O. Box 3035
Malvern, PA 19355-0735 (610) 647-3930 fax: (610) 647-8908

www.paris.ensoniq.com

CIRCLE #077 ON PRODUCT INFO CARD

World Radio History

Tapeless Tracking

says, is a major consideration when purchasing a DAW system. "I would definitely look for a system with a large amount of disk space, either internal or removable hard drives. Buy as much time as you can afford. If you want to have a whole album in your computer, you need to figure out how much space you need, or how long it will take to off-load to some off-line backup."

Tassin, meanwhile, suggests that the DAW shopper first determine whether "the amount you have budgeted will buy a machine capable of meeting your expectations. After all, a tape machine that works is a lot better than a DAW that's buggy. Technical support is also critical. At some point, you'll have a question, and a manufacturer that takes two days to call you back could cost you a client. Transferability and interfacing with other formats are also important, as is an upgrade path. And be certain the personal commitment to learn a new system is there, because any DAW will only work as well as the

person running it."

For McGleenan, the biggest factor to consider is "the functionality of the workstation beyond being just a digital multitrack: DSP functions, plug-ins, what third-party developers are writing

"you find that a lot of people like the Sonic for its great editing ability. So they will use Sonic for music or heavy dialog editing. But in sound effects, people will go for the Audio Vision or the Pro Tools. The Akais that we have

Look for a system with a large amount of disk space, either internal or removable hard drives. Buy as much time as you can afford. —Bernie Becker

for your platform, how long it has been around and what the track record is of the company that makes it."

Finally, Porath points out that there is no one "best" system; the specific application for which the DAW will be used should guide the choice. Even within the general field of film, for instance, the needs of mixing facilities differ from those of editing facilities. "If you talk to editors and some of the people that work with us," he says

are very good at cut-and-paste, and move fast as editors, which works very well for ADR and Foley but not necessarily for dialog or music. So everybody chooses the machine that works best for them." ■

Mix's Media & Mastering editor, Philip De Lancie, is a mastering engineer, freelance writer and multimedia designer in Berkeley, Calif. He can be reached at pdel@compuserve.com.

Folks say it's like a "best of" album with a few new songs....



It looks awesome, but what is it?

AN ALL-TUBE MICROPHONE PREAMPLIFIER, OPTO-COMPRESSOR, EXTENDED PULTEC EQUALIZER, DE-ESSER & PEAK LIMITER DONE IN A WAY THAT CUTS THE TYPICAL PATH OF A MIC TO TAPE IN HALF! THE MAIN APPLICATION IS RECORDING VOCALS BUT IT IS TRULY AMAZING ON MOST INSTRUMENTS, ESPECIALLY BIG DRUMS AND BASS.

MANLEY VOXBOX

and I like it too...



EveAnna Manley

The word is out! Users and magazines are raving about how we put the compressor ahead of the mic-pre and then put a limiter at the end of the chain. All-Passive Processing. Even the EQ is passive with real inductors for that good ol' low end punch. Plenty of inputs and outputs, with and without transformers. It's all there.

MANLEY LABORATORIES, INC.
13880 MAGNOLIA AVE.
CHINO, CA. 91710 USA
TEL: (909) 627-4256
FAX: (909) 628-2482
emanley@netcom.com
<http://www.manleylabs.com>

CIRCLE #078 ON PRODUCT INFO CARD

Introducing RADAR II.
The latest in 24 bit recording technology.

RADAR II

NEW
FOR
1998!

The World's Best Sounding Hard Disk Recorder... JUST GOT BETTER.



Completely self contained, RADAR II is an extremely compact, great sounding Multitrack Recorder. When two RADAR IIs are slaved, the package presents an extremely cost efficient solution to 48 track Digital Recording. Both mainframes are controlled by a single remote and metering is provided by the RE-8s integral meterbridge.

Otari's RADAR has replaced analog multitracks in hundreds of commercial and private facilities worldwide. RADAR has become the benchmark of sonic excellence in hard disk recording. In keeping with Otari's legacy of innovation, we proudly present the newest in 24 bit Digital Multitrack technology.

Through advancements in technology, the sonic integrity of the RADAR series has been elevated to a new level of excellence. A single removable hard drive provides record time of over 40 minutes of 24-bit,

24 track audio. Longer record times are available simply by adding additional external hard drives. Multiple RADAR IIs can be linked together and its enhanced RE-8 controller provides track arming and optional metering of up to 48 tracks of storage.

Multiple machine control, user definable macro keys and digital I/O make RADAR II the most comprehensive, best sounding recorder/editor available. Contact Otari today for RADAR II information and then listen to the future of digital recording.

Otari, Inc.
Japan
Phone: (81) 4-2481-8626
Fax: (81) 4-2481-8633
www.otari.co.jp

Otari Corporation
USA
Phone: (80#) 877-0577
Fax: (650) 341-7200
www.otari.com

Otari Europe GmbH.
Germany
Phone: (49) 2159-50861/62/63
Fax: (49) 2159-1778

Otari Singapore Pte., Ltd.
Singapore
Phone: (65) 284-7211
Fax: (65) 284-4727

The Otari Logo is a registered trademark of Otari Corporation. © 1998 Otari Corporation.

CIRCLE #079 ON PRODUCT INFO CARD

MULTICHANNEL I/O CARDS

BY GEORGE PETERSEN

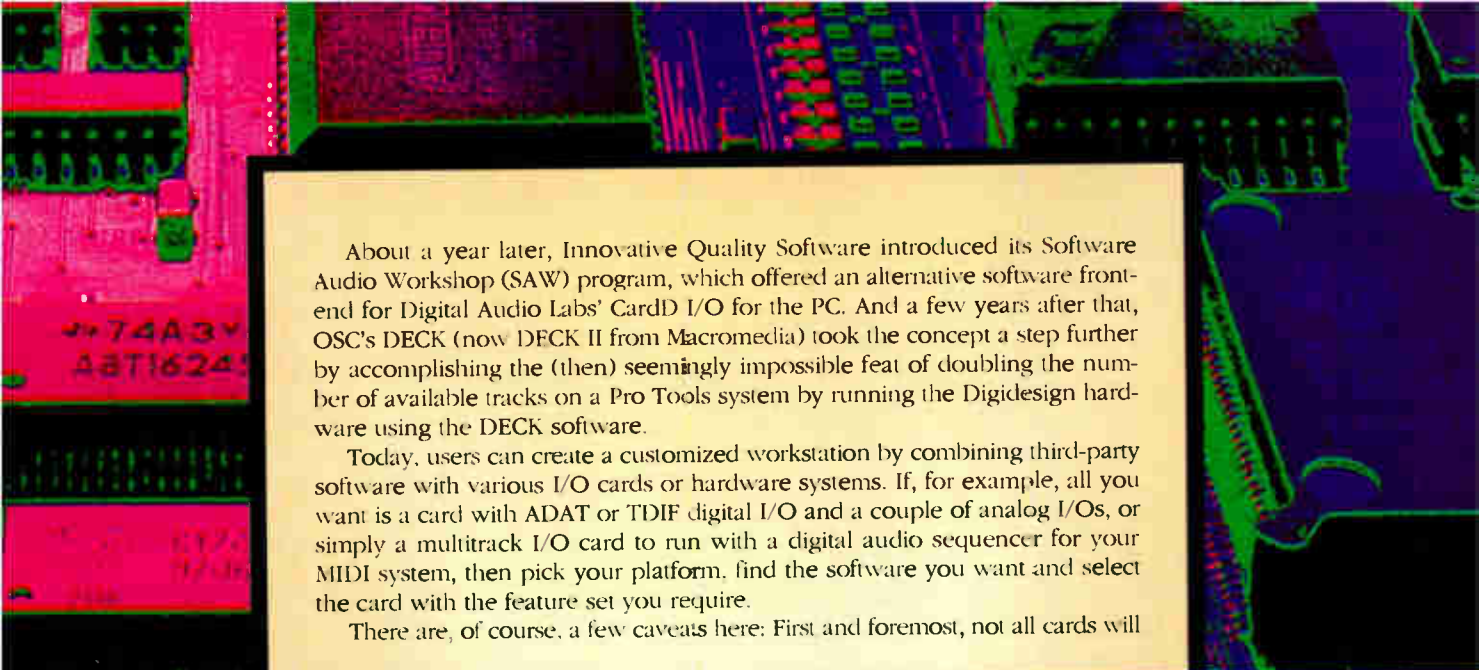
Once upon a time, buying a multichannel workstation was a comparatively simple process: First of all, there weren't many companies offering multichannel products

at all, and once you decided on the system that met your needs, then the hard-

ware and software were supplied as a package from the same company. However, over time, the practice of sourcing hardware and software from the same manufacturer began to change. In 1990, Opcode showed Studio Vision, the first MIDI sequencing program that offered control of another company's digital audio hardware, in this case, Digidesign's Sound Tools.

Workstation Alternatives

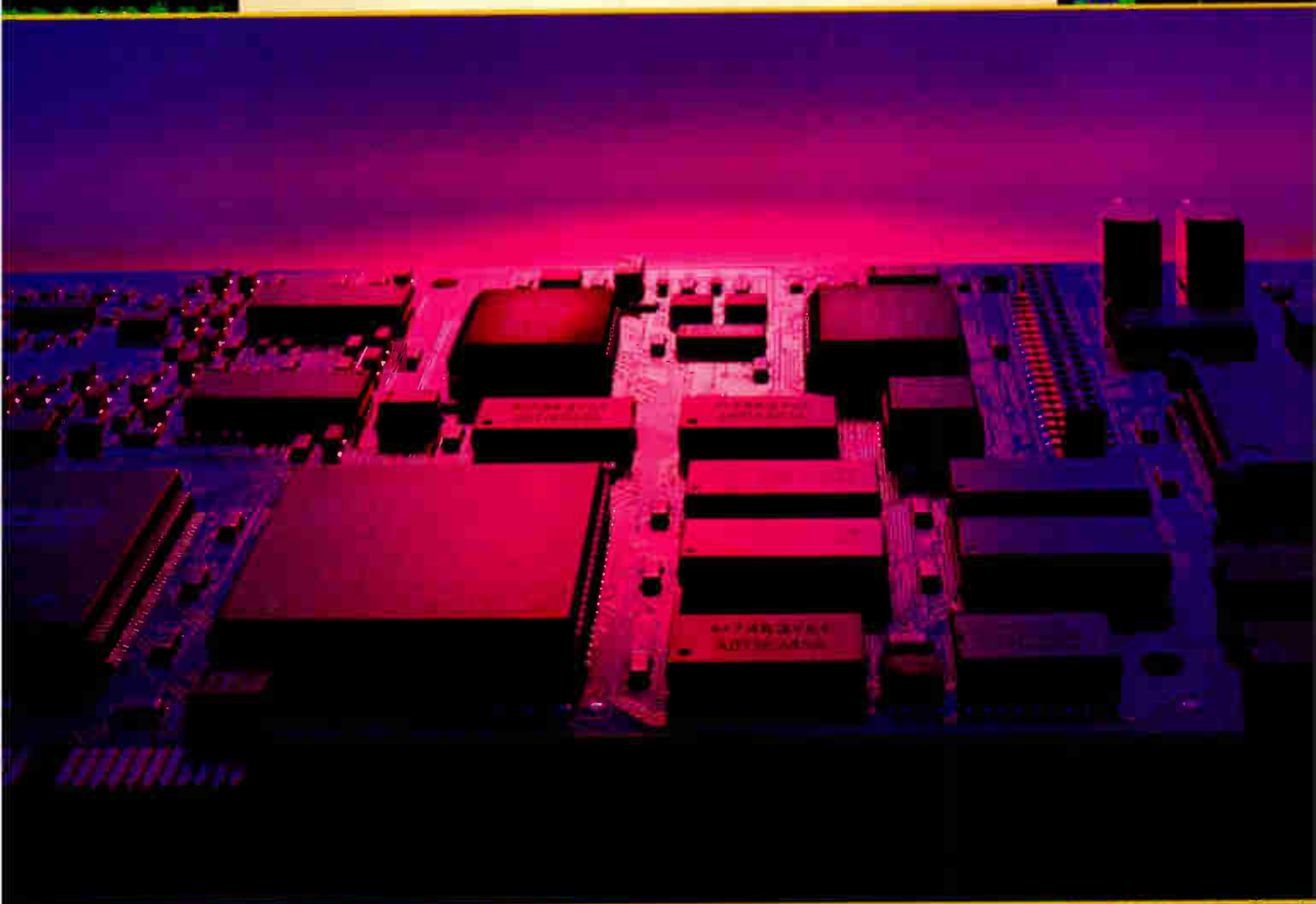
PHOTO BY BILL SCHWOB



About a year later, Innovative Quality Software introduced its Software Audio Workshop (SAW) program, which offered an alternative software front-end for Digital Audio Labs' CardD I/O for the PC. And a few years after that, OSC's DECK (now DECK II from Macromedia) took the concept a step further by accomplishing the (then) seemingly impossible feat of doubling the number of available tracks on a Pro Tools system by running the Digidesign hardware using the DECK software.

Today, users can create a customized workstation by combining third-party software with various I/O cards or hardware systems. If, for example, all you want is a card with ADAT or TDIF digital I/O and a couple of analog I/Os, or simply a multitrack I/O card to run with a digital audio sequencer for your MIDI system, then pick your platform, find the software you want and select the card with the feature set you require.

There are, of course, a few caveats here: First and foremost, not all cards will



work with all software, and even though most cards use PCI bus interface—that fits in newer PCs and Power Macs—nearly all the cards listed here will work with Windows-based software, thanks to the (almost-always) plug-and-play ease of the Windows95 audio (.WAV) driver. However, all cards designed for use with Macintosh-based applications require an application-specific driver



written for the card and whatever software you're using. Unfortunately, the dream of a universal Mac sound card driver remains just that—a dream—but someday...

Another thing to consider is support. If you buy a Sonic Solutions workstation, you'll be using their hardware and software, so if a problem occurs, you know exactly who to call. As soon as you start to mix and match cards and software from various vendors, problems can be harder to sort out, especially when the hardware company says it's the software's fault and vice versa.

Currently, there's no shortage of single-vendor sources to buy a computer-based workstation from, in an assortment of sizes, prices and configurations; manufacturers include AMS, Avid, Creamware, Digital Audio Research (DAR), Digidesign, Doremi Labs, Ensoniq, Fairlight, Merging Technologies, Metalithic Systems, MicroTechnology Unlimited, SADIe, Solid State Logic, Sonic Solutions, Soundscape, Spectral and Waveframe. And there are compact, stand-alone systems from companies such as Akai, Fostex, Otari, Roland and 360 Systems.

Musicians looking to integrate digital audio into their MIDI sequencing software have numerous choices in PC or Mac platforms. Among these are Cakewalk's Cakewalk Pro Audio, Emagic's Logic Audio, Opcode's Studio Vision, MOTU's Digital Performer, Passport's Master Tracks Pro Audio, Steinberg's Cubase and Cubase VST, Tracer Technologies' Audio Master and Voyetra's Digital Orchestrator Pro, to name a few. If you're planning to go the digital audio sequencer route, chances are you already know what you'll be using (or currently have) and are simply looking for a compatible card with the features you need.

Software products offering *non-sequencer-based* audio recording/editing applications include Berkley Integrated Audio Software's (BIAS) Peak, CanAm's Audio Pro, Entertainment Data Services' SPOT, Macromedia's DECK II and SoundEdit 16, Minnetonka Software's

MxTrax, SEK'D's Samplitude, Software Audio Workshop's SAW series, Sonic Foundry's Sound Forge, Steinberg's WaveLab and Syntrillium Software's Cool Edit Pro. Following the lead from a couple of years back, when The Synclavier Company developed Synclavier software for Pro Tools Systems, even Digidesign has gotten into the act, offering a version of Pro Tools software for its Audiomedia III card or stand-alone for use with any Power Mac.

Of course, the world isn't entirely Mac/PC-based, and Steinberg has shown Nuendo, a mixing/editing/processing environment for post-production applications, with native processing

on the Silicon Graphics platform. The Nuendo/SGI package has real-time, floating-point DSP, integrated destructive editing and a networked interface. Up to 32 channels of 24-bit ADAT I/O are supported, with sampling rates as high as 96 kHz. SGI has also shown its PCI-AUD-8C (\$1,000), a PCI multichannel audio option card for OCTANE and 02. Each card adds ADAT optical I/O for eight channels of 24-bit digital audio; AES3 input and output for two channels of 24-bit serial digital audio input/output, which also serves as a sync source (AES11) and provides professional jitter continuation; video composite sync input (blackburst); and PAL

MANUFACTURER CONTACT INFORMATION

Aardvark
734/665-8899
www.aardvark-pro.com
Circle 201 on Product Info Card

Alesis Studio Electronics
800/5-ALESIS
www.alesis.com
Circle 202 on Product Info Card

Antex Electronics
310/532-3092
www.antex.com
Circle 203 on Product Info Card

Applied Magic
888/MAGIC-55
www.applied-magic.com
Circle 204 on Product Info Card

Digigram
703/875-9100
www.digigram.com
Circle 205 on Product Info Card

Digital Audio Labs
612/559-9098
www.digitalaudio.com
Circle 206 on Product Info Card

Emagic
926/477-1051
www.emagic.de
Circle 207 on Product Info Card

Event Electronics
805/566-7777
www.event1.com
Circle 208 on Product Info Card

Frontier
800/928-3236
www.frontierdesign.com
Circle 209 on Product Info Card

Gadget Labs LLC
503/827-7371
www.gadgetlabs.com
Circle 210 on Product Info Card

Korg USA
516/333-9100
www.korg.com
Circle 211 on Product Info Card

Lexicon
617/280-0300
www.lexicon.com
Circle 212 on Product Info Card

Midiman
800/969-MIDI
www.midiman.net
Circle 213 on Product Info Card

Mark of the Unicorn
617/576-2760
www.motu.com
Circle 214 on Product Info Card

SEK'D (formerly Hohner Midia)
800/330-7753
www.sekd.com
Circle 215 on Product Info Card

Sonus
212/253-7700
www.sonus.com
Circle 216 on Product Info Card

Soundscape Digital Technology
805/851-8596
www.soundscape-digital.com
Circle 217 on Product Info Card

Yamaha
714/522-9011
www.yamaha.com
Circle 218 on Product Info Card

A revelation...

a reliable, bulletproof PC Workstation, outstanding value for money.

MELBA MEERT MIX MAGAZINE, FEBRUARY '98.

SSHDR1 plus

- Windows® 95 or NT
- 12 to 196 track playback
- "Rock Solid" sync. to tape and MIDI sequencers
- Full digital connection to Yamaha 02R/03D, Korg, Mackie and Tascam Digital Consoles
- Free 24bit recording software upgrade (in the works for '98)
- Balanced +4dBu XLR's 20 in/24 out (optional)
- Real time custom mixing and EQ's
- Simple to use powerful editing tools
- Punch in/out on the fly (tape machine style)
- Optional effects plug-ins including Reverb from TCWorks and Wave Mechanics Inc.
- Optional removable hard drives (IDE/EIDE up to 26 hours per disk)
- EDL file support (optional)
- ADAT/DA88 editing
- Fully networkable

CIRCLE #080 ON PRODUCT INFO CARD

24 TRACK SYSTEM
(20 IN/24 OUT, ADAT, TDIF)
FROM \$12,800 (SRP)



16 In/Out TDIF™

Digital Console

16 In/Out adat

4 In/8 Out S/PDIF

20 Analog Ins

4 In/8 Out AES/EBU

Network

adat

24 Analog Out-

DAT

TDIF

World Radio History

Designed for



Microsoft
Windows NT
Windows 95

Soundscape™

internet: <http://www.soundscape-digital.com>

INTERNATIONAL SALES ENQUIRIES:
TEL: +44 1222 450120 FAX: +44 1222 450130
email: sales@soundscape-digital.com

U.S. SALES ENQUIRIES:
TEL: (805) 658 7375 FAX: (805) 658 6395
email: us-sales@soundscape-digital.com

CANADA SALES ENQUIRIES:
TEL: (613) 342 6999 FAX: (613) 342 8499

disc
RECORDABLE

STUDIO I/O™

16 CHANNELS OF DIGITAL I/O
FOR PC OR MAC



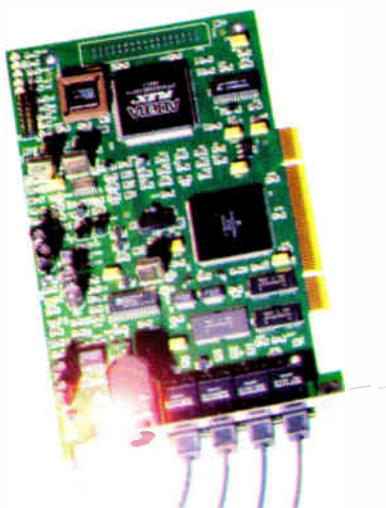
SONORUS

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

List Price:
\$989USD

Sonorus, Inc., 111 E. 12th St., NY, NY 10003, USA; Phone: +1-212-253-7700; Fax: +1-212-253-7701; <http://www.sonorus.com>; info@sonorus.com

All trademarks are registered by their respective companies. © Sonorus, Inc., 1998



CIRCLE #081 ON PRODUCT INFO CARD



or NTSC for audio lock to video sample clock generation.

Many digital I/O cards are bundled with software ranging in power from a few simple functions to some very elaborate programs, making the value of bundled software another option for you to weigh. As an analogy, my computer came bundled with Microsoft Explorer, although I prefer using Netscape Navigator for Web surfing. However, as with digital audio cards, it's nice to know that I have an alternate software system available, should the need arise.

The following is a list of some of the currently available digital I/O cards suitable for multitrack work. Each has four or more outputs and two or more inputs. Some are simple I/O devices; some have elaborate onboard DSP processing/mixing functions; others include breakout boxes or fan-out cables with 1/2-inch or XLR interfacing. Digital I/O possibilities include AES/EBU, S/PDIF (coaxial or optical), ADAT Lightpipe and Tascam TDIF ports. Sync capability ranges from nothing (wild sync) to MIDI, SMPTE, wordclock and more. So whether you're upgrading from a 2-channel sound card (or built-in audio in your computer) or looking for something new, rest assured that there are cards and systems for every budget and need, listed here alphabetically by manufacturer. Note: Most use PCI bus interfacing, and unless otherwise stated, most offer support for Windows 95 drivers only.

DEALING THE CARDS

The Aark 20/20 (\$995) from **Aardvark** is a 24-bit capable PCI I/O card with eight channels of 20-bit ADCs and DACs and stereo S/PDIF I/O in a breakout box. Features include ten simultaneous record/play channels, word clock I/O and video sync input. Aardvark also makes the StudioI2L, a 12-channel I/O card, with I/O for eight ADAT tracks plus four more channels for audio editing on the PC, with track bouncing to/from the ADAT. Features include 18-bit conversion, 8-channel ADAT optical in/out, 2-channel S/PDIF in/out, and two channels of analog

in/out.

Alesis unveiled its ADAT PCR, a \$499 PCI I/O card that offers eight channels of ADAT Lightpipe I/O (also useable as S/PDIF optical I/O) and 9-pin ADAT sync ports. Essentially, the PCR allows your computer to act as another ADAT in your system, functioning as either master or slave to the tape transports and providing sample-accurate sync for transferring materials into/out of the ADAT system, with up to 24-bit resolution. ADAT PCR is slated to be shipping this month, and Alesis says drivers for all popular editing systems (PC and Mac) will be available.

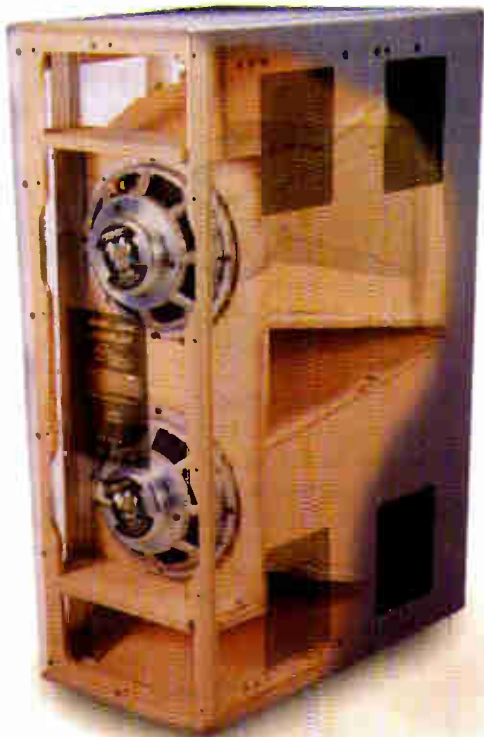
Antex StudioCard is a 4-channel PCI board with four channels of balanced analog I/O (+4 dBu or -10 dBV) and AES/EBU or S/PDIF digital I/O, SMPTE (LTC and VITC) and MIDI Time Code support, onboard digital mixing with internal 32-bit floating-point processing and a PLL-based sample clock generator that can be locked to an assortment of clock sources. Up to four StudioCards can be installed in a single PC for up to 16-track recording, and an onboard expansion connector accepts optional daughter cards for compression or enhanced DSP operations. Retail is \$1,595.

OnStage from **Applied Magic** offers 20-bit editing, with four balanced XLR analog I/Os and AES/EBU digital I/O. Signal-to-noise is said to be greater than 100 dB, with a dynamic range of greater than 99 dB. SMPTE LTC time code and MIDI are also supported. The card lists for \$1,595.

Digram makes an array of computer sound cards intended primarily for developers of automation systems in live broadcast, post-production and other no-failure-tolerance applications. The \$3,300 PCX40np is a PCI bus card with 20-bit converters for its four balanced analog inputs and outputs, word clock input and digital I/O and video sync options. Onboard DSP handles both linear PCM and compressed MPEG Audio operating modes. Numerous software functions, such as time-stretching, pitch-shifting, noise reduction and format frequency conversion are supported, and the PCX40np includes Xtrack multitrack PC editing software.

Digital Audio Labs' V8 is a PC-based system of ISA audio cards, ADAT and DA-88 interfaces, digital and analog I/O modules, and peripherals that, combined with third-party software, form a customizable 16-track workstation. The rackmount AD/DA and audio breakout box has eight channels of

An Inside Look at Some Great Loudspeakers



Q Factor™

2 2 1 2 / 2 1 8



Woofers — Q Factor™ woofers are constructed with a neodymium magnet structure and use Kevlar® impregnated cones. These technologies increase sonic performance and ensure lasting reliability, even under the extreme stress produced by today's progressive thrash bands. Peavey was the first to integrate these advances into complete loudspeaker systems.

Enclosures — A loudspeaker system is only as good as its structure. The enclosures are constructed using industry-standard 18mm, 13-ply Baltic birch to withstand long-term punishment, and to provide excellent acoustic support.

Alloy Substructure — Extensive structural stress testing allowed engineers to design an alloy substructure for optimum rigging support. This reduced the weight of the substructure while increasing the number of loudspeakers that can be flown, without sacrificing structural integrity.

Q Factor 2212 System — The performance of this high Q system maintains an incredible 60° x 40° constant directivity control down to 500 Hz. This kind of control is vital to a smooth response in a large array: FOH engineers can now have the confidence that the entire house has a smooth and accurate sound.

Compression Driver — The Q Factor 2212 high frequency is produced by an AVA 4000 F 4" dome compression driver. Ferro-Fluid™ provides added damping for increased response and power handling.

Q Factor 218 — The Q Factor™ 218's dual 18" woofer cabinet utilizes the same Kevlar cones, neodymium magnet structure, and cabinet design as the 2212, making it a powerful, coherent full-range system when matched with a Q Factor 2212.

Peavey Q Factor™ loudspeakers are designed with technologically advanced modeling and testing. Utilizing these technologies, Peavey engineers have elevated system performance and structural integrity to a new level.

Each component is engineered to the optimum balance between high sensitivity and aggressive power handling, and is capable of performing flawlessly at the high SPL required by touring and system design professionals.

This constant Q loudspeaker system provides the control necessary for use in large arrays. And the use of the CEX™ 5 and MediaMatrix® family of products for processing ensures excellent system response and performance.



C o n c e r t S o u n d



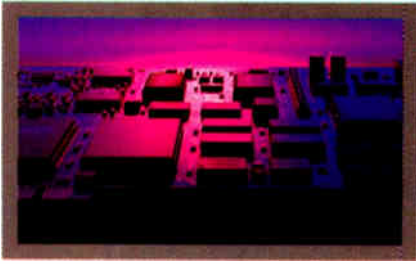
PEAVEY

IT'S TIME YOU HEARD

Peavey Electronics Corporation, 711 A Street, Meridian, MS 39001 • (601) 483-5376
Fax (601) 486-1154 • <http://www.peavey.com> ©1997

CIRCLE #082 ON PRODUCT INFO CARD

World Radio History



and-play support for Windows 95. Priced at \$499, and shipping this summer, the Wave/824 is a PCI interface card that includes eight inputs and eight audio outputs. With full 24-bit audio converters, it achieves dynamic

range performance greater than 100 dB. Additionally, it includes an integrated MIDI interface as well as a low-cost expansion option for S/PDIF digital I/O.

The SoundLink DRS Model 1212 from **Korg** is a multichannel I/O audio interface on a PCI card. As its name implies, the 1212 features 12 inputs and 12 outputs configured as two analog I/Os, an S/PDIF I/O and an 8-channel ADAT optical I/O. Retail is \$1,250.

The **Lexicon Studio** provides a variety of hard disk recording tools: high-quality analog conversion, digital connectivity, format conversion, signal routing, synchronization, system accel-

eration and audio DSP—hardware solutions designed to work with your PC or Mac software. Lexicon Studio offers 32 simultaneous audio record and 32 simultaneous audio playback channels. The Lexicon Studio will also interface to tape-based MDMs (including ADAT and Tascam DA-88), allowing editing and processing of previously recorded material. The system is expandable, with up to 44 simultaneous I/O sources from as many as two Lexicon LDI-16S racks and one LDI-12T, all controlled by the internal router. A 24-bit multichannel digital signal bus can communicate with other Lexicon cards to expand system processing power. A \$3,000 starter system includes Core-32 card, LDI-12T interface and PC-90 processor.

The Dman 2044 from **MIDIMAN** is a PCI digital audio card with four independent analog inputs and outputs, using 20-bit delta sigma converters with 128x oversampling. Dman 2044's four audio outputs have independently programmable pan, tremolo, vibrato and tone filtering, and onboard DSP for effects such as reverb, chorus or flange independently on any audio channel, as well as an onboard 56-voice wavetable synthesizer. The 2044 is fully Windows 95 Plug-and-Play compliant, and Win95 drivers are included. Retail is \$349.95.

From Cambridge, Mass., comes **Mark of the Unicorn's** 2408 hard disk recording system, with 24 I/O connections—expandable to 72. The basic package includes the PCI-32+ card and rack-mount 2408 I/O unit; up to three I/O units can be attached to one card. Additional 2408s are \$695. Each 2408 has a bank of eight analog RCA I/Os, coaxial S/PDIF connectors, three TDIF and three ADAT optical connectors. For main stereo output, analog outs 1 and 2 are duplicated as balanced 1/4-inch TRS (+4 dBu), S/PDIF out and a 1/4-inch headphone out. Word clock I/O is standard. ADCs and DACs are 20-bit with support for 24-bit, and the 2408 also functions as a stand-alone ADAT/TDIF converter. All I/O processing is handled independently of the host CPU and acts as a 72x72 patchbay, routing any input to any output. The card also has a 9-pin ADAT sync input for sample-accurate lock to ADATs; alternatively, the system can connect to MOTU's Digital Timepiece for sample-accurate sync with Tascam MDMs.

A Core 2408 system is \$995, including a Windows .WAV driver, a Mac Sound Manager driver and Macintosh

RAVE ON!



Yorkville YSM-1 Near-Field Monitors

Critics agree... the YSM-1 monitor is a real contender. But the excerpts below only tell part of the story. Let your own ears be the judge... and then buy yourself a new toy with the money you save!

▶ "...I was immediately impressed with the deep bass response."

▶ "...Rock solid cabinet, internal brace and ample internal dampening material...no audible unwanted bass resonances."

▶ "...a much bigger sound (than the industry-standard Yamaha NS-10 nearfields), with dramatically deeper bass response and a more 'open' top end."

▶ "...quite detailed, allowing you to pick specific elements out of dense mix."

▶ "...I would encourage all nearfield buyers, regardless of price point, to listen to these monitors."

▶ "It was a pleasure mixing on the YSM-1s, and the resultant mixes translated exceptionally well to other playback systems...ear fatigue was nonexistent."

▶ "...The YSM-1 reproduces timbres with near pinpoint accuracy."

▶ "The YSM-1 is a full-bodied, sonically neutral monitor that, to my ears wins the prize for delivering the most realistic picture of the aural spectrum."

▶ "...Mids and high mids were clean and articulate."

▶ "Stereo imaging is very good, resolution is consistent in every frequency range"

Pro Audio Review
Lorin Alldrin, Sept/96

Electronic Musician
Brian Knave, July/96



See the full reviews at www.yorkville.com

IN CANADA

Yorkville Sound Ltd.
550 Granite Court
Pickering, ONT. L1W 3Y8

IN THE USA
Yorkville Sound Inc.
4625 Witmer Industrial Estate
Niagara Falls, N.Y. 14305

CIRCLE #085 ON PRODUCT INFO CARD

\$20,000.00 and worth every penny!

Special Edition Keyboard
88-Note Weighted Action
Variable Architecture Synthesis Technology

\$11,350.00 Value Library
40 Producer's Elite CD-ROM Set

KDFX 8 Channel DSP
Full 24Mb ROM Expansion

KURZWEIL AUDIO ELITE SYSTEM



128MB Sample RAM

P/RAM-2
Program memory expansion- 1.25MB

2 GIG Internal Hard Drive

KB3 Mode/Live Mode
Operating system in Flash ROM

2 DMTi Digital Multitrack
Interface's, ADAT™, TASCAM™
Rack Mount

External SCSI CD-ROM Drive
With 50-pin terminator plug

Extended 3 Year Warranty

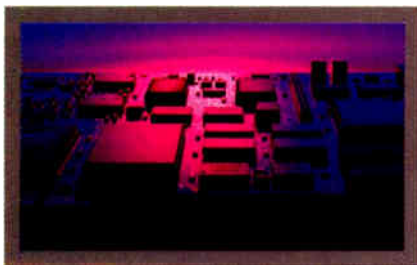
KURZWEIL... SOUND
IT'S THE

Ask your dealer about our Consumer Financing Plan.

Available at your authorized Elite System Dealer.

Kurzweil Music Systems Young Chang Canada, Corp.
(253) 589-3200 905-948-8052

World Radio History www.youngchang.com/kurzweil



DAW software (offering multichannel waveform editing, automated mixing, real-time/32-bit effects processing and support for MOTU Audio System and Adobe Premiere plug-ins). Mac users can also use the system with Digital Performer. The number of simultaneous record/playback tracks is dependent on the computer's performance.

The Analog ARC 88 from **SEK'D** is a PCI-based multitrack recording card with eight TRS analog inputs, eight TRS analog outs and stereo 16-/24-bit S/PDIF optical digital I/O. Up to three cards can be cascaded for additional tracks. All analog connections are via a breakout cable to RCA connectors, and the card supports the Windows stereo driver standard (Cubase VST support and drivers for Windows NT are in development). Retail is \$799. A similar

version—Analog ARC 88 Studio—which includes Samplitude Basic Studio software is \$1,199. For those on a budget, SEK'D also makes the Analog ARC 88, a 4-input/4-output analog interface ISA card (no digital I/O) for \$399.

SEK'D's Digital ARC 88 is a half-length ISA-format I/O card with ADAT Lightpipe and two channels of S/PDIF (on RCA and optical connectors). Both 16- and 24-bit data transfer are supported, and four inputs modes are available: ADAT optical (8-ch), stereo S/PDIF optical (2-ch), stereo S/PDIF coaxial and stereo S/PDIF electrical via internal CD-ROM cable. Output modes are ADAT optical and S/PDIF co-ax (10 independent channels) or S/PDIF optical and S/PDIF co-ax (four independent channels). MIDI I/O is supported via a breakout cable. Digital audio format conversion includes ADAT to/from S/PDIF and S/PDIF coaxial to/from S/PDIF optical. Digital ARC 88 retails at \$999 and includes SEK'D's Samplitude Studio 4.0.

SEK'D's Prodif Gold is a PCI-bus, 16/20/24-bit, 2-channel digital I/O card that includes 8-channel ADAT Lightpipe interfacing, allowing the transfer of up to eight channels per card (16

with two or 24 with three cards) between a PC and an Alesis ADAT. Prodif Gold uses bit clock synchronization—the same PLL sync method used by the Alesis ADAT—for sample-accurate transfers. The Prodif Gold works exclusively in slave mode, but with Auto-Sync enabled, starting a recording on-the-fly (or any time during playback) is possible without the need to sync the card to the input signal. Digital I/Os are optical or coaxial S/PDIF and ADAT optical, and a cable adapter allows stereo AES/EBU I/O. Retail is \$699, including Samplitude Basic Studio software.

Sonorus' STUDI/O is a 16-channel digital audio interface for PCI-based computers. STUDI/O includes two 8-channel Alesis ADAT optical interfaces and a high-resolution, 18-bit stereo analog monitor output. For mastering applications, one or both ADAT interfaces can be software-configured for optical S/PDIF optical I/O, with or without sample rate conversion. STUDI/O is shipped with Windows 95 and Steinberg Cubase ASIO drivers (for Mac and PC), so STUDI/O works with most current audio editing software. Other drivers are in the works. Retail is \$989; optional is

Originality ...

or copycats?



Originality is obvious when you see and hear it. In audio workstations, only MicroSound frees you from all fears and track limitations. All fears of crashing or losing files are removed even from a power loss... simply overlap floating segments to mix and play on-the-fly... adjust anything in the project anytime without destructive undoing... hear the sonic perfection of sample accurate fades. Why limit yourself with a tape recorder copycat? **MicroSound Originality... freedom to create your best! Call Today!**

"Quality Digital Audio Since 1977"
Celebrating Our 20th Anniversary

microsound™

Digital Audio Workstations

Voice: 1-919-870-0344 Fax: 1-919-870-7163 Web: www.mtu.com Email: info@mtu.com

Micro Technology Unlimited • 6900 Six Forks Road • PO Box 21061 • Raleigh, North Carolina, USA 27619-1061

CIRCLE #087 ON PRODUCT INFO CARD

Xwire announces the X905 Digital Wireless System



Xwire Corporation announces a breakthrough in wireless design: the X905 Digital Wireless System. It's the world's only wireless that's 100% free from the compromises of high-capacitance cables and analog wireless systems, assuring audio and musical professionals that what goes in is what comes out. Period.

Gone are the long cable runs that dull sound. Gone are analog compression and expansion schemes that color sound and introduce noise and distortion. An audiophile-grade 20 bit A/D converter captures the full dynamic range of instrument, line-level, or microphone sources and transmits them in digital format on one of five user-selectable UHF frequencies. The XR905 receiver decodes the signal via a precision 20 bit D/A converter, with quality matched only by plugging in directly with a premium patch cable.

Crystal-clear audio is just the beginning: the X905 is free from drop-outs, interference and multipathing. Four omni-polar patch antennas and two complete receivers are hidden behind the front panel of the XR905 receiver creating Quadiversity™ — two completely separate diversity systems working in tandem. A unique digital key identifies the transmitter's signal to the receiver, locking out all other sources of possible RF interference. The X905 system provides a minimum range of 100 feet under adverse conditions, 300 feet with clear line of sight.

Visit your authorized Xwire dealer and free yourself from excess cable without compromising your audio quality.

Xwire™
Digital Wireless System

Xwire Corporation
4630 Beloit Drive, Suite 20, Sacramento, CA 95838
Voice (916) 929-9473 Fax (916) 924-8065 Internet www.xwire.com

*"X" your wire,
not your sound!*

- ✗ State of the art, 20 bit AD/DA converters
- ✗ Greater than 120db of dynamic range
- ✗ 10hz to 20Khz frequency response
- ✗ No compander IC's or squelch circuit
- ✗ Unique digital key locks out interference
- ✗ Five user-selectable channels, up to five systems in simultaneous operation
- ✗ 100 – 150 foot operating range under adverse conditions, 300 feet line of sight
- ✗ Receiver LCD shows operating channel, audio level, data percentages and battery life (in one-hour increments, 11 hours typical)
- ✗ Instrument and microphone systems available
- ✗ FCC approved, no license required
- ✗ Made in the USA
- ✗ Five year limited warranty

Visit our website at
www.xwire.com

See us at NSCA 98,
booth 945.

"The X905 should not be compared to other wireless units, it should be compared with your favorite cord."

Bass Frontiers magazine

"We specialize in recording full bands as live as possible, that means we often have amps spread out all over the facility. Xwire gets the signal where it needs to be without any line loss."

Dan Daniel, Chief Engineer,
Laughing Tiger Recording

Call now to reserve your free copy of our upcoming demonstration CD which will feature cable and wireless comparisons, great music and more.

24 Bit / 96 kHz

We are there !

WINDOWS™ 95/NT



Samplitude 2496

Samplitude 2496 Mastering/Multi-Tracking Software. Shown above: Multitrack Screen, FFT Filter, Noise Reduction, Multi-Band Dynamics Module.

Where are you ?



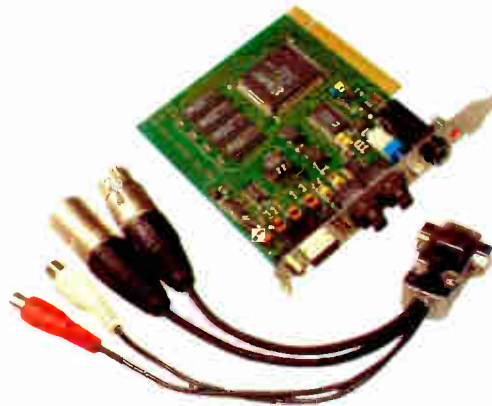
ADDA 2496 DSP

AD/DA Converter: Wordclock, Dynamic Range >128 dB, Real-Time Resample, 44.1/48/88.2/96 kHz, 135dB s/n, Store 24 Bit, 96 kHz on 16 Bit DAT.

The SEK'D 24/96 Mastering/Multi-Track system represents a price/performance breakthrough in state of the art high resolution audio.

If you are still wondering about high resolution audio, this is the time to explore the precision craftsmanship and astonishing audio quality that is finally possible at a less than astonishing price.

For more information, please call SEK'D America (1-800-330-7753) or one of the fine Pro Audio dealers listed in this ad!



PRODIG 96

Digital Transfer Card: Sample rates: 32, 44.1, 48, 64, 88.2, 96 kHz, <2 ns in PLL mode. Analog Out: 20-Bit, 96 kHz, Dynamic Range >94dB

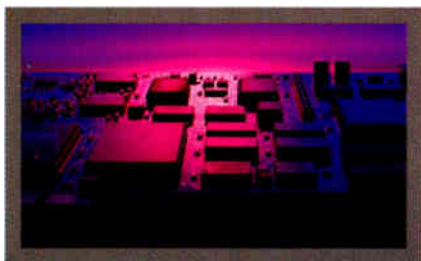


Join us !

SEK'D America
 P.O.Box 5497
 Santa Rosa, CA 95402
 Tel: 707-578-2023
 Fax: 707-578-2025
 eMail: info@sek.com
 Web: www.sekd.com

SEK'D Pro Audio dealers: **Draco Audio**, AZ, 520-325-6543 – **Apex Audio**, CA, 714-596-1185 – **Sound Chaser**, CA, 800-549-4371 – **MIDI Classics**, CT, 860-651-1349 – **Interactive Microsystems**, IL, 847-426-1950 – **Parsons Audio**, MA, 781-431-8708 – **Non Linear Productions**, NY, 212-732-3773 – **Studio Cat Software**, OH, 888-873-8855 – **Smoky Mountain Recording Co., Inc.**, TN, 423-428-9088 – **Wright Spirit Music**, TX, 210-497-3339 – **Bayview Pro Audio**, WA, 888-718-0300

CIRCLE #089 ON PRODUCT INFO CARD



a sync backplate (\$150), providing ADAT 9-pin sync, MIDI Time Code input and word clock I/O.

Soundscape recently introduced MaxMedia, a PCI interface card with the ability to run 16 tracks of digital audio using two standard TDIF ports, in combination with the V2 MIXER software from the SSHDR-1. Intended for use with a wide range of PC software, including Sound Forge, Logic Audio and Cakewalk, the card retails at around \$700, includes the V2 MIXER software and offers MIDI In/Out/Thru and optional S/PDIF I/O. In addition, the TDIF ports allow integration with systems such as the Yamaha 02R and 03D, as well as the Tascam DA-88. To support the card, Soundscape is offering two I/O units, offering TDIF to 8-channel (with 20-bit A/D/A converters and RCA connections) and TDIF to ADAT I/O. Both units are half-size, 1U rack units and retail for \$600 each. Two units can be combined to offer 16 I/Os in a rackspace.

Yamaha made a major splash a few months back with its DSP Factory family of components for multitrack recording, editing and mixing for Windows. The first product shown was the backbone of the system, the DS2416 PCI card: Priced at \$999, the host CPU-independent card offers mixing features of the 02R such as 24-channel, 32-bit mixing with ten bus outputs and six aux sends, plus 104 bands of parametric EQ, 26 dynamics processors and two effects processors (comparable to the REV500), in addition to 16-track recording capability. The DS2415 can be cascaded and features 2-channel, 20-bit A/D conversion, plus stereo analog and coaxial 20/24-bit digital I/O. An AX44 expansion unit (\$299) installs into a standard tower drive bay, adding four analog I/Os, MDM interfaces and a Mac driver are in the works. Control software is being developed or integrated by leading companies such as SEK'D, Steinberg, Sonic Foundry and Cakewalk; the first DSP Factory should ship sometime this month. ■

George Petersen is the editor of Mix.

**PRO
TOOLS**

LEARN AUDIO RECORDING AT THE CONSERVATORY LIKE NOWHERE ELSE.

Avid | Authorized
Education Center

- Multi-Studio Facility
- Hands-on Training
- Affordable Tuition
- Internships
- Small Classes
- 22 Week Master Recording Program
- Financial Aid to Qualified Students
- Our Graduates are in Demand

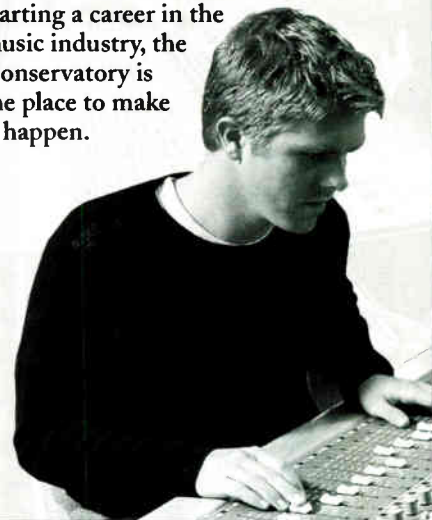
Call Today!
1-800-562-6383

CONSERVATORY OF
Recording
Arts & Sciences

2300 East Broadway Rd.
Tempe, AZ 85282

BC&A 1997

The Conservatory is the only recording school in the *entire country* that's authorized by Avid to teach ProTools recording, editing, and mixing functions. If you're serious about starting a career in the music industry, the Conservatory is the place to make it happen.



CIRCLE #090 ON PRODUCT INFO CARD



Finally. A practical computer display for your studio.

Face it: big, bulky CRT monitors never made sense in the cramped conditions of a studio. Now there's a better solution. At just a fraction of the weight and depth of a CRT monitor, flat-panel displays from FlatWorks will work with your Mac or PC systems, and are available in a variety of sizes to meet your specific needs.

FlatWorks is the leader in flat-panel display solutions, offering all of the major brands including Akia, IBM, NEC, Sceptre, Samsung, and ViewSonic. You can order one right now from our Web site, or please call (425)456-0042 for more information.

FlatWorks
The Flat Panel Display Experts.
www.flatworks.com



Fax (425)456-0043 Email: info@flatworks.com

CIRCLE #091 ON PRODUCT INFO CARD

OTARI RADAR II

24-BIT/48KHZ DIGITAL RECORDING SYSTEM

Anounced at the NAB show in 1994, the Otari RADAR (Random Access Digital Audio Recorder) digital recording system was an immediate hit: A self-contained, stand-alone platform, it was an affordable (less than \$1,000 per track), professional-quality (16-bit) disk-based system that combined the power of random access with an easy-to-use interface modeled after that of a standard analog multitrack. The RADAR quickly proved to be a success; more than 500 units have been sold

Although designed as a replacement, RADAR II maintains file compatibility with the earlier units: RADAR II's 24-bit-format files cannot be used on an original RADAR, but 16-bit files are backward-compatible. Conversely, RADAR I files can be restored on a RADAR II as a 16-bit file.

Another advantage is more flexible (and bigger) storage capabilities. Where the RADAR I system needed three drives to handle 24-track operation, the new generation incorporates a 9GB removable hard disk, enabling 42 minutes of 24-bit 24-track recording (or about 4.6 minutes/track per MB), or 64 minutes of 24-track recording in 16-bit mode (or around 7 minutes/track per MB). RADAR II's configuration can accommodate two drives internally; front panel drive-bay slots are designed for either



to date. Four years later, the next generation of RADAR has arrived, with last month's introduction of the RADAR II at the NAB show in Las Vegas. RADAR II keeps the ease-of-use of the RADAR but adds enhanced sound quality and flexibility.

One of the biggest advantages RADAR II offers over its predecessor is 24-bit/48kHz recording capability. The unit features 24-bit architecture and records 24-bit to disk. The 24 A/D and D/A converters are 24-bit; a TDIF Link 24-track digital I/O card allows RADAR to communicate directly with digital consoles.

narrow devices such as hard drives, Jaz and Travan drives, or wide devices such as an Exabyte drive. Additional drives can connect via the rear panel SCSI port. (A list of qualified drives is available from Otari.)

RADAR II's new "reliability features" maximize hard disk functionality and stability. A Custom SCSI Configuration feature allows the user to assign different tracks to different drives, enabling longer record time and even greater reliability. The system incorporates intelligent recovery of bad (unreadable or unwritable) sectors by remapping them to spare sectors in a reserved area of the drive. Also added is distributed/redundant playlist storage: The system automatically switches to the second copy if the primary playlist file becomes inaccessible or corrupted. And an Auto Reclaim function auto-

BY SARAH JONES

matically restores disk space whenever the system determines that a file is no longer available.

RADAR II has a new remote control—the RE-8 II, which is an expanded version of the original RE-8 but designed to further emulate the look, feel and operation of a standard analog recorder remote. Major upgrades include 48-track arming controls and more direct access to commonly used menu items. (By using RADARLink software, two RADAR IIs can be linked to provide sample-accurate 24-bit, 48-track recording capability.) The RE-8 II adds a set of macro keys for programming and recalling common button-press sequences; additional key features include Zoom In, Zoom Out, RADARLink, RADARLink Solo, Mark Sync and Auto Reclaim. New remote menu items include additional user preferences and more extensive diagnostic tools. Additionally, a new Sync User Interface allows for a more comprehensive selec-



The main unit's rear panel

tion of available sync parameters such as timecode rate etc., and includes a look-up-by-project feature.

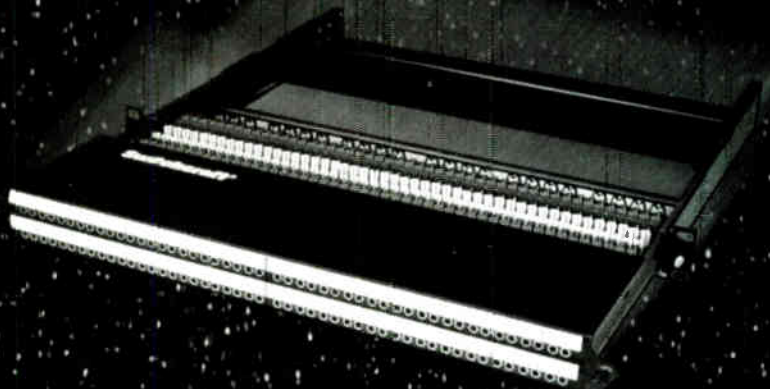
A new, detachable meter bridge allows the main RADAR II unit to be located away from the control room, thus eliminating machine noise. The bridge features 12 LED meters and can be mounted to the RE-8 II, behind the console meter bridge or under the RADARVIEW monitor. For 48-track monitoring, an optional second meter bridge can be mounted alongside the first.

At approximately the same cost as the original, RADAR II's new features, expanded functionality, improved sound quality and familiar, recorder-style user interface should make it a strong entry into the hard disk recorder market. A fully fitted 24-track system with 24 channels of digital I/O, plus backup drive, costs less than \$25,000.

Otari Corp., 378 Vintage Park Drive, Foster City, CA 94404; 650/341-7200; fax 650/341-7200; Web site: www.otari.com. ■

Sarah Jones is an assistant editor at Mix.

SPACECRAFT



Switchcraft TTP96FA Front Access Panel

Switchcraft's innovative front access patchbay provides easy access from the front of the rack, making it the perfect space-saving vehicle for your next job.



For Catalogs, No Minimums, Volume Buying, Person-to-Person Distribution, Custom Warehousing, Value-Added Assembly, Technical Assistance

(800) CAL-SWCH

Fax: (800) FAX-CASW • www.calswitch.com • ISO-9002

CIRCLE #170 ON PRODUCT INFO CARD

Been Waiting for the DVD-Audio Spec?



DVDMedia has taken an advanced position in the emerging world of DVD.

Since 1984, we have provided the best in audio recording, mastering, and premastering -- from corporate training for Johnson & Higgins to recordings for the Philadelphia Orchestra.

Whether your project includes video and interactivity, needs mastering, or is ready for release and simply needs DVD premastering ("authoring") -- DVDMedia is ready today.

Delaware
Valley
Digital
Media

- 96k/24bit
- Dolby Digital 5.1
- Audio Encoding for DVD-Video



16 East Johnson Street #10 • Philadelphia, PA 19144-1918
(215) 242-3111 FAX (215) 848-1504

CIRCLE #092 ON PRODUCT INFO CARD

PREVIEW

LEXICON DUAL-CHANNEL PROCESSOR

The MPX 100 dual-channel processor from Lexicon (Bedford, MA) offers 20-bit A/D and D/A conversion, 24-bit internal processing and 240 presets, including multiple stereo reverb, pitch and modulation effects programs, and up to 5.7 seconds of delay. Dual-channel processing allows independent control of left and right channel effects; a front panel rotary knob adjusts effect parameters, and a Balance knob controls the direct signal/effects mix. Effects level, program adjust, bypass, tap and mix controls are controllable via MIDI, and tap tempo can be set with the front panel Tap button, footswitch, external MIDI control or even the audio input. The MPX 100 provides both analog and S/PDIF digital outputs. Price is \$249.

Circle 327 on Product Info Card

TELEX COBALT SE60 CONDENSER MIC

Telex Communications (Minneapolis) has introduced the Cobalt™ SE60, a cardioid condenser mic aimed at project studio and live sound applications. Boasting a frequency response of 30-19k Hz ± 5 dB, the SE60 is said to handle SPLs of up to 141 dB without distortion. The SE60 may be phantom- or battery-powered (AA battery life is projected at 1,000+ hours). Price: \$179.

Circle 328 on Product Info Card

**YAMAHA 01V 8-TRACK DIGITAL MIXER**

Yamaha (Buena Park, CA) introduces the 01V, a compact digital mixer featuring snapshot storage and recall of all functions: motorized faders; and onboard dynamics, EQ and digital effects. Twelve input channels offer parallel XLR and 1/4-inch input connectors, mic preamps with pads, 48-volt phantom power and 60mm motorized faders, while an additional two stereo faders control four line returns. These 16 primary inputs feature the same 4-band parametric EQ and limiter/compressor/gate found in the Yamaha 02R, plus a 250ms delay line, and may be routed to eight direct digital outputs and six aux sends. An additional eight inputs (17-24) are designed as digital tape returns and feature 2-band parametric EQ and four aux sends. All inputs may be routed to the stereo mix bus and to any or all of four

analog Omni-Send outputs. Optional digital I/O cards (\$299) interface the 01V to popular 8-track MDMs, workstations and outboard processors; output formats include ADAT, TDIF and AES/EBU. Two 01Vs may be linked to create a 48-input digital mixing system, and RS422 and MIDI connections provide remote control options and interface flexibility. Additional features include a high-density 320x80 backlit LCD for graphic depiction of mixer settings and up to 300 ms of delay on analog outputs. Price is \$1,999.

Circle 329 on Product Info Card

NEOTEK MICMAX STEREO MIC PRE

Martinsound (Alhambra, CA) announces the Neotek MicMAX microphone preamp, a

2-channel, single-rackspace unit based on the Neotek Elite console's stereo mic pre. Input gain is controlled by nudge buttons in 5dB increments; output stages feature a ± 5 dB trim pot. Exceptional headroom offers +30dBu output with less than 0.001% distortion. Additional features include completely balanced circuitry from input to output (an unbalanced output is also available), subsonic filter, polarity reverse and ground lift switches, phantom power, highly visible bar graph metering and switchable input impedance. Price: \$1,200.

Circle 330 on Product Info Card

TC EFFECTS FOR YAMAHA 02R

TC Electronic (Westlake Village, CA) announces TC UNITY, the first plug-in effects card for the Yamaha 02R digital recording console. TC UNITY provides two independent 24-bit mono in/stereo out signal processing engines; the 02R automatically senses the card's presence in any I/O expansion slot and activates specifically designed preset and editing screens. Effects include reverb, chorus, delay, pitch shifter, etc. TC UNITY will be available with and without an 8-channel AES/EBU digital I/O Sub D25 connector. Due to ship this spring, TC UNITY retails at \$1,495 with digital I/O, \$1,195 without.

Circle 331 on Product Info Card



PREVIEW

FURMAN HEADPHONE SYSTEM

Furman Sound (Petaluma, CA) offers a new headphone distribution system comprising the HDS-6 single-rackspace distribution module and up to eight HR-6 remote mixers, which connect to the HDS-6 via Ethernet cabling. The HDS-6 accepts up to six inputs and provides four mono submixes and a stereo mix at the HR-6, allowing for multiple individual headphone mixes, using rotary pots. A switch mutes all mono inputs. System price of \$349 includes one HDS-6 and one HR-6; additional HR-6 units are \$129 each.

Circle 332 on Product Info Card

ANTARES AUTO-TUNE RACK

AnTares Systems (distributed by Cameo International, Los Gatos, CA) now offers its pitch correction technology, first developed for the AnTares Auto-Tune Pro Tools plug-in, in a rack-mount device. The ATR-1 Auto-Tune™ Rack corrects pitch automatically, either live or from tape, in real time, without distortion or artifacts. The ATR-1 includes preset scales, including major, minor and chromatic scales in any key, and allows any combination of notes to be defined as a scale. Over 100 memory settings store scales and presets, and any scale may be detuned to a new pitch. The ATR-1 can be programmed to ignore vibrato and note-bending, and can add vibrato with programmable delay, depth, rate and waveform. Scales, keys and notes may



be controlled from any MIDI device. Price: \$1,199.

Circle 333 on Product info Card

SPIRIT DIGITAL 328

Spirit by Soundcraft's (Rocklin, CA) Digital 328 is a digital 8-bus console with a total of 42 inputs (including 16 mic/line ins and 16 tape return channels), comprehensive moving fader automation, onboard dynamics processing and internal Lexicon reverb and effects units. The channel inputs, tape returns and all group/master controls are accessed by switching them in banks of 16 to the control surface. An "E-Strip" running across the console provides the interface for all control and processing parameters, which

include 3-band parametric EQ and four external aux sends plus two internal Lexicon sends per channel. Two stereo dynamics processors are assignable to any input or output, and recall of all console functions is via 100 memory scenes or MIDI. Metering is via ten-segment bar graphs. The Digital 328 also supports SMPTE and MTC control and includes a timecode display. AES and S/PDIF digital I/Os may be freely assigned, and dual TDIF and ADAT I/Os are standard. Price is \$4,999.95.

Circle 334 on Product Info Card

TC DIGITAL MIC PRE

TC Electronic (Westlake

Village, CA) introduces the Gold Channel, a 2-channel digitally enhanced mic pre-amp. Features include 24-bit A/D conversion, EQ, an expander/gate and Softlimiter™ compressor/limiter. EQ and dynamics processing is at 96 kHz. The rackmount unit has mic and line inputs plus Word Clock synchronization and multiple digital outputs (AES/EBU, optical S/PDIF and ADAT). Additional features include polarity reverse, +48V phantom power, pad and muting, high-resolution metering and 200 memory locations for instant recall of custom user presets. Price is \$2,495.

Circle 335 on Product Info Card



MARANTZ PORTABLE DIGITAL RECORDER

The Marantz PMD690 portable digital recorder from Superscope Technologies (Aurora, IL) uses standard PCMCIA cards as a storage medium and offers a choice of linear PCM or MPEG compression recording. Tracks are stored as MS-DOS-compatible and .WAV files, easing transfer to DAWs. The PMD690 can record up to one hour of stereo audio with a 20kHz bandwidth (120MB memory required) and accepts analog



PREVIEW

mic line and digital inputs/ outputs. Power is supplied by conventional or rechargeable batteries; operating time is approximately three hours. Price: \$999.

Circle 336 on Product Info Card

ROCKTRON MULTIVALVE EFFECTS PROCESSOR

Rocktron (Rochester Hills, MI) introduces the Multivalve effects processor, a single-rackspace device that emulates the sound of vintage tube electronics using a 12AX7 tube section and 24-bit DSP. Effects such as rotary speaker, phaser, flanger, compressor, delay and parametric EQ can be selected via front panel rotary controls. Two gain settings for the tube section add warmth and "fatness." Output is +4/-10 dB switchable. Price: \$899.

Circle 337 on Product Info Card

HOT OFF THE SHELF

Recording Console Concepts' **No More Tape™** is an innovative labeling accessory, an alternative to adhesive tapes for labeling recording consoles, sound reinforcement mixers, patchbays and miscellaneous rack-mount accessories. Call 612/588-6430 or visit www.musicstores.com/nomoretape... The Tascam **MM-RC Remote Control Unit** can control any combination of up to 100 MMR-8 and MMP-16 recorder/players via the MMR Bus. The unit provides function keys and macros for executing strings of commands with a single button. Price is \$2,599. Call 213/726-0303... **Signature Music**, a supplier of buy-out production music, now dis-

tributes Mokai Music and Flying Hands collections. Call 800/888-7151... **Canare's** 1998 Catalog 9 includes cable, connectors, digital video patchbays, snake systems, cable reels and related accessories. Call 818/355-2446... Version 3.5 software for the **TC Electronic M5000 Digital Audio Mainframe** is available. Registered M5000 owners can download the update from www.tcelectronic.com, or call 805/373-1828... **WhisperRoom's SE Series** sound isolation enclosures come in various sizes,

and each unit includes a stationary floor, window, fan-powered ventilation system, interior acoustical package and cable passages. Call 423/585-5827 or visit www.whisperroom.com... **E-mu Systems** has licensed **Aphex Systems' Aural Exciter™** technology and will incorporate it into E-mu's current line of ESI and E-IV Series samplers. The company has also begun shipping the Formula 4000 series of sounds from the E-mu Orbit™ and Planet Phatt™ sound modules. Available separately, the five-CD-ROM disc series costs \$295. Call 408/438-1921 or visit www.emu.com...

JRT Music adds five new releases to the **Tele Music Library** of original music scores. Titles include **Cool & Easy**, **House Grooves**, **Drums & Bass**, **Orchestral Colors** and **32 Jingle** (a collection of 32 jingle tracks in 60-, 30- and 15-second cuts). For a free demo call 888/578-6874... **Promusic** offers paperless music licensing online, day or night. Production music and SFX library users may download licensing applications from the company's Web site at www.promusic-inc.com/musicuse/htm, and may catch up on new Promusic releases at the home page. Or call 800/322-7879...

TecNec's On the Level audio interfaces is a range of four passive, low-cost level and impedance matching devices for linking semi-pro and consumer audio equipment with professional 600-ohm balanced equipment. Call 800/543-0909... **Jameco Electronics** offers its **25th-anniversary catalog** featuring

5,000 ICs, components, tools, test equipment and computer products. For a free copy, call 800/831-4242 or visit www.jameco.com...

Acoustic Science Corp.'s Flutter Stix are designed to eliminate flutter echoes by absorbing sound energy and creating lateral diffusion. Composed of Fiberglas and acoustical foam and available in two sizes, Flutter Stix include built-in mounting hardware. Call 541/343-9727 or visit www.tubetrap.com...

Signature Music adds five new CDs to its buy-out collection of production music. New titles are **Orchestral Energy**, **Positive Vibe**, **Overtures & Underscores**, **Piano Explorations** and **Acoustic Rhythms**. Call 800/888-7151 for a free demo CD... **Carver Professional** intros audio interconnect and speaker cables, with and without RCA, phone and XLR connectors. Call 503/978-3344 or visit www.carverpro.com...

EMTEC Pro Media announces 30-, 60- and 113-minute tapes in the BASF line of DTRS Master tapes. EMTEC, formerly JR Pro Sales, is North American distributor of BASF recording media. Call 888/295-5551 or visit www.emteca.com...

Audix created the **instructional Microphone Application Guide** and accompanying CD-ROM. The booklet and CD-ROM feature well-known engineers discussing proper mic placement for recording and live sound. A paired audio CD has recordings made with various Audix mics. Call 415/227-0894 or visit www.audixusa.com. ■

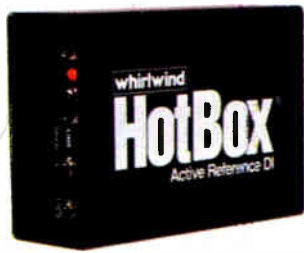


SONY DPS-V55 MULTI-EFFECTS PROCESSOR

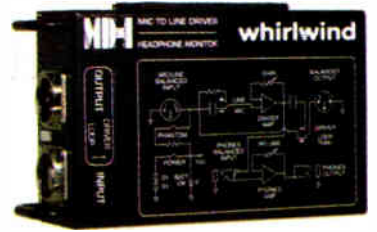
Sony Electronics (Park Ridge, NJ) introduces the DPS-V55 multi-effects processor, an economical but powerful 4-channel effects processor based on the company's DPS-V77, using the same DSP chip and two-bit converters. Offering 45 effects types and a wide range of presets created by leading engineers, the DPS-V55 features a large rotary knob with variable velocity, a search function and a tap tempo button. Price is \$555.

tributes Mokai Music and Flying Hands collections. Call 800/888-7151... **Canare's** 1998 Catalog 9 includes cable, connectors, digital video patchbays, snake systems, cable reels and related accessories. Call 818/355-2446... Version 3.5 software for the **TC Electronic M5000 Digital Audio Mainframe** is available. Registered M5000 owners can download the update from www.tcelectronic.com, or call 805/373-1828... **WhisperRoom's SE Series** sound isolation enclosures come in various sizes,

THE GOOD STUFF.



Professionals rely on industry-standard tools from Whirlwind to protect each performance and recording from the frustrating failures and poor sonic results of second-rate components. Built to provide consistent superb results through years of tough use, these products are what sound specialists buy when they can buy what they want — *the good stuff.*



The **Hot Box™** is Whirlwind's top-of-the-line DI for sending your pure guitar sound direct to the mixer. The ultra-high input impedance, super-wide bandwidth and vanishingly low noise mean you won't find better sonic performance anywhere.

The **MD-1™** is a battery powered studio-quality mic preamp with a transformer isolated line driver output and a built-in headphone monitor. The heavy steel box, 18V phantom power and transformer isolation make it a favorite with sports broadcasters.



The **Director®** is a premium quality DI box with an input select for instrument or amp/preamp, a ground lift switch, and a filter to roll off amp noise.

The **MicPower®** is a convenient portable phantom power supply that operates from two standard 9V batteries to power condenser mics.



The **IMP® 2** brings a high-quality DI to musicians on a budget. Rugged, good sounding, with a ground-lift switch.

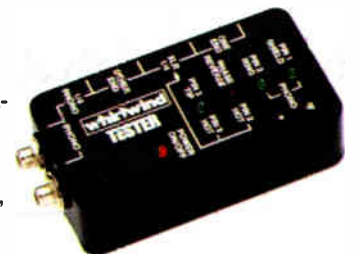
High Performance **PM Tubes®** are manufactured for Whirlwind using the latest techniques and specialty metals. If you own a tube amp or effects device, listen to the difference these tubes will make.

The **Mic Eliminator®** is a specialty DI that takes your direct guitar, amp, or preamp signal, and adds the clean sound of a classic SM57 + Jensen 12" mic + speaker setup for that famous "miked" sound without the mic.

The **Qbox®** is an all-in-one battery powered audio line tester. It includes a built-in mic, speaker, tone generator, headphone amp, and voltage detect LEDs for verifying phantom or intercom power.

The **Selector®** switches one instrument to two inputs or two instruments to one input using a patented totally silent Whirlwind switching circuit.

The **Tester** is the industry's favorite continuity tester, detecting shorts, opens, or cross-wiring on cables with virtually any combination of XLR, 1/4", and RCA phono connectors.



whirlwind™

99 Ling Rd. • Rochester • NY • 94549 • TOLL FREE 888.733.4396 • FAX 716.865.8930 • <http://www.WhirlwindUSA.com>

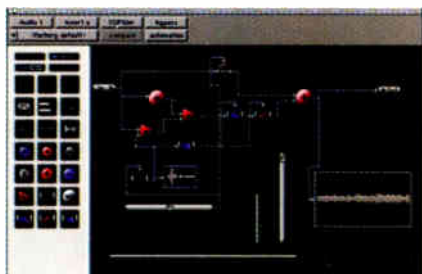
CIRCLE #093 ON PRODUCT INFO CARD

SOFTWARE AND HARDWARE FOR AUDIO PRODUCTION

DUY DSPIDER FOR TDM

Barcelona-based DUY (distributed in the U.S. by Cameo International, Los Gatos, CA) introduces the DSPider TDM plug-in. DSPider is a modular processing/synthesis package consisting of 40 linkable modules and operators for custom creation of virtual effects processing and audio generating devices. A wide range of modules is included, from operators for addition, subtraction and shifting to functions such as shapers, envelope followers, delay modules and pitch trackers. Users can work from predefined patches or create their own modules, and graphical representations of objects such as sliders, plasma meters and scopes make "drag-and-drop" editing easy. Pro Tools 24 is supported; retail for the plug-in is around \$799.

Circle 338 on Product Info Card



SIBELIUS VMP FOR MAC AND PC

Sibelius Software (U.S. offices in Los Angeles), creator of the Acorn RISC-based Sibelius 7 notation software, has gone cross-platform with Sibelius VMP (Virtual Manuscript Paper), notation software for Power Mac and Pentium PCs. Written by composers, VMP

features an intuitive interface and high-speed operation, updating and reformatting scores in a fraction of a second. Music is input from any MIDI keyboard, or via computer mouse and keyboard, and features include checking that rhythms add up, extensive user customization, and an Expressive feature that uses artificial intelligence to produce a lifelike performance straight from the score. VMP is an open architecture design and offers Internet capabilities. Prices will be announced.

Circle 339 on Product Info Card

XYTAR 1616CD

Xytar Digital Systems (San Francisco) recently announced the DMS1616CD, the latest in its ADMS family of "recording and production studios in a box." The DMS1616CD is a 16-track hardware-based system designed for mastering. Features include punch-in-out, EQ, filtering, reverb, time and pitch shift, sample rate conversion and an FFT function for restoration/noise removal. Hardware features include a 1GB internal drive, with an additional 1GB Jaz drive for extra space/backup (1.5GB SyJet optional), and an onboard CD recorder. List is \$9,999.

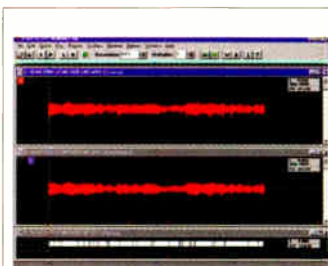
Circle 340 on Product Info Card

BITHEADZ RETRO SOFTWARE SYNTH

New music software company Bitheadz (Capitola, CA) debuts the Retro AS-1 Analog Synthesizer, a fully programmable, polyphonic, analog synth implemented

in software for the Mac OS operating system. Retailing at \$259, the Retro AS-1 comprises a synthesizer engine, editor, control panel, mixer application, 100 built-in sounds, a direct serial port MIDI application, OMS and FreeMIDI drivers and an on-screen keyboard; the software is designed to integrate seamlessly with most sequencers. Additional features include matrix modulation controls, multiple filters and oscillators, effects and an arpeggiator that imports and exports standard MIDI files. The AS-1 is multitimbral and offers 24-bit, 44.1kHz sound quality.

Circle 341 on Product Info Card



Version 2.0 (\$199); and the Studio 8-track software recording program (\$199) for PC. Visit www.tracertek.com...Power Technology debuts an enhanced version of DSP•FX Virtual Pack that supports 96kHz effects processing. Check www.dspfx.com for information...Digital Audio Labs (www.digitalaudio.com) announces new supporters of the V8 workstation platform. QSound Labs introduced three V8 plug-ins featuring QSound 3-D encoding technology; Waves announced the V8 Pack plug-in bundle; and AnTares will soon release Auto-Tune as a V8 plug-in...Seer Systems announced SeerMusic, its proprietary new Internet music delivery technology. For more information, check out www.seersystems.com...New from Spatializer: Version 1.4 of its PT3D plug-in for Pro Tools. The update is compatible with Pro Tools 4.1 and adds automation capability and Mackie HUI support. Visit www.spatializer.com...Waves (www.waves.com) introduces the streamlined EasyWaves AudioTrack and EZVerb, a package including 4-band EQ, compression, gating and reverb, for Mac and PC. Also from Waves, the De-Esser multi-band dynamics processor Pro Tools plug-in. ■

UPGRADES AND UPDATES

Digidesign's Pro Tools 24 Version 4.1.1 upgrade features d24 Sound Output Drivers (allowing non DAE-based applications from Digidesign developers to use the d24 card for 16-bit output via Sound Manager) and compatibility with Audiomeia III and PowerMix, among other software enhancements. In addition, Digidesign released Pro Tools 24 Expansion kits, which support expansion of to up to 64 tracks of record/playback. Visit www.digidesign.com...Tracer Technologies is now shipping DART PRO 32 (\$399), featuring 32-bit capability, CD making, pitch shifting and 3-D spectrum analysis; Diamond Cut Audio Restoration Tools

IN YOUR FACE!



World Radio History

CAD EQUITEK E-300.

Still the unparalleled leader in microphone performance, quality and value!



Professional Microphones



The Revolution Continues.

1-800-762-9266 • (440) 593-1111 • E-mail salesdept@CTIAudio.com

CIRCLE #094 ON PRODUCT INFO CARD



the largest
audio school on
the planet opening
soon in the US

in cooperation in sound engineering with
WALT DISNEY Entertainment[®]

www.sae.edu

CIRCLE #141 ON PRODUCT INFO CARD

World Radio History

AB INTERNATIONAL SUB3600

THREE-CHANNEL AMPLIFIER WITH INTEGRATED CROSSOVERS

AB International has been making amplifiers with integrated crossovers for almost two decades (my monitor system reference rack still contains the AB 710c bi-amp that I bought in '83). The company's Professional Series SUB3600 is a full-featured 3-channel amplifier, but each channel also has its own 24dB-per-octave Linkwitz-Riley crossover filter. The SUB3600 is, in effect, an entire amp rack with processing and offers a robust system solution in the space normally occupied by a simple amplifier.

Channels 1 and 2 are generously rated at 500 watts into 8-ohm loads and 800 watts into 4 ohms. The third channel, generally intended for powering subwoofers, is rated at 1,500 watts into 4 ohms and 2,000 watts into 2 ohms. When measured with all three channels driven, the amp easily exceeded its spec and produced 4,300 watts total into 2-ohm loads without clipping.

The SUB3600's front panel includes detented level control knobs for the three channels and nine-LED output metering. Four standard crossover frequencies are front panel-selectable: 80, 1,200 and 1,600 Hz are available on all channels, and the fourth frequency for channels 2 and 3 is 800 Hz; channel 1's fourth frequency is 5 kHz, useful for tri-amp applications. Custom frequencies can also be ordered. Along with $\frac{1}{4}$ -inch and XLR "combo" inputs and five-way binding posts for outputs, the rear panel includes a ground lift switch and dual high-power fans with temperature-activated speed control. The rear panel also includes three balanced $\frac{1}{4}$ -inch TRS jacks for feeding the line-level output of each crossover to other amps. At

5.25 inches high, the SUB3600 uses only three rackspaces and is less than 17 inches deep. Chassis construction is 14-gauge, cold-rolled steel with a $\frac{1}{8}$ -inch aluminum front panel. The amp weighs 65 pounds.

The SUB3600 can provide an integrated single-chassis solution for many speaker systems, and, because the crossover settings are recessed, rental companies can confidently package it with speaker systems. One obvious application for the SUB3600 is as a complete



system amplifier for stereo mains (full-range, passively crossed over) and a mono subwoofer. In fact, the SUB3600 I reviewed has been used for the past year to bi-amp a pair of Technomad three-way Cairo pole-mount speakers, with the Radian coaxial 12s crossed over at 80 Hz and the system powered in stereo. The single Electro-Voice 15s in each cabinet are both powered (in mono) by the third channel.

Mix talked with engineer Mark Heath, who mixes the Portland, Ore., band Pepe & the Bottled Blondes. The band has used this system for a variety of gigs, hauling it in and out of clubs and ballrooms for dances, socials and weddings. Heath pumps Pepe's unique style of Latin dance music from a Mackie SR24, and the system is required to cover up to 1,000 people with a full mix of rhythm section, horns and vocals. Because the amp is rated to 2 ohms, Heath is able to add on

Bag End TA-15 speakers and single-15 subs in parallel to pump up the dance floor for the largest shows. The amp held up brilliantly in this typical, if abusive, situation and allowed the band to carry production easily in their van.

"We always have plenty of clean power," Heath says. "It's a little heavy, but not much more than the amps and crossover we replaced, and it's quite a bit smaller." One easily overlooked feature is that the SUB3600 runs on a single 15-amp circuit—just plug it into an Edison on the wall.

The SUB3600 is more than a fancy amplifier. It's a Swiss Army knife-type solution for a wide range of speaker applications, including tri-amping, bi-amping with an extra channel for monitors, or even 3-channel operation with an external processor. Channel 1 also has a half-power switch, which is helpful for tailoring its output down for compression drivers in tri-amp applications.

At a list price of \$2,490 the SUB3600 may seem a little expensive until you consider that the price includes a stereo amp plus a high-power mono amp and built-in crossovers, all in a rugged three-space package. Two related products in the same line are AB's SUB2000 (\$1,849) and the SUB 1850B (\$1,572), which offer the same features at power points 2 and 4 dB lower. Other multichannel amps in AB's line-up include 4- and 6-channel amps at three different power points.

AB International Electronics, 1830 Vernon Street, Ste. 6, Roseville, CA 95678; 916/783-7800; e-mail: abamps@aol.com. ■

Mark Frink is Mix's sound reinforcement editor.

BY MARK FRINK

BENSON STUDIOSTAT 8.2

ELECTROSTATIC NEAR-FIELD STUDIO MONITORS

Electrostatic loudspeakers were first introduced into the home hi-fi market in 1956 by QUAD Electronics and have been the source of lively debate ever since. Though they're revered by a segment of the audiophile population, a constant complaint about electrostatic speaker designs has been that they are more suitable for classical or jazz music and don't have adequate punch for rock and other styles. And, despite more than four decades of acceptance of electrostatic speakers in the home stereo community, no one to my knowledge has ever used electrostatic elements in professional studio monitors—until now.

Enter the StudioStat 8.2 from Benson Audio Labs. Rather than employ an expensive all-electrostatic design—which also equates to a very large surface area to create the air motion required for low frequency reproduction—the StudioStat 8.2 uses a hybrid approach, combining a conventional cone woofer crossed over at 1,600 Hz to a single electrostatic panel handling the upper mids and highs. This allows the extended high-end performance (to 25 kHz and beyond) of an electrostatic design, while reducing the size of the cabinet (which measures 17.75x11x12 inches), providing punchy bass response and keeping the cost of the system down to an earthy \$1,399/pair.

Operating much like a condenser microphone in reverse, the StudioStat 8.2's 4x4-inch electrostatic element works by charging a large 19.3-square-inch diaphragm surface with a high voltage. Changes in the input signal cause the polarizing potential to vary, and the ultralow-mass (0.1 mil) Mylar diaphragm vibrates to re-create the input.

Physically, the StudioStat 8.2s are a front-ported design. There is no grille, and the front baffle and cabinet edges are smooth to reduce

diffraction effects. Centered between the drivers is an "Optimum Listening Plane Indicator," a blue LED fitted into a custom light pipe that's designed to help the listener find the center of the listening sweet spot. The LEDs also double as a power-on indicator for the electrostatic panels. Inputs are gold-plated, five-way binding posts, and each StudioStat has an input jack for an external wall-wart DC adapter (two are included with each pair of speakers) that powers the electrostat panel.

I hooked the speakers up to an Australian Monitor power amp, which has excellent specs and delivers about 400 watts per side. Benson says the speakers can handle 250 watts over long periods, so the 400-watt amp would offer plenty of headroom. The monitors were set up with the speaker centers at ear level, and the LED indicators

BY GEORGE PETERSEN



Lab Analysis: Benson StudioStat 8.2

by Mike Klasco

PHYSICAL CHARACTERISTICS

The enclosure is 0.75-inch-thick MDF wood stock construction with thick vinyl wrap on sides and back. The sides have a 1-inch radius curved edge. No grille cloth is provided, although there is a protective screen over the electrostatic tweeter element. The drivers are recessed flush to the front baffle, and the woofer mounting has threaded screw inserts. The bass reflex port is flared to reduce air turbulence noise. Enclosure packing is 2 inches thick and appears to be polyester fiber.

The woofer appears similar to a popular Vifa model and features a rubber surround and a straight sided paper cone with a wet-look glossy surface finish that might contribute some humidity resistance and damping of resonances. A flat spider is used, providing more linearity than a cupped spider. The frame is cast and therefore does not drain magnetic flux from the magnetic structure. The magnetic structure (pole piece) is vented, which should help keep the voice coil cool and reduce power compression.

The electrostatic tweeter is a 4x4-inch panel. A 12VAC external power supply is used to bias up each tweeter panel. A rear panel switch toggles +2 dB, 0 and -2 dB. There is no "waveguide" profile or acoustic lens, so the pattern becomes progressively more narrow as

—CONTINUED ON PAGE 142

shining brightly.

I began my listening with a B&K test disk, that has material ranging from symphonic and chamber ensembles to pop acts such as Little Feat and Jennifer Warnes. Bass was nicely damped and well-defined, and in balance with the vocals and midrange instruments. The top end seemed overly bright, and as I leaned across the console to check the EQ, the HF response dropped off dramatically. By moving my head slightly, I determined the speakers' sweet spot was about six inches wide, due to the beam-like dispersion of the electrostatic tweeters.

On my next session, I was recording an acoustic ensemble with some Earthworks mics, Millennia preamps and dCS 96kHz/24-bit ADCs/DACs, storing to a Nagra D. On this session, I really wanted to hear some upper-end response, and by re-aiming the StudioStats to about 10 to 12 degrees off-axis, the HF performance became more in balance, and I could appreciate the speaker's ability to go out to 25 kHz. But I was still working within the narrow confines of the sweet spot, which also precludes anyone else being in the listening area at the same time.


This tight sweet spot relegates the StudioStats to applications where the user stays in place during a session—while problematic for engineers working a big board, this could work in desktop audio, where the user remains in front of a computer screen or small digital console. In these “cockpit audio” applications, magnetic shielding is often necessary on the drivers; perhaps Benson could add this as an option, as the speakers distorted video screens when placed near a display.

Overall, the Benson StudioStat 8.2s have much to offer, including a frequency response that's flat (± 2 dB) from 80 to 7k Hz—an impressive accomplishment in a critical audio range. The LF response stated in Benson's specs says the speakers go to 40 Hz, but at that level they're -6 dB down. The -3dB down point (which is more realistic in defining usable bass energy) is around 60 Hz—respectable for an 8-inch driver in a compact cabinet. The high-end response is more enigmatic and with a bit of experimentation in placement, can yield good results in single-engineer setups.

Benson Audio Labs, 4017 Washington Rd., Suite 320, McMurray, PA 15317; 412/914-0575; fax 412/914-0571. ■

still celebrating

A DECADE OF DATS



introducing sony's limited edition tcd-d100

*vital stats:
metallic silver color
one and one-eighth inches deep
four and five-eighths inches high
& three and one-eighth inches wide
only 13 1/3 ounces with batteries & tape*

at the dat store

cd recorders · dat recorders · dvc recorders · dvd players · minidisc recorders · multitrack recorders · blank media · accessories
2624 WILSHIRE BOULEVARD · SANTA MONICA · CALIFORNIA · 90403
PHONE 310.828.6487 · OPEN WEEKDAYS 11-5 · FAX 310.828.8757

CIRCLE #096 ON PRODUCT INFO CARD



Putting the **M**
in **M**astering.



Rocket Lab LLC
San Francisco
415.495.2297

email: audio@rocketlab.com
www.rocketlab.com

CIRCLE #097 ON PRODUCT INFO CARD

Little mic BIG SOUND

Q: When do professional sound engineers choose the DPA4060?

A: When the job calls for microphones that are to be heard, not seen and deliver accurate, lifelike results.



**Fred Aldous,
MultipleSports Emmy
award winner:**

"I used the DPA4060 for the 1997 NBA Basketball Playoffs, in the "swish" position. The high sensitivity, broad dynamic range and gain before feedback of the DPA4060, improved the quality of the broadcast and made my mixing more enjoyable. The sound was sweet and natural, and required very little equalization, and did not distort on shots that firmly hit the rim, incredible. I also use the DPA4060's for NFL Football. The mics are positioned on the field umpires due to their proximity to the action. The quality of the DPA4060 Miniature Microphone ensure the sound of the players calling audibles, the line exploding on the snap and the crunch of body bending tackles are captured true to life. We are able to then transport our audience from their living rooms to the live venue."

The Miniature Microphones from DPA

20Hz - 20 kHz ± 2 dB - 5.4mm capsule - 3 models with three different sensitivities - 3 color options - Adapters that will fit most wireless systems. Optimized towards humidity problems.

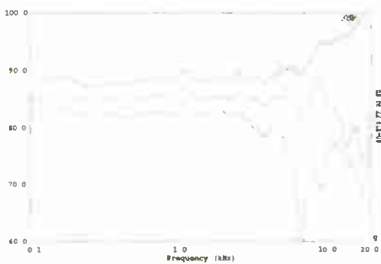
The sound, the price, too hard to believe - demo not really needed. Listen to what the Pros are saying.

Danish Pro Audio 

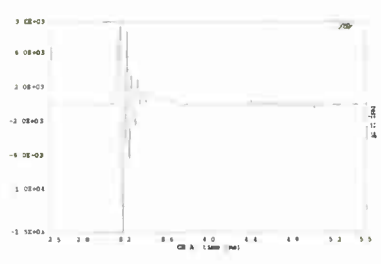
World-wide Supplier of Brüel & Kjaer Microphones

North American Distribution: T.G.I. North America, Inc.
300 Gage Ave., #1 • Kitchener, ON, Canada N2M 2C8
(519) 745-1158 • Toll Free Fax Order Hotline: (800) 525-7081
Website: www.danishproaudio.com

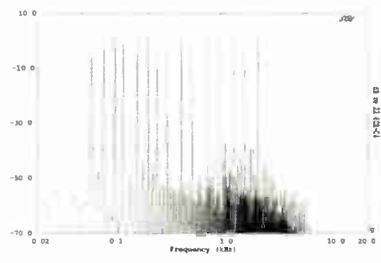
CIRCLE #098 ON PRODUCT INFO CARD



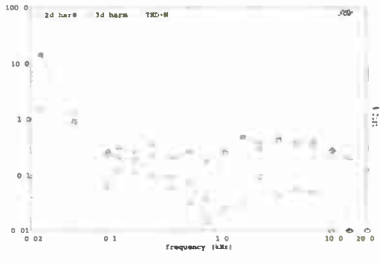
On-axis, 15° off-axis and 30° off-axis frequency response: Rising on-axis response (top trace) will make the speaker sound airy and drooping, while off-axis response (bottom trace) will make the speaker sound very dull. The 15° off-axis curve (middle trace) will sound fairly neutral.



Impulse response test shows that woofer and tweeter are not in time alignment. Small pulse at 4.4 ms is internal reflection coming out of the port.



Spectral contamination test compares a series of input signals (tall spikes) to speaker output. Clarity is very good in woofer range and good in tweeter range.



Distortion (THD+N = Δ trace; 2nd Harmonic = \triangleright trace; 3rd Harmonic = \triangleleft trace) remains under 0.2% from 100 Hz to 1k Hz. This is excellent performance.

—FROM PAGE 140, LAB ANALYSIS: BENSON STUDIOSTAT 8.2

frequency increases. This effect is significant, as can be seen with the rising on-axis response and off-axis droop. You'd best have a favorite listening position or you will get largely varying HF impressions of your mixes. An LED at the end of a blind hole lets you see if you are on axis—far more elegant than a bite bar!

The passive crossover has an air core inductor for the woofer, a large laminate core inductor for the tweeter, and Mylar caps and sand cast resistors, all mounted on a thick copper-clad board.

ACOUSTIC CHARACTERISTICS

The impulse response measurement is good, but the StudioStat 8.2 woofer and tweeter appear to not be in time alignment. Frequency response is extended and smooth. For flat frequency response, the ideal listening position is about 15° off-axis. We tested distortion at 90 dB SPL at one meter. The woofer measured excellently, and the mid/high range measured very well. Spectral contamination is typically 50 dB down from the signal tones on the woofer and 40 dB+ on the electrostatic element. ■

Mike Klasco operates Menlo Scientific, an independent acoustical measurement and consulting firm based in Berkeley, Calif. For more information on testing methodology, refer to the Feb. '98 issue of Mix, or visit www.mixmag.com.

PORTADAT ALWAYS IN THE ACTION



PORTADAT is the recorder of choice for the TV documentary 'Astronauts'.



More than 4000 PORTADATs now in use and not a single one returned with a worn head drum.



Skywalker's Chris Boyes gathers sound effects for 'Titanic' with his PORTADAT in tight and dangerous locations.



The PORTADAT performed faultlessly despite extreme humidity on location for 'The Lost World: Jurassic Park' with Skywalker sound recordist Chris Boyes.



Egyptian national broadcaster ERTU buys 300 PORTADATs, standardising on the PORTADAT for all OB and ENG work.



PORTADAT 1000 4 head, 4 motor portable professional DAT recorder with 44.1/48/32kHz recording, balanced XLR analogue I/O and AES/EBU + SPDIF digital I/Os.



PORTADAT 000TC 4 head, 4 motor professional portable DAT recorder equipped to record, generate and reference to timecode in all existing international standards.

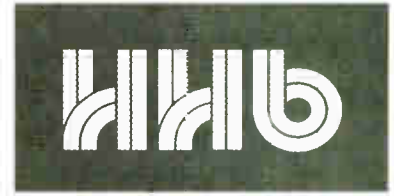
Film, radio, TV, music recording – whatever the application, PORTADAT delivers.
 From the deserts of Egypt to the jungles of Costa Rica, PORTADAT consistently proves itself to be the most compact, reliable and best sounding professional DAT portable on the market.
 No wonder PORTADAT users are amongst the busiest sound recordists in the business.
 And now, PORTADAT is more affordable than ever before. So talk to HHB today about PORTADAT. And put yourself in the action.



HHB Communications USA - 626 Santa Monica Boulevard, Suite #10, Santa Monica, CA 90401, USA
 Tel: 310 319 1111 - Fax: 310 319 1311 - E-Mail: sales@hhbusa.com
 HHB Communications Canada Ltd - 260 King Street East, Toronto, Ontario M5A 4L5, Canada
 Tel: 416 867 9000 - Fax: 416 867 1080 - E-Mail: hhbcan@istar.ca
 HHB Communications Ltd - 73-75 Scrubs Lane, London NW10 6QU, UK
 Tel: 0181 962 5000 - Fax: 0181 962 5050 - E-Mail: sales@hhb.co.uk

<http://www.hhb.co.uk>

CIRCLE #099 ON PRODUCT INFO CARD
 World Radio History



AUDIO-TECHNICA AT4054 & AT4055

HANDHELD CARDIOID CAPACITOR MICROPHONES

Nine years ago, Audio-Technica began setting its sights on the pro studio market with the introduction of its AT4031 and AT4051 condenser microphones. In the years since, these models—which were followed by the introductions of models such as the AT4033 and AT4050—have estab-



lished Audio-Technica as a serious contender in the eyes of professionals. Over the same time period, A-T also developed higher-performance handheld mics such as the ATM61HE dynamic and the ATM89R condenser. Audio-Technica has now applied some of the principles of its 40 Series studio mics to a high-end vocal design for live performance. The result is the AT4054 and AT4055.

Priced at \$499 each, the two microphones are essentially identical, except the AT4054 incorporates an LF roll-off curve, while the AT4055 has a linear LF response. To keep the two mics distinctive, the 4054 has a thin blue line surrounding its windscreen basket.

Physically, the mics are 7 inch-

es long and weigh 10.6 ounces. The baked-on, non-reflective black finish is tough, and the body fits nicely into the hand and balances well. The mics are shipped with a stand adapter but will fit snugly into standard mic clips.

The windscreen is a tough, stainless steel mesh basket that unscrews easily. Beneath the mesh, an open-cell foam screen provides a second layer of pop protection and can be removed for cleaning. The mic capsule, which was derived from the technology used in A-T's popular AT4050 studio mic, is housed in a hardened steel enclosure. A true condenser design, the AT4054/55 uses a medium-diameter, two-micron-thick, gold-sputtered diaphragm, which goes through a five-step aging process. According to A-T, the pre-aging process helps provide consistent performance characteristics over the life of the mic. From the capsule, the signal is routed through a low-noise, transformer-balanced preamp, ending in a male XLR (wired pin 2 hot).

After a quick reassembly, I clicked on the console's 48-volt phantom power and checked the mics out. Although the 4055 provides response down to 20 Hz, I was surprised by the mic's smooth low frequency response, even on low baritone and bass voices. The degree of proximity effect was just about perfect—just enough to provide an extra boost to a performer who really knows how to “work” a mic, while not being boomy or mushy. Obviously, with the 4054's LF roll-off, proximity effect was substantially reduced, but I liked the fact that the LF attenuation curve is a gentle -3 dB/octave be-

ginning around 180 Hz, then going into a -6dB/octave roll-off about 90 Hz, continuing downward. The curve has a more natural (and far less drastic) sound than the type of LF attenuation typically offered by mics with roll-off switches. Also, the 4054's built-in roll-off is particularly well-suited for use with consoles that lack sweepable HP filters.

Further up the spectra, the midrange was nicely balanced relative to the high frequencies. As with most live vocal mics, the 4054/55's upper response exhibits a presence boost designed to improve vocal intelligibility. But in the case of these mics, the HF rise is a long, gradual slope starting about 1 kHz and ending in +3.5dB peaks centered around 4.5 and 10 kHz. The net effect is a very natural sound that worked well for male and female vocalists.

The mic's polar response is a fairly tight cardioid pattern throughout the midrange. The tightness of the pattern offers ample rejection of unwanted sounds, and isolation from sounds coming from 180 (behind the mic) was excellent. This feature maximizes gain before feedback, though the tightness of the pattern could be a problem with untrained singers who fail to stay on-axis. The mics' off-axis sound was impressive: essentially an attenuated, uncolored version of the on-axis sound.

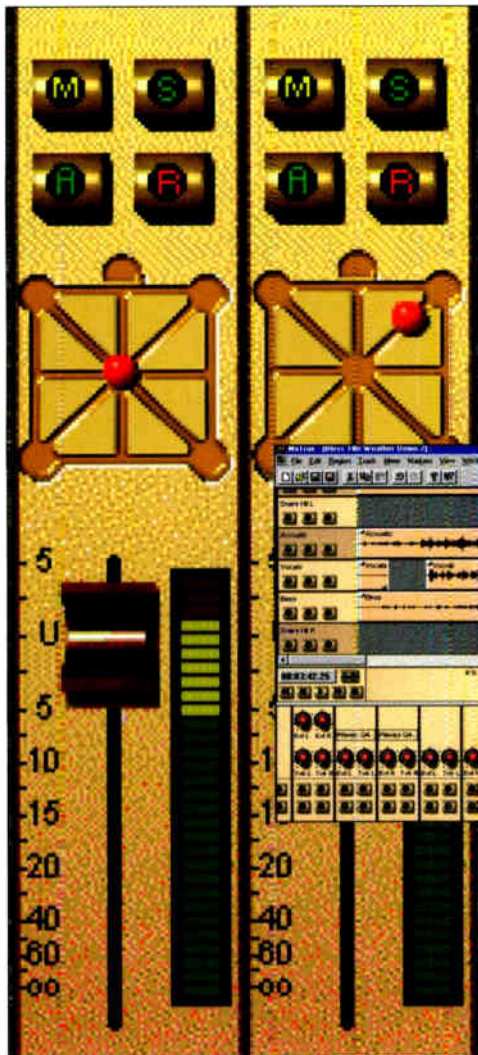
In creating the AT4054 and AT4055, Audio-Technica has achieved its goals of producing live vocal condenser mics that have a natural studio sound, yet provide excellent feedback rejection. The tight polar pattern may be problematic for some artists, but professional vocalists who are willing to learn how to work this mic should be pleasantly surprised at what they hear.

Audio-Technica U.S., 1221 Commerce Drive, Stow, OH 44224; 330/686-2600; fax 330/688-3752. Web site: www.audio-technica.com. ■

BY GEORGE PETERSEN

Mx51™

5.1 SURROUND THE EASY WAY



Mx51™ from Minnetonka Software; the elegance of MxTrax and the power of V8™ come together to deliver a revolutionary new tool for surround sound production.

Finally, a professional audio workstation designed specifically for true multichannel format mixdown. With Mx51 software, a Digital Audio Labs V8 system, and a PC, surround mixes are a breeze:

- Individually pan each channel with Mx51's five way pan controls.
- View surround panning on all channels simultaneously.
- Dynamically automate all surround panning in real time.
- Automatic 5.1 bussing on V8's mixer.
- Easy-to-use adjustable subwoofer crossover

Plus get all the power of the standard MxTrax/V8 combination, including:

- 16 true hard disk tracks
- Drag and drop automated digital mixer
- True ADAT & DA88 integration*
- LTC and VITC video sync*
- Optional realtime 3rd party effects from the V8 audio gearhead partners

Breakthrough tactile interface lets you *feel* surround panning as you *hear* it.



 **Minnetonka**
AUDIO SOFTWARE, INC.

17113 Minnetonka Blvd. • Suite 300
Minnetonka, MN 55345 • (612) 449-6481
www.minnetonkasoftware.com

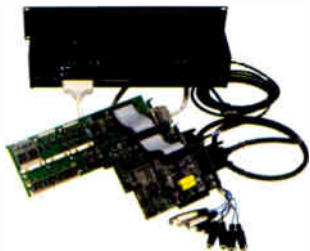


V8™
APPROVED

Why the V8?

The V8 from Digital Audio Labs is a modular audio workstation platform for the PC. Systems can be configured with a choice of analog and digital I/O, MDM interfaces for ADAT and DA88, and realtime DSP options Contact Digital Audio Labs for information:

(612) 559-9098 www.digitalaudio.com



*Some options require additional hardware.

Prices and specifications subject to change without notice.

TASCAM TM-D8000

DIGITAL RECORDING/PRODUCTION CONSOLE

So far, 1998 is definitely the year of the low-cost digital mixer. With as many as a half-dozen leading manufacturers entering the market with powerful, affordable designs, a growing number of users and facilities can now take the binary plunge.

Tascam, a company well-known

based V1.0 Dynamic Automation Software.

The TM-D8000 console features 40 input channels, eight mixing buses, six stereo returns and six aux sends. Of the 40 input sources, 16 are provided with mic preamps and 20-bit ADCs; the remaining 24 are intended for digital connection

returns (L + R on a single fader) via the right-hand section. Similarly, the lower bank accommodates tape returns: three sets of TDIF-compatible inputs from DA-88/98/38 decks, etc. Analog input channels are also provided with individual 48-volt phantom power, mic/line trim controls, mic/line selection and a 20dB pad. (These analog controls are the only nonautomated functions on the console.)

For added flexibility, the upper left-hand and center bank can be switched to accommodate TDIF-format digital inputs, while the center section offers an additional choice with AES/EBU format via XLR connectors. (These same four 2-channel inputs also appear as alternate sources to the lower right-hand bank, for hook-up to suitably equipped workstations, etc.)

The control surface is compact and easy to follow, the lower fader bank being tilted very slightly from the horizontal, and in-line with the assignable rotary shaft encoders to the right, along with four group masters plus a stereo monitor master. The center section is further angled to provide easy access to the upper faders and interrogation screen, plus other functions, while the uppermost section houses the various peak-reading meters, time-code display window, etc.

The front panel color scheme is a flat gray, with colored legends to designate important sections and functions. The only major oversight is a lack of moving faders, though, given the system's price, this is an understandable economy; the VCA-style automation, with null lights and familiar read/write/update controls, is easy to understand and use.

SETUPS AND ASSIGNABLE CONTROLS

All input-source selection and output routing options are displayed on a central 640x480-pixel, back-lit LCD screen; selections are made via a bank of four nudge buttons,

for producing cost-effective analog mixers, tape decks and peripherals, in addition to modular digital multi-tracks, has come up with a clever solution. Combining a very elegant user interface with great-sounding analog and digital I/Os, the TM-D8000 40-input/8-bus Digital Recording/Production Console includes a full-function machine control section and 5.1-channel panning.

Now, with just a few simple interface cables, it is possible to put together a five-machine record/playback configuration, connected via digital ports to the TM-D8000. In fact, for this evaluation session I was using a Doremi V1 video player connected via a 9-pin P2 serial port as the master timecode and picture source, replaying tracks from a single DA-88 plus multiple DA-38 decks, while laying multichannel mixes onto an MMR-8 hard-disk recorder. And all of this mixing power is available for just \$9,999, complete with Mac-

to a user-selectable choice of TDIF or AES/EBU format signals. For full compatibility with up to five DTRS 8-track decks (or perhaps a multi-channel workstation and/or a couple of ADAT machines), the analog ports can also be switched to accommodate digital sources. Master clock source—either generated internally, or locked to an external word clock stream—can be set to a 44.1 or 48kHz sampling rate, with the usual video-based pull-up/downs. No sample-rate converters are built into the mixer.

The TM-D8000's front panel is laid out with 24 upper short-throw and 24 lower long-throw faders; a convenient Swap function enables sources to be flipped as necessary. Normally, the upper bank of modules handles inputs: eight mic/line-level analog sources via the left-hand module, eight more mic/line-level analog sources via the central section and six stereo

BY MEL LAMBERT

plus a familiar scroll wheel. Effects returns and aux sends are normally 20-bit, oversampled analog; the user can also select AES/EBU-format digital ports for Stereo Return 6, while Mono Aux Send 3 and 4 can also be routed to a similar-format output. A companion Transport Control Center incorporates a jog/shuttle wheel for controlling single or multiple audio/video transports.

Four assignable insert points can be accessed post-EQ/pre-fader, and routed to a bank of dedicated A/D and D/A converters. (I was unable to determine the exact processing delay time required to send a signal from and then back into the console, but it seems to be small enough to be inaudible.)

Four-band parametric EQ is available on all input channels, plus the stereo bus output. After selecting a channel to be modified—either by accessing the Select button above the corresponding channel fader, scrolling through a screen menu or simply moving the fader—a bank of 20 assignable rotary encoders and 32 soft switches below the LCD screen provide access to center EQ frequency, cut/boost and bandwidth settings. Upper and lower EQ bands can be set to shelf or peak/dip operation.

For added flexibility, each EQ band runs from 20 to 20k Hz; overall response is displayed on a section of the screen. In use, the EQ is very elegant, precise and sounds very sweet.

A bank of eight dynamics sections can be assigned to signal channels or the stereo bus on an individual basis; insert point is post-EQ/pre-fader. Gating, compression or expansion settings are again mapped to the assignable rotary controls (including threshold, attack, release, ratio, decay and hysteresis); input-output response is displayed on a section of the LCD screen. Four Cut Groups are available, in addition to four VCA-style Fader Groups with individual master faders.

The numerous input/output connections on the back panel include XLR and balanced 1/4-inch jacks for the mic- and line-level analog inputs; XLRs and RCA jacks for stereo line-level outputs; two pairs of XLR/RCA for analog 2-track inputs; unbalanced jacks for the analog aux sends and reverb returns; 1/4-inch TRS jacks for four assignable inserts and 16 analog-source inserts (for patching analog processors, etc.); MIDI In, Out and Thru (for MIDI Machine Control of external decks, as well as SysEx dumps of

snapshot automation data, etc.); a pair of jacks for GPI outputs; XLRs and RCA connectors for the various AES/EBU and/or S/PDIF digital I/Os; timecode in; word clock in/out/thru (via unbalanced BNCs); plus five 25-pin D-Sub digital I/O connectors for interfacing TDIF-compatible recorders. A single 15-pin D-Sub provides machine control for DTRS recorders; additional decks and systems can be accessed via daisy-chained interconnects.

After selecting each channel's signal source via a dedicated Setup Page, outputs can be routed to any or all of the eight buses or master L/R stereo bus. If anything other than a stereo pan is selected on any channel—for example, 4-channel LCRS or 5.1-channel surround with subwoofer—then the buses are re-assigned accordingly. Now each bus becomes a dedicated output designation, with full post-fader surround-sound panning and routing—no need to use up a spare aux channel(s) to provide front-back panning. MIDI-capable joysticks can also be patched into the circuit for dynamic pan control.

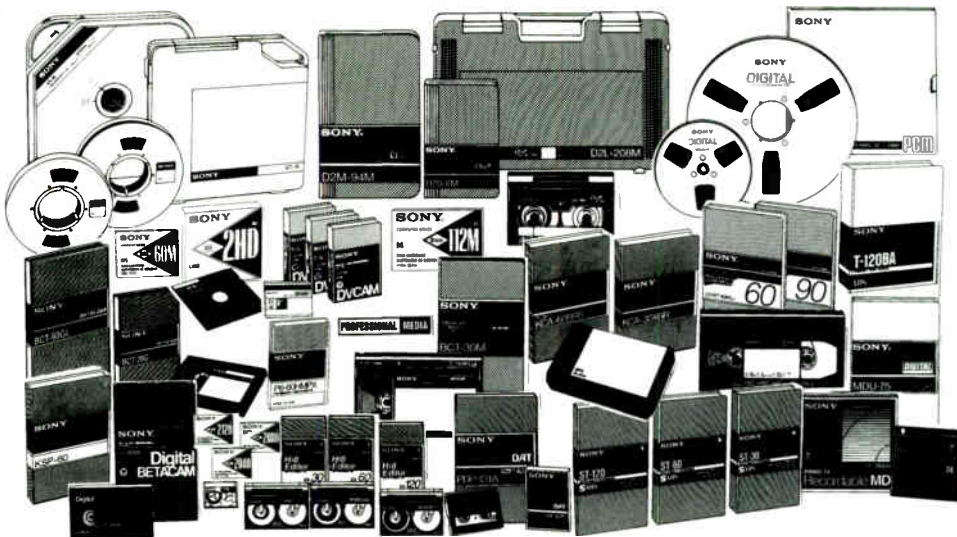
Currently, if LCRS or a similar 4-channel pan law is selected, then all channels route to the same four buses. A

**Call or Fax
for FREE
CATALOG!**

**Inquire about
products & brands
not listed.**

**USA
1-800-331-3191**

**NYC Area:
516-678-4414
Fax: 516-678-8959**



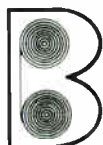
Visit our Website: <http://www.burlington-av.com> • E-mail: sales@burlington-av.com

At Burlington We Have All The Media So You CAN Record!
Shipped From Stock • Priced Right

• Immediate Delivery •



SONY
PROFESSIONAL MEDIA



Burlington A/V Recording Media, Inc.

106 Mott Street • Oceanside, New York 11572

CIRCLE #101 ON PRODUCT INFO CARD

World Radio History

MAY 1998, MIX 147

software revision in the near future should enable split busing for the TM-D8000 and will provide, for example, LCRS M&E plus LCRS dialog stems to be printed simultaneously from the TM-D8000. (Of course, you'll also need some form of external monitor switching, but that shouldn't be too difficult to set up.) All in all, the console's current and planned surround sound routing and pan capabilities are outstanding in a unit at this price.

Once bus outputs have been routed to the various multitrack decks (use-

fully, all eight buses are paralleled to each of the five TDIF connectors), a Menu Setup selects which deck will be master, and the types of slave relationships you need for the others. As might be expected from a company like Tascam, the system can be set to automatically interrogate each of the transports connected via the 15-pin Tascam machine control interface and related ports, and then display the type of decks it finds.

The TM-D8000 includes the functional equivalent of one of the firm's RC-898 Remote Controllers, with the ability to store up to ten setups in the

mixer's memory, including autolocate points. Rehearsal mode, auto punch in/out and track record select are also available. Other species of tape- and disk-based machines can be controlled via MIDI Machine Control and/or P2/RS-422 machine-control protocols.

If the mixer recognizes a Tascam transport with additional control functionality, most of these can be controlled from the menu screen. For example, the TM-D8000 can remotely control such parameters as track delay, generator functions, timecode offset, pre-/post-roll, clock sources, etc., for DA-series MDMs.

BUILT-IN SNAPSHOT AND EXTERNAL DYNAMIC AUTOMATION

The TM-D8000's built-in snapshot automation handles 99 complete console-wide Scenes, plus 99 individual EQ setups (19 modifiable factory-set, and 80 user-programmable), 99 dynamics setups (19 factory-set) and ten input/output/group routing setups; memory contents can be off-loaded as SysEx data to a MIDI-capable sequencer or recorder. Any one of the 99 Scenes can be stored and recalled from a library either manually, via MIDI program change, or assigned to SMPTE or MIDI Time Code offsets.

In addition, dynamic automation of console parameters is processed internally, but can be controlled via a high-speed serial interface from an external Power Mac (7100 or above). Using a series of setup screens on the Mac, a variety of mixer parameters can be scanned and memorized to hard drive, including faders, cuts, EQ, pan and aux sends. Users can also set up ten custom views with icon-based displays of level-control elements and other adjustments on the Mac's monitor. (You may want to see all EQ settings for example, or selected output group faders; using drag-and-drop techniques, it's possible to quickly build customized, re-positionable screens to suit the specific requirements.)

The integrated meter bridge houses an array of 15-segment bar graphs that can be set to display output levels from upper or lower banks of signal sources—either pre- or post-EQ—or a choice of stereo returns, bus levels or aux sends. In addition, the meters can be set to display fader positions when the mixer is under automation control, or when faders are assigned to fader groups. Below the meter are separate record function keys used to arm the record-ready mode of external DA-Series MDMs, and indicators that show the

EuropaDisk

All Manufacturing In-House

- **CD Replication In Bulk**
(minimum is only 100 CDs!)
- **Retail-Ready CDs with Graphics**
- **7"/45 & 12" Vinyl Records**
- **Cassette Duplication**
- **Graphics Design & Printing**

Why deal with brokers when you can work directly with our factory and save? You can rely on our 20 years of experience to get your project done right and on time!

Best Service...Best Price...Period.

Free catalog or quote: (800) 455-8555

EUROPADISK, LTD.

75 Varick Street, New York, NY 10013 (212) 226-4401 FAX (212) 966-0456

<http://www.europadisk.com> Major credit cards accepted.

record status of assigned tracks.

A dedicated pair of 30-segment meters monitor levels on the main stereo bus. Dual-mode operation shows average levels on the main segments, with a single LED displaying peak values. An "over" light can be set to follow user-selectable -16dB FS (Tascam), or -20dB FS (SMPTE) reference levels.

Monitoring functions on the TM-D8000 are comprehensive. With so many sources available to send to the 2-channel control room and studio monitoring system, the user needs some way of quickly setting up different assignments and sources, depending on what is occurring during the session. Normally, the upper faders feed the various multitrack decks and/or workstation, while the lower faders monitor the bus sends/multitrack returns into the stereo bus that connects to the CR monitors. Alternatively, during remix, all sources can be routed to the two mix and monitor buses. As mentioned earlier, system I/O setups are available at the press of a button.

A wide selection of monitoring sources are available, including stereo mix, 2-track return 1 and 2, one of four stereo digital inputs, or any of the aux sends. Mono summing and dim switches are provided. And individual solo is available from each channel, either PFL or solo in-place.

Should the TM-D8000 crash for any reason—a rare occurrence, as I discovered during extended evaluation sessions—the entire console reboots within just a few seconds and returns to its previous configuration.

IN A NUTSHELL

Some five years in development, the Tascam TM-D8000 truly represents a unique solution for users who are searching for a cost-effective digital mixer. Realizing that budget-minded recording and production facilities need an integrated solution—and will probably be using MDMs, in addition to disk-based workstations—the designers obviously decided that machine control was an essential part of the equation, rather than an add-on. Also, the need for surround sound mixing functions seemed to be high on their list of essentials.

The result is a powerful system that packs a great deal of processing power into a compact package. The control surface is clearly laid out and a breeze to master, with fixed and assignable controls exactly where you would expect to find them. And the array of analog, TDIF, AES/EBU and S/PDIF

interconnects is versatile, to say the least; no extra plug-in cards are required to accommodate different formats.

My complaints are both major and minor. I really would like to have seen moving-fader automation offered, at least as an option. (The competition seems able to provide such functions; why not Tascam?) And I would like to have seen a larger LCD screen—it is rather petite, but usable. (For complex reasons, it would be expensive to offer a separate VGA-compatible video port.)

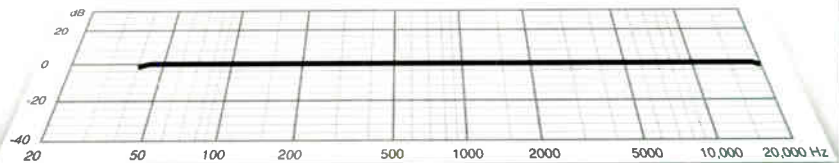
But these gripes are offset by the integrated functionality provided by the TM-D8000, plus the powerful static and

dynamic automation of all front-panel settings and I/O routing. With onboard machine control that supports a variety of industry-standard protocols, the TM-D8000 easily integrates into the most demanding production environments. All in all, it's a system that fits its intended market perfectly.

Tascam Professional, 7733 Telegraph Rd., Montebello, CA 90640; 800/827-2268 or 213/726-0303; Fax 213/727-7635. Web site: www.tascam.com. ■

Mel Lambert currently heads up Media&Marketing, a consulting service for pro audio firms and facilities.

NO COLOR ADDED



Capture exactly what you hear. Sennheiser's MKH microphones give you the flattest response, as well as the lowest noise and distortion available. For sampling, nothing comes close. For acoustic and orchestral recordings they're a natural. Plus, our unique electronic output design makes them immune to humidity, allowing you to use them confidently outdoors. When you need the absolute truth, the choice is pure and simple.

THE EVOLUTION OF AUDIO



SENNHEISER ELECTRONIC CORPORATION
P.O. BOX 987, DEPT: 205, OLD LYME, CT 06371 • TEL: 860-434-9190 EXT: 205 • FAX: 860-434-1759
CALIFORNIA: TEL: 818-845-7366 • MEXICO: TEL: 525-639-0956
SENNHEISER CANADA: 221 LABROSSE AVE., PTE-CLAIRE, PQ H9R 1A3 • TEL: 514-426-3013 FAX: 514-426-3953
World Wide Web: <http://www.sennheiserusa.com>

CIRCLE #103 ON PRODUCT INFO CARD

AUDIX OM-6

DYNAMIC MICROPHONE

Audix has been creating a buzz in the industry with its studio monitors for some time, but in my opinion it is the company's stage microphones that have really put Audix on the map as a major player in the industry. It seems that Audix has a grasp on what live sound engi-

The OM line of live sound microphones has been quite successful for Audix, and the OM-6 is a good example of why. A hypercardioid dynamic stage vocal microphone, the OM-6 has a frequency response of 48 to 19k Hz and offers incredible gain before feedback. From its VLM (very-low-

mass) capsule type D design down to its gold contacts, the OM-6 is a solid, well-designed microphone. Outstanding off-axis rejection, a >30dB background noise rejection and an extremely high SPL-handling capability (>144 dB) are all features that recommend the OM-6 for the stage environment.

IN THE FIELD

From the time I picked up an OM-6 for testing until the night before I had to return it to *Mix* magazine, I had this microphone working, and working hard. On my first night out with the OM-6, I used six of them as front line vocal microphones in a festival situation.

During sound check, the monitor engineer had some trouble getting used to the OM-6. We quickly realized that you have to hit the gain a little harder with an OM-6 than, say, with an SM58. The mids and highs were smooth and full-bodied with very little color, yet they maintained a characteristic all their own. The low-end response was flat with very little

boominess, which meant that the microphone lacked weight on the lower end of the audio spectrum.

This was only a problem with female vocalists; their voices were not cutting through in the monitor mix, and we had to increase the vocals significantly.

Fortunately, an increase in volume was not a problem for the OM-6—with its hypercardioid pattern, high-volume environments did not affect its performance. In fact, feedback was never an issue when using the OM-6, even in the most demanding situations. I was on one show where the lead singer decided to climb on top of the main stack and dive into the audience, with the OM-6 in hand. From the front-of-house position, I saw the lead singer surfing across the crowd, in front of the mains, singing (well, actually screaming); there were absolutely no feedback problems whatsoever. Show after show after show, I found myself reaching for the OM-6. It took some getting used to, granted, but like any quality piece of equipment, once you feel comfortable and confident with it and you know which applications it excels in, it can become an effective weapon in your arsenal.

CONCLUSION

At \$349, the OM-6 is strong enough to challenge almost any microphone on the market. The sound quality was great, durability was outstanding, the mic is cosmetically pleasing and it fits into a standard microphone clip. What more can you ask for? Used in the right application, the OM-6 will far exceed your expectations. I am quite sure that, in time, Audix will design a microphone that will set standards for the industry.

Audix Corp., P.O. Box 4010, Wilsonville, OR 97070; 503/682-6933; fax 503/682-7114; www.audixusa.com. ■

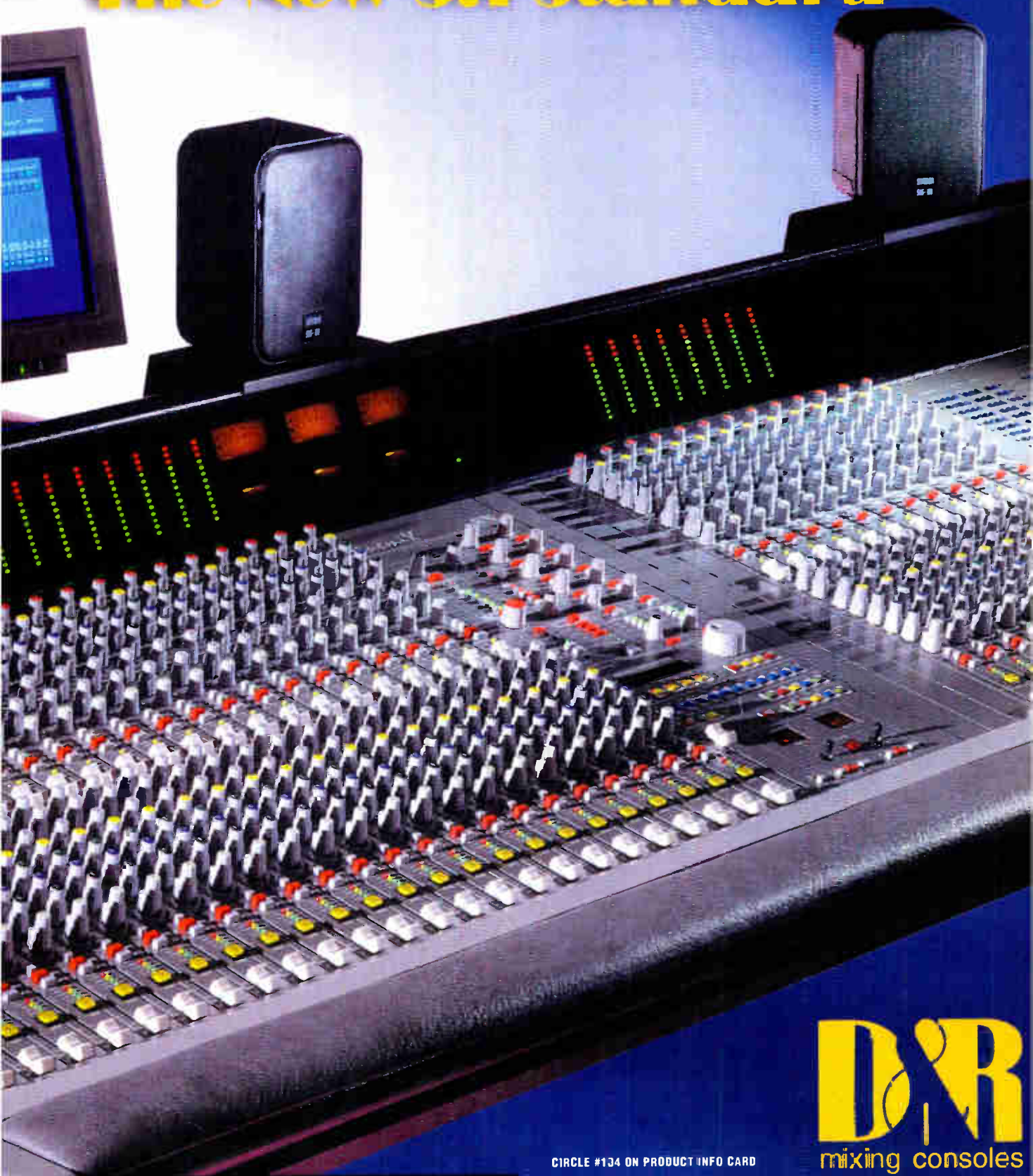
Javier Alcares is a live sound engineer in the San Francisco Bay Area.

BY JAVIER ALCAREZ



neers need in today's competitive sound reinforcement market, where the need for sound quality sometimes gets lost in the fight for increased volume.

Cinemix - The New 5.1 Standard



Southern California
Coast Recording Supply
Hollywood, CA
213-462-6058

Northwest
Advanced Systems Group
Oakland, CA
510-654-8300

Northeast
Sam Ash Professional
New York, NY
212-586-1100

Southwest
Studio Tech Supply
Dallas, TX
214-358-0050

World Radio History

CIRCLE #134 ON PRODUCT INFO CARD

D & R
mixing consoles

Television, Film and Music Consoles

Advance Digital Corp. 214-742 5345

Website: d-r.nl · E-mail: gkeeper@msn.com

ENSONIQ PARIS

PROFESSIONAL AUDIO RECORDING INTEGRATED SYSTEM

Best known for its sampling keyboards and synthesizers, Ensoniq moved into pro audio with its popular DP/4+ and DP/Pro line of signal processors a couple years ago. Ensoniq's newest product is PARIS (Professional Audio Recording Integrated System), a cross-platform, card-based hard disk recording system.

PARIS was developed as a joint venture with *Mix* columnist

2000—it's a solid machine that's very stable. The EDS-1000 card has six ESP-2 chips handling all of the audio processing and effects, leaving the computer's CPU free to handle screen functions and communicate with the card itself. According to Ensoniq, when the system expands to include playback of 128 virtual tracks, some of the EQ functions will be handed over to the computer's CPU, but currently the host proces-

rather than the 16 tracks that the system can currently handle. In addition, 24-bit, 8-channel I/O cards are available at \$499 each, and more expansion options are in the works.

The final hardware component is the Control 16, a sleek 17-fader (16 tracks plus one Main stereo output) surface that operates much like a JLCoooper CS-10. If you're used to working on analog mixers where each knob handles a single function you might grumble at the learning curve involved here. From the perspective of a composer/operator whose only tactile interface has been the mouse, the Control 16 is a great bonus—the faders have a solid throw, soloing a particular "track" or assigned output source is easy, and getting to the various functions becomes second nature quickly.

Displaying all of the functionality of a system that serves as a mixing board and track editor on a computer monitor such as my 17-inch screen necessitates compromise. By and large, Ensoniq and HD have done an excellent job of giving the user a variety of Windows—each contains enough information to handle specific tasks in a thorough manner. The mini mixer, which shows all 16 faders in reduced size, is extremely useful, but serious users will probably use PARIS in a multi-monitor setup. PC owners with a Miro Twin display card will be able to spread displays out across several monitors, just as Mac users can.

PARIS lets the operator set up a variety of different Views—up to 99 per Window—which makes it easy to home in on a given task. Let's say that your piece has 16 tracks, with a duration of 2:34. You'll probably set up one view that lets you see all 16 tracks on the editor Window, with the entire length of the tune in view. As PARIS provides control over how many tracks are visible at one time, and lets you



Stephen St.Croix's company Intelligent Devices designing the user interface and writing most of the associated software, and Ensoniq developing hardware, DSP and effects, which are very good. (PARIS features 12 real-time, 24-bit effects, including reverb, delay, chorus, compression and expansion.) However, it should be pointed out that St.Croix applied no pressure on me concerning this review, and the opinions stated in this piece are solely my own.

The system is based on several components and uses PCI technology. Installing the EDS-1000 card on either a PC or PowerMac is straightforward. I used PARIS with Power Computing's Power Tower Pro

processor is not taxed in this fashion.

PARIS is available in a variety of I/O configurations: The PARIS 1 bundle (\$2,895) features an Interface 2, with a single pair of analog ins and outs; PARIS 2 (\$3,395) is bundled with the Interface 442 (four analog ins and outs and a pair of S/PDIF connections). The system currently records at 24-bit resolution, and the sound quality is sumptuous. By the time this review prints, Ensoniq/HD will ship PARIS 3 (\$3,895), which includes hardware (MEC—Modular Expansion Chassis) to expand the system, and a software update that allows playing up to 128 tracks at one time,

BY GARY ESKOW

Bringing the Store TO YOUR Door



AUDIO, VIDEO, A/V & LIGHTING EQUIPMENT
Full Compass



Catch the Tidal Wave of
Audio & Video Products in
Your **FREE** Catalog or Surf the
Web! www.fullcompass.com

Our store is at your fingertips.
Check out our customer support—
you'll be impressed!

CIRCLE #105 ON PRODUCT INFO CARD



FULL COMPASS

Audio • Video • A/V • Lights

1-800-356-5844

FIELD TEST

scroll the time window down to less than a second, you may also set up a more detailed view for fine editing, say two tracks (which will, of course, be quite a bit larger now) and eight or nine seconds' worth of music.

PARIS has eight discrete stereo aux sends, in addition to individual channel inserts, and four bands of parametric EQ per channel, so you'll probably want to create a view within the Mixer window that will expand a number of aux sends, and another that gives you access to all of the EQ bands. Is this as easy to use as a traditional console? No, but to my thinking it's a well-thought-out compromise, and at its price point, an easy trade-off to make.

I would have liked to see waveform editing within the PARIS environment and have heard that it will be offered in the future. As things currently stand, PARIS ships with PEAK LE and Steinberg's WaveLab Lite; tracks that have been cleaned up in these editors may then be slotted back into their original place within your PARIS project.

Most PARIS users will be using the program in conjunction with a MIDI se-

quencer. Anybody using OMS, use care when configuring your system: PARIS, like other systems, uses OMS to take command of any sequencer that works with this Opcode-designed MIDI protocol. I have several MOTU MIDI Time Piece patchbays, which means that gear from four different companies—Opcode, Ensoniq, MOTU and Steinberg (the piece I recorded was developed in Cubase)—was involved in the sync process, and it was challenging trying to get everything to work together. In my case, these were caused by incompatibilities between OMS and MOTU's FreeMIDI extension.

PARIS organizes recorded audio files in a three-part structure. The highest architectural group is the audio file itself. Segments—parts of the whole—reside in the Object Bin. When you take a segment from the Object Bin and move it to a track you will probably want to manipulate the data within the editing window environment, which is called the Playing Field.

Let's say you copy a 2-bar tom fill and paste it to a second location. This edit, an Object, stays on the Playing Field and will not clutter up the Object Bin unless you feel it is important

enough to be stored there as a Segment. The terminology is somewhat confusing in that the Object Bin is designed for Segments and not Objects themselves! However, aside from this inconsistency, this three-part way of working is well-thought-out.

The Playing Field has lots of features. For starters you'll want to turn on a few rulers, say the bars/beats and minutes/seconds ones. As you hit disk with your first pass, you might drop in markers on-the-fly and edit them to organize your tune by section. These are SDII-style markers with a few limitations—for example, you can't type in descriptive texts. (I tested Version 1.0 software, and given the good job that ID has done, I don't doubt them when they say that this feature will be added.)

I particularly liked the fact that you can use either a time-locked Constrain Selector tool to grab data on a track or the regular selector that is not referenced to a given place. This lets you move data around any way you choose, using the tool that is unlocked. Once you select the Constrain Selector tool, the data may be assigned to any track, but it goes to its original

Sam Ash
PROFESSIONAL AUDIO GROUP

Our staff of experts have been serving New York audio professionals for decades - now that same famous service and selection is available to you! Sam Ash Professional features the world's largest inventory of MIDI instruments - signal processors, digital recording systems, software, studio monitors, microphones, amplifiers and mixing consoles - all at the guaranteed lowest prices! One call and you will find out what New York has known for over 70 years - the name to remember for all of your audio needs is Sam Ash!

YOUR ONE-STOP PRO PARTS SOURCE!
OUR PRO PARTS DEPARTMENT OFFERS THE LARGEST SELECTION OF PRO AUDIO PARTS, CABLES, CONNECTORS, PATCHBAYS, CUSTOM WIRE AND MORE!

Most Informed Staff In The Industry!
Authorized Dealer For All Major Brands!
Extraordinary Technical Support!
All Major Credit Cards Accepted!
Courteous Personalized Service!
Super-Fast On-Time Shipping!

MasterCard VISA DISCOVER Sam Ash

ORDER BY PHONE!
MON. - SAT. 10:00 AM - 6:00 PM EST
(212) 586-1100
FRIENDLY SERVICE
DIRECT TO YOUR DOOR!

1600 BROADWAY • 8TH FLOOR • NEW YORK, NY 10019 • (212) 586-1100 • FAX: (212) 586-3375

project time location, so you're never in danger of losing the internal synchronization of all tracks that have been laid to disk.

Speaking of time functions, the Nudge and Slip feature is happening. This lets you take a track that doesn't feel quite right and push it around. If you want to give a laid-back feel to that snare part, you can take the track and push it back (or forward) by increments of 1, 5, 10, 25, 50, 75 or 100 milliseconds. I took a bass part that came over from the sequencer a bit out of time and locked it up very quickly.

PARIS has lots of features—I could easily fill three times the allotted space with detailed descriptions—but by and large they are intuitive, which is good because the manual leaves a great deal to be desired. What it gives is written well, but many of my questions had to be answered by Ensoniq's support staff because they were not discussed in the manual. A supplementary "Introduction" manual that does a better job of laying out the basic operations is now offered.

Can PARIS be improved? Certainly. Some easy fixes—I would prefer for the color scheme on the mixer knobs be rewritten so that all volume knobs are one color, EQ knobs another, etc.—seem simple, although avoiding overtaxing a marginally powerful CPU might have been a concern here. Others—such as the lack of an automation editor and audio scrubbing in V.1.0—will be addressed in future software revisions: Version 1.2, shipping in March, includes a full automation editor and is available as a free download, and scrubbing is in the works.

The bottom line for me, however, is audio quality. In session, I wanted to record four pieces that combined MIDI tracks with live performances by alto player Baron Raymonde. I previously dropped all of the 28 sequenced tracks to hard disk using a popular sequencer/hard disk recording package, going analog in from my console to a Panasonic 3700, using its converters to output a 16-bit S/PDIF stream to my computer by way of a popular card. Ultimately the equalization limitations of the sequencing package forced me to avoid tracking this way, but I was very impressed with the sound that got into my computer—until I recorded the very same tracks with PARIS.

The sound of this system is, simply put, gorgeous. Oberheim Matrix 1000 fans know that many of the great bass sounds on this box (I used preset #60, untweaked) have wild harmonics float-

ing around. These sounds are among the hardest to reproduce accurately on tape or disk. PARIS captured almost the entire frequency range of this patch with little loss of the highs or the gutsy low end. As the MIDI data—which consisted of 909 drums, the bass, acoustic guitar samples and several pads—was given MIDI compression to max its output, the 20-bit A/D converters of the Interface 422 do not strike me as the sole reason why the tracks sound so rich. Rather, the filters that Ensoniq employs must be given a great deal of credit for the sound.

Ensoniq/ID has told us that many of

the features I'd like to see—waveform editing, MIDI sequencing, more tracks—will be available in the future, possibly by the time this review is published. Keep your eyes open for developments as they are brought to market.

Thanks to engineer Paul Wickliffe and saxman Baron Raymonde for their assistance with this review.

Ensoniq Corp., 155 Great Valley Parkway, Malvern, PA 19355; 610/647-3930; fax 610/647-8908. Web site: www.ensoniq.com. ■

Gary Eskow is a freelance musician, writer and producer based in New Jersey.

SIMPLY THE BEST!



...and it just keeps getting better. **Simon Systems** has set the new standard of excellence in professional audio signal processing. The four channel **RDB-400 Integrated Direct Box** is simply the best direct box you can buy. This AC powered unit is based on a totally active (transformerless) audio path design with no insertion loss. And with features like variable line level output, variable attenuation trim, unbelievable headroom, speaker level input pad, active unbalanced/balanced outputs, front and rear inputs and output connectors, ground isolation switch, and toroidal power transformer, it's easy to see why so many professionals insist on it in the studio as well as on the road.



The portable single channel **DB-1A Active Direct Box** is based on the same design philosophy as its big brother. Its three-way independent power scheme* facilitates a unique design that simply blows every other DI away! In addition to features like line level output and no insertion loss, the DB-1A has rechargeable battery capability and automatic system power check.

*Simon Systems PS-1 Power Supply is recommended.

And for the ultimate in headphone distribution systems there is the **CB-4 Headphone Cue Box**. The CB-4 features four headphone outputs independently controlled by conductive plastic stereo power controls. The XLR input/output connectors allow numerous boxes and headphones to be connected to the same amplifier with headroom, clarity, and flexibility that cannot be achieved with active headphone cue amplifiers. A three-position switch selects left mono, right mono, or stereo mix, allowing for additional cue mixes. It's no wonder why the CB-4 has become a standard in the industry.



So the next time you think signal processing equipment, think like the pros:

Simon Systems - Simply The Best!®

Thanks for setting the trend:

Alabama • Fleetwood Mac • Whitney Houston • Tito Jackson • Jimmy Johnson •
Kenny Loggins • John Mellencamp • John-Luc Ponty • Leland Sklar
REO Speedwagon • Universal Studios



SIMON SYSTEMS® ENGINEERING, INC.

707 Clear Haven Drive • Agoura Hills, CA 91301 • (818) 707-9980

CIRCLE #106 ON PRODUCT INFO CARD

LAWSON L47MP

TUBE CONDENSER MICROPHONE

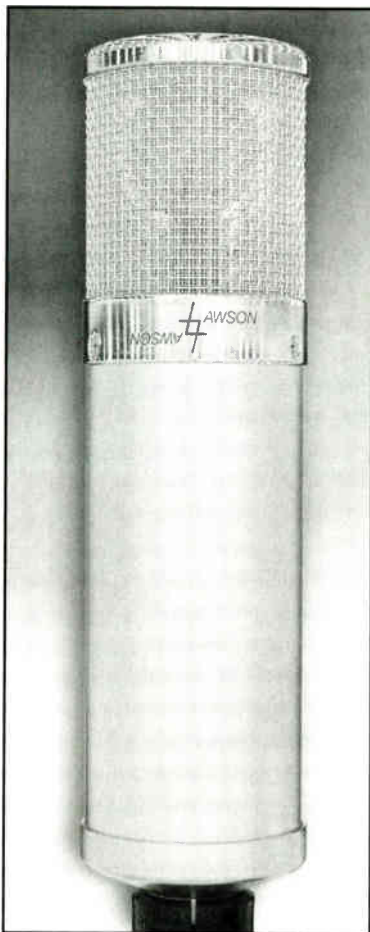
I often find the pro audio products made by small companies to be more compelling than those mass-produced by larger corporations. The niche designer (frequently also the president of the company) usually has an idealism and obsession with audio that I relate to. Unfortunately, the result is often a stringently engineered, rapturously musical product that costs too darn much for my pocketbook. Not so with the Lawson L47MP, a supremely crafted, stunningly musical microphone that, at \$1,995, most professional studio owners can readily afford.

STRIKING APPEARANCE

The L47MP is a multipattern, large-diaphragm tube condenser. Straight out of its bombproof (airtight and watertight) Pelican storage case, the L47MP makes a bold statement. Shaped much like an U47 and measuring an impressive 9¾ inches long and 2¾ inches in diameter, virtually its entire body—including cable connector and double-mesh head grille—is plated in 24-karat gold. It's a look you'll either love or hate. Virtually all of my clients think it looks gorgeous, and I agree.

Underneath the gold veneer, the mic's body is machined from solid brass, bead blasted and plated with nickel. Its substantial weight (2 pounds) and solid construction inspire confidence.

The Pelican case ships with the mic. Also included is a sturdy, proprietary power supply and companion 6-foot, three-prong, detachable IEC power cord. A knob on the power supply allows you to make continuously variable adjustments to the mic's polar pattern, from omni to cardioid to bidirectional (and all patterns in between). A 30-foot, shielded Mogami cable (fitted with gold-plated Neutrik connectors) is provided for hooking up the L47MP to a locking 6-pin XLR



connector on the power supply; this delivers power to and audio from the mic. Other features of the power supply include a switch for padding the mic 12 dB, a power switch with inset red LED and a 3-pin male XLR for audio output to your mixer/mic pre.

The 12dB pad comes after, not before, the output stage. From a user's perspective, I think most tube mics are better off padded than pre-attenuated. The latter scheme often degrades the already critical signal-to-noise in tube designs past the point of usefulness. Lawson's design makes sense.

A swiveling mic adapter, made

of high-impact plastic, is also supplied with the L47MP. As the capsule element is internally shock-mounted, an external suspension mount is not needed. The mic is secured by sliding its wide-diameter connector base into the adapter's split O-ring clamp, which is opened and closed by tightening a knurled knob. This arrangement is the most hassle-free and foolproof scheme for hanging a mic (upside down or right side up) I've seen. In fact, the complete microphone system—right down to the rubber feet on the power supply—demonstrates extensive forethought and impeccable construction quality. This product is a joy to use.

INSIDE DETAIL

The L47MP's capsule features dual 1-inch-diameter, gold-sputtered membranes. Gene Lawson (president of Lawson Inc.) modeled the capsule's design after the M7 capsule used in the Neumann U47 and M49 microphones, with modifications. For example, the diaphragms are only 3 microns thick (the original M7's were 7 microns) to optimize transient and high-frequency response. Each capsule is precision-machined from solid brass and then hand-lapped in the Lawson lab.

At the heart of the L47MP is the venerable 6072 vacuum tube, coupled through a Jensen transformer. Lawson stringently tests and selects the tubes for all its mics to meet low-noise guidelines. Additionally, a low-loss tube socket is employed, which uses military grade, heavily gold-plated beryllium copper contacts for better grip, low contact resistance and extended life.

The L47MP's sensitivity at 1 kHz is rated a modest 11.4 mV/Pa, and the A-weighted equivalent noise level is 22 dB SPL—typical specs for a tube mic. The maximum SPL for 1% THD at 1 kHz is

BY MICHAEL COOPER

a very modest 117 dB, suggesting careful placement on loud signal sources.

A cardioid-only version of the L47MP, the L47C, is available for \$1,695. Both mics are only sold factory-direct, which partially explains how the prices can be kept so low.

THE SOUND

As with all multiple-pattern condensers, changing the L47MP's polar pattern results in a change of timbre, making for a very versatile mic. The omni pattern exhibits a dip in the 3 to 5kHz range, and a broad peak centered roughly at 10 kHz. As you increase the L47MP's directionality, the timbre becomes more and more present as midrange response is boosted and very high frequency response is diminished. The mic sounds quite bright in bidirectional mode.

My first critical listening test was an A/B/C comparison of the Lawson L47MP, RØDE Classic and AKG C-12VR microphones, all set to cardioid and recorded to separate ADAT tracks via a Millennia Media HV-3 preamp and the Yamaha 02R's 20-bit converters. The sound source was female spoken word. The L47MP has a deeper bottom

than the Classic; I liken it to an AKG TLII on steroids in this regard. But the L47's bottom is not accentuated in the upper bass as with the C-12VR, which has by far the overall biggest bottom of the three mics (not necessarily always a good thing). The L47MP is more present in the midrange frequencies than both the Classic and the C-12VR, which have a darker sound even though they both offer more high-end sizzle and better transient detail. All three mics have an uncanny ability to make a sound source fatten or grow in perceived size, a cherished characteristic of the best tube mics. In this regard, the L47MP sounds fatter than the Classic, but the C-12VR takes the grand prize. The C-12VR is also the smoothest-sounding of the three mics.

IN SESSION

When you tuck vocals recorded with an L47MP into a mix, something magical happens. The track somehow manages to sound incredibly fat, yet retains its presence. All the warm, lush texture you would want from a tube mic is there.

Male rock and jazz vocals both had a tight, full bottom and a velvety fat yet

clear sound. Although these tracks were not extraordinarily detailed up top, they nevertheless sounded more than adequately articulate. This quality makes the L47MP a good choice for recording sibilant singers.

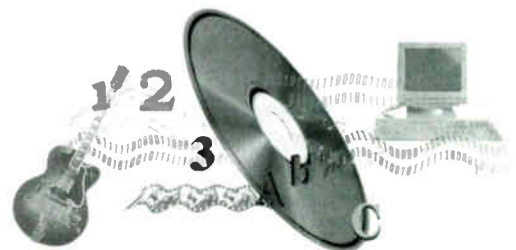
Next up were some female vocals, recorded via the HV-3 to 24-bit digital (the 02R's V2 software allows you to record 24-bit audio onto two ADAT tracks; you *gotta* hear this!). Six inches from the mic in cardioid mode, the singer sounded warm yet clear, with a beautifully soft and shimmering high end.

The L47MP has a very flattering proximity effect, but tends to overload when you're screaming right on top of it. The "wide cardioid" position usually yielded the best results for recording lead vocals; the figure-8 pattern often sounded too bright for this application. The hypercardioid mode's moderately boosted presence was just the ticket for recording male rock backing vocals. A testament to this mic is that I rarely had to employ any EQ to vocal tracks at mixdown (the one exception being some low shelving EQ for a vocalist who almost ate the mic).

David Bowie
Magic Dick & J Geils
Polygram
Frank Zappa
Burning Spear
Heartbeat
MGM/UA
Richard Thompson
Phish
Rounder
Roy Orbison
NRBQ
Rykodisc
Alison Krauss
Morphine
Bob Marley
Bruce Cockburn
Tone-Cool
Arlo Guthrie
Medeski Martin & Wood
Sweetfish
The Beach Boys
Bob Mould

know these guys?
they know us!

THEY TRUSTED US WITH THEIR MASTERING.
508-481-9322 www.cdndr.com



...ndr...
NORTHEASTERN DIGITAL RECORDING, INC.

northeastern digital
unparalleled service, experience, and technology

America's Largest Volume Dealer is Now a Part of
America's Largest Musical Instrument Chain

Guitar Center's RHYTHM CITY

- **MORE BUYING POWER!**
- **MORE GEAR!**
- **MORE SAVINGS!**

- All Major Brands • New and Used
- All Major Credit Cards Accepted
- Easy Terms-Financing Available
- Professional Sales Staff • Speedy Shipping



NOBODY BEATS OUR PRICES! (404) 320-SALE
 1485 Northeast Expressway
 Atlanta, GA 30329
www.musician.com

CIRCLE #108 ON PRODUCT INFO CARD

MASTER SYNC
AARDSYNC II

A problem free studio...

...begins with the AARDSYNC II. Having all your digital audio devices locked to one jitter-free master clock solves every click, pop, out-of-sync, digital incompatibility problem you ever had.



- Pro Tools®
- Sonic Solutions™
- Tacam® DA-88/38
- Yamaha® O2R/O3D
- ADAT®
- NTSC/PAL Video
- Sony® PCM-800
- DAT Machines



Word Clock/AES Distribution Professional AD/DA

Aardvark

<http://www.aardvark-pro.com>

Ph 313•665•8899 • Fax 313•665•0694 • 202 E. Washington Ste 306 • Ann Arbor • MI • 48104

CIRCLE #109 ON PRODUCT INFO CARD

FIELD TEST

The next task was recording a variety of Native American wood flutes with timbres ranging from dark and soothing to bright and almost shrill. The deeper and darker the inherent tone of the instrument, the more directional pattern was called for. On mid-sized flutes, the L47MP's cardioid pattern was chosen for its softer, darker midrange and breathy highs. The mic's figure-8 pattern sounds more present yet less detailed; this was a more complementary timbre for some bassier flutes that had a raspy or beady high end.

Overall, the L47MP lent a rich, fat, warm, golden tone to the bigger flutes. But on the smaller, soprano range flutes, the L47MP was a tad too bright. The C-12VR produced a more flattering, softer, darker timbre on those instruments.

The L47MP's combination of warmth and presence make it a natural for recording electric jazz guitar. The mic never sounded harsh or glassy; instead, the sound was soft and round. Perfect! Similarly, I got excellent results miking up the Leslie cabinet on an XB-2 Hammond organ with the L47MP's mode set approximately to supercardioid (only the omni, cardioid and bidirectional modes are marked on the power supply).

Finally, I miked the cabinet of an electric bass guitar in figure-8 mode. This pattern's hyped midrange and understated highs gave me the hard-driving tone I was looking for on this rock 'n' roll session. The timbre was perfect for rock bass: present, huge and with a big, tight bottom.

CONCLUSIONS

If you're in the market for a world-class tube condenser, you cannot go wrong with the L47MP. It has the uncanny ability to sound great on almost any vocalist, as well as on a wide variety of instruments. The L47MP's construction is impeccable, it looks great, and it's quite affordable. What more could you ask for? I cannot praise this microphone enough. Don't wait—buy it.

Lawson, 2741 Lamon Dr., Nashville, TN 37204; 615/269-5542; fax 615/269-5745. Web site: www.lawsonmicrophones.com; e-mail: mail@lawsonmicrophones.com.

Michael Cooper is fat, rich and very present.

ACM1406

Add Something DIFFERENT to your Mix for ONLY \$25



DESIGNED AND MANUFACTURED IN THE U.S.A.

Based in St. Louis, Missouri, Audio Centron has over 200 full-time employees, including one of the largest Research and Development staffs and manufacturing facilities in the industry. Audio Centron has dealers and distributors in the Americas, Europe, Australia, and the Far East. All Audio Centron products are designed and manufactured completely in the United States, and come with a full 5 year warranty on electronics.

- 6-Mic Channels**—Balanced XLR / 1/4" inputs with inserts on each channel. Insert acts as discreet direct out when plug is inserted 1/2 way. Input Gain, 3-band EQ, peak LED's, 2-Aux sends with stereo returns.
- 4-Stereo Channels**—Stereo 1/4" inputs, 3-band EQ, 2-Aux sends with stereo returns.
- Channel Solo Button**—turns off all other channels so you solo only the channel you select. Featured on 6-mic and 4-stereo channels
- Mute Switches** allow you to "turn off" a single channel. Featured on both 6 mic and 4-stereo channels.
- 60mm Faders** give you precise level controls for each channel in your mix. Featured on 6-mic and 4-stereo channels.
- Solo in PFL / AFL**—Select between Pre-Fader Listen (PFL) and After-Fader Listen (AFL).
- Solo to Mains or solo to Headphones cue**—Select between solo to mains when setting up

your mix, or solo to headphone cue, where the selected channel goes to cue only and leaves your master L&R mix unaffected.

- Top loaded L&R balanced 1/4" outputs.**
- Footswitch insert**—Plug in optional foot switch to control Aux 2 send.

ALSO FEATURES:

- **Rear loaded L&R balanced outputs**—Select either +4 or -10 level for these additional outputs.

For only \$25 more, get a **TFX1-SP Digital Signal Processor.**
A \$179 Value!

- 32 Editable Programs
- 1/3 Rack Space
- Chorus, Delays, Reverbs, Flanges
- Perfect for Live Sound & Recording
- **Rear loaded 1/4" Mono output**—Provides additional feed for broadcast, perfect for send to subwoofer.
- **19" rack mountable** with optional rack ears (ACM1406RE).

Audio Centron

1400 Ferguson Ave. • St. Louis, MO 63133 • www.audiocentron.com

World Radio History

CIRCLE #110 ON PRODUCT INFO CARD

BY TOM KENNY

POSTSCRIPT

SOUND FOR FILM

EDITING BEFORE THE EDIT

GATHERING YOUR PERSONAL EFFECTS, PART 3

by Larry Blake

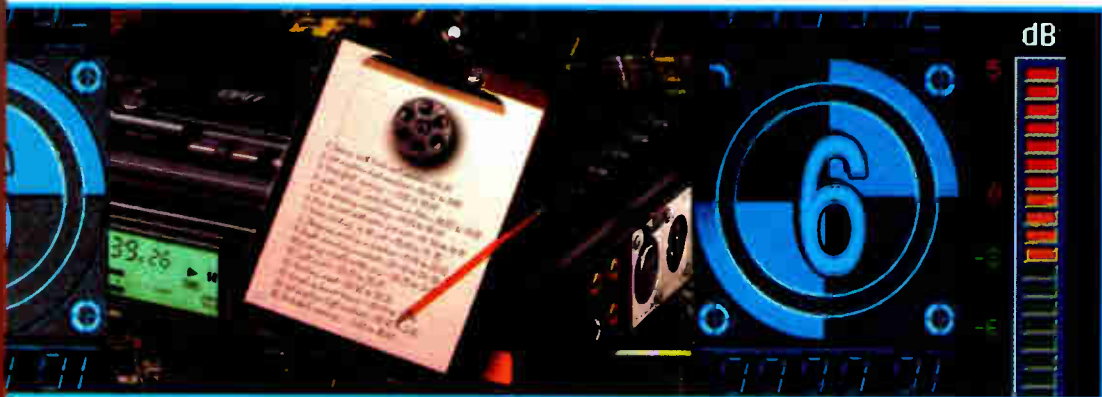
I don't envy my colleagues who had to start recording and organizing sound effects libraries in the early days of Hollywood film sound. It's not their lack of a good database program or even the nonexistence of stereo recorders that draws my sympathies. Having to search through card files never held anyone back creatively, and all films were in mono, so

sound, when all sound was recorded in this manner. Just take a quick look at what we take for granted today: rewinding tracks in sync, punch-in recording, recording on separate stems, total console automation. The closest we come to optical recording—making the matrixed stereo soundtrack that is transferred to a stereo optical negative—is when we are monitoring through calibrated optical clash simulation. And to make the process even easier, in the case of SR-encoded tracks, we have more headroom than we should ever need.

Enough of my guilt. The fact of the matter is that Hollywood sound personnel made the most out of their state-of-the-art equipment. There is the final frontier that

In the days when all sound was cut on 35mm (either optical or magnetic), reprints of the master sound recording would be in a box, and when the last one was used, a transfer order would be put in to replenish the box. God help you if you cut the master into your film; this fate undoubtedly befell many a mag master in the middle of the night at the hands of a desperate sound editor.

This obviously couldn't happen to sound effects masters that were recorded on 1/4-inch tape, a procedure that began in the '60s with the introduction of Nagra tape recorders, which would become the standard of the film industry (with due respect to Stellavox and Uher). Battery-operated 1/4-inch ma-



PHOTOMONTAGE: TIM GLEASON

what did they care?

What did piss them off, I'm quite sure, was the fact that they were recording on huge 35mm optical sound cameras. (I would put quotes around that word, but optical recorders really *are* cameras.) Once you added up the power supplies and electronics, you needed a truck to carry them around. And it gets worse.

Because optical sound recording is a photochemical process, you have to develop and print the negative before you can hear what you've recorded. You really have to respect what mixers (both production and re-recording) went through for the first 20 years of film

the technophile in me regards as the one piece of equipment that has indisputable benefits over "prior art," as they say in patent applications: digital audio workstations. Brilliant, original observation, I know, but what does this have to do with the topic at hand—sound effects libraries?

Workstations can be a powerful tool not just in editing sound against picture but in editing the original field tapes before they are entered into the effects library. This month's column, the third in a four-part series on sound effects recording and organization, will deal with some simple techniques that I've developed for feature films.

chines gave effects recordists the ability to shoot (see how that word has remained in film sound parlance, even in nonoptical sound usage) sound effects anywhere, anytime.

Once the tapes came back, it made sense to edit them, but since you were editing the original field tapes, any edit was permanent. Additionally, that edited 1/4-inch tape was a master and was exposed to wear and tear simply in the act of rewinding and auditioning.

The procedures have changed substantially with today's near-universal use of DAT in field effects recording. (Now, even a Nagra

—CONTINUED ON PAGE 164

FACILITY SPOTLIGHT

BAD ANIMALS SEATTLE

by **Tim Moshansky**

For a time in the early 1990s, Bad Animals was a shining example of the "post-all-day, rock-all-night" wave sweeping through facilities in secondary markets. Suits would come in from the ad agencies, lattes in hand, for an afternoon slot on a McDonald's spot, while a television show was being prepped in an adjacent suite and a CD-ROM audio track was being mixed next door. Down the hall, young rockers from Seattle's booming grunge scene would be tracking an album. Companion facility Studio X was going full-bore with music and had gained a national reputation very quickly, and Bad Animals was attract-

ing major-label bands from around the country.

Then, seemingly out of the blue, a press release was issued last summer announcing that owner Steve Lawson was pulling out of the music business and concentrating exclusively on audio post. It came as a surprise to many, but in retrospect, it was a solid business move. Today, Bad Animals is right where it wants to be.

"Our marketing and advertising clients had really dropped off," says Lawson, last year's chairman of the Society of Professional Audio Recording Services. "And a lot of the reason it had fallen off was that our resources were spread very, very thin. Because we had two divergent clienteles, even though they are both very cool, it was really hard to make it work.

"The biggest issue was being able to find staff who could interact with both sides without having to double-hire," he continues.



Above, left to right, Bad Animals sound designers Mike McAuliffe and Suzie Brutke, president Steve Lawson, and sound designers Dave Howe and Gary Littell. At right, The Red Room.



"It got to be where they weren't really complementary businesses; they were very jealous of each other. If we bought something for the music side, the post-production side would be jealous, and vice versa. It was prudent for us to make a decision as to which business we wanted to be in. We saw that the record budgets were dropping, and the

Seattle music scene had kind of passed by. The quantity of work wasn't there, especially for three rooms. There was also a lot of competition. When we put Studio X in, it kind of raised the bar all over town; people were putting in SSL boards. Other people upgraded their old Harrison

—CONTINUED ON PAGE 169

FACILITY SPOTLIGHT

BASH, BOOM, BANG INC.

**A SOUND DESIGN
QUARTET IN
THREE-HOME HARMONY**

by **Kim Wilson**

Bash, Boom, Bang Inc., based in Pacific Palisades, Calif., specializes in composing music and sound design for broadcast advertising in the national and international markets. Executive producer John Bashew, along with a strong creative team of Chris Desmond, Alan Pasqua and Roger Bashew, have developed spots for Toyota, Acura, Kmart, Eastman Kodak and Intel, among many others.

"What we offer is a strong team of individuals," declares John Bashew with confidence. "Unlike other music houses, we have no creative director. Each one of us has a broad range of talent and experiences and is capable of taking an idea from concept to completion. These three guys attack every project with the same passion and creativity, whether it calls for a 60-piece orchestra or simple guitar part."

"Every one of us has worked with clients before," adds Desmond. "In this environment, clients work with the musicians directly. There is no need for a filtering process. We seem to get a more open and creative dialog in this relaxed setting."

A native of South Africa, John Bashew learned the art

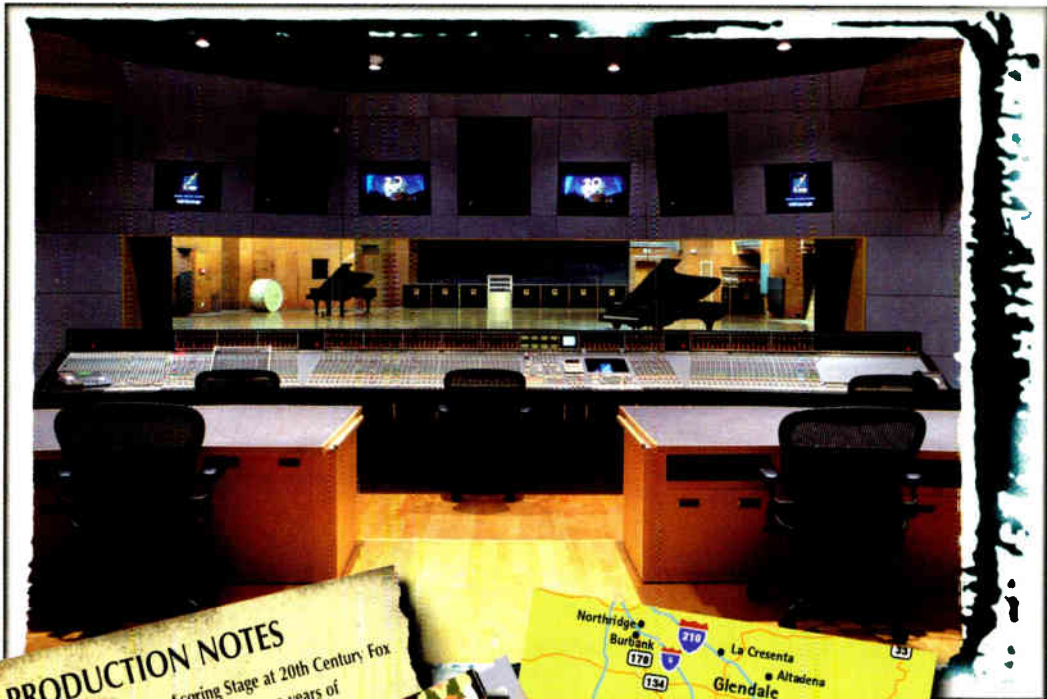
—CONTINUED ON PAGE 166



PHOTO: ED COLVER

Clockwise from top left: Executive producer John Bashew, composer/sound designer Chris Desmond, composer/sound designer Roger Bashew and composer Alan Pasqua.

Great Scoring Stages Of The World



PRODUCTION NOTES

The legendary Newman Scoring Stage at 20th Century Fox in Los Angeles recently opened after two years of renovation with a new SL 9000 J Series console as the master audio control unit. The new stage has already hosted several projects including 20th Century Fox's first animated feature film, 'Anastasia', TV shows such as 'The Simpsons' as well as the re-recording of the Fox 'Fanfare'. Grammy award winning Scoring Mixer John Kurlander says, "The SSL is an excellent choice for the Newman Scoring Stage. SSL's reputation for reliability and flexibility is renowned, but with the SL 9000's new multi-format film routing matrix and impressively transparent signal path, this will surely become the industry standard for world class orchestral scoring and mixing."



10201 W. Pico Boulevard,
Los Angeles, CA 90035
Phone: 310 369 2873

Solid State Logic

International Headquarters

Begbroke, Oxford, OX5 1RU, England

Tel: +44 (0)1865 842300

Fax: +44 (0)1865 842118

E-mail: sales@solid-state-logic.com

<http://www.solid-state-logic.com>



SL 9000

New York
+1 (1)212 315 1111

Los Angeles
+1 (1)213 463 4444

Tokyo
+81 (0)3 5474 1144

Paris
+33 (0)1 3460 4666

Milan
+39 (0)2 2622 4956

Toronto
+1 (1)416 431 9131

Singapore
+65 (0)285 9300

ON THE SET WITH THE BLUES BROTHERS

by Jeffrey Wolpert

Okay, so *Blues Brothers 2000* came and went, but as Clint Eastwood once said as head judge at the Cannes Film Festival, there's something to like in every movie. In *BB2000*, that would be the music, specifically the closing "battle of the bands" scene.

The music for the movie included a who's who of R&B, soul and blues, with artists such as Aretha Franklin, James Brown, BB King, Eric Clapton, Erykah

(only vocals were overdubbed), and the first take was almost always used. Studio One at McClear Pathe is fairly large (41x31 feet) and has a good-sized isolation booth (20x14), which helped to keep everyone comfortable. Principal singers were generally available in Toronto for two days, so vocals were recorded and tapes prepared for playback on the set. These tapes were 8-track DA-88s, with vocals separated

so songs were shot and recorded live on the set. The first tune, "How Blue Can You Get," was played by the Louisiana Gator Boys, with a lineup including BB King, Eric Clapton, Bo Diddley, Travis Tritt, Jimmy Vaughn, Jeff Baxter, Gary US Bonds, Lou Rawls, Koko Taylor, Isaac Hayes, Tommy McDonnell, Charlie Musslewhite, Dr. John, Billy Preston, Steve Winwood, Grover Washington, Clarence Clemens, Joshua

Redman, John Faddis, Willie Weeks and Jack DeJohnette.

The second song, "New Orleans," has the same lineup plus the entire Blues Brothers Band, which complicated matters because the Gator Boys were live but the Blues Brothers synched to playback except for vocals, which were live. Westbury National Sound handled the FOH, monitor mixes and playback

levels. Doug McClement and the Live Wire Remote handled the 48-track analog recording, while I had a separate split and mixed live 8-tracks for safety and playback. (Sound recordist Glen Gauthier and his Noize Boyz handled the on-camera dialog.) This was the one instance where we mixed after the picture was cut. Director John Landis cut between takes, which meant that we had to construct a final mix by editing the multitracks. This was accomplished at McClear Pathe using a new Pro Tools 4.0 24-bit, 32-track system.

With 22 songs to mix, Harvey Goldberg came to Toronto, and he and I ran two studios simultaneously in order to meet the delivery deadline. Wherever possible, we went back to the original session recordings. This meant running any combination of three analog 24-tracks, four DA-88s and 16 tracks of Pro Tools. The SSL 6000 consoles at McClear Pathe were well-suited to this type of work, allowing for simultaneous stereo and split mixes. Total Recall was also invaluable as decisions were made and approvals delivered. All the film mixes were 16-track LCR splits sent to Todd-AO in Los Angeles for final dubbing. The record mixes were on 1/2-inch, 2-track analog with Dolby SR. Mastering was by Ted Jensen at Sterling Sound. ■

Jeffrey Wolpert is an engineer at McClear Pathe Recording Studios in Toronto.



Above: (l-r, foreground) John Landis, Paul Shaffer, Jeff Wolpert (console), Aretha Franklin.

Left: (l-r) Paul Shaffer, Harvey Goldberg, Hohn Biondich and Jeff Wolpert.

from the band in order to facilitate monitoring for lip sync. (A note of caution: Simply plugging a video reference into the video-in jack and running the DA-88's clock-on video will NOT ensure the playback speed. I've tested this, and there is no change when feeding a 29.97 or 30Hz reference. However, the DA-88's internal reference is solid enough to ensure lock if the original source was resolved to the desired speed.) Occasionally, the vocals were recorded live on set by Doug McClement of the Live Wire Mobile.

There was one major exception to this format. The ending sequence of the film takes place at a battle of the bands,

Badu, Dr. John and many others performing live or for the soundtrack. Some of the bed tracks were recorded in New York at Sound on Sound by Harvey Goldberg, who mixed the soundtrack, as well. Tracks used in the film were mixed by myself and Goldberg at McClear Pathe Recording Studios in Toronto, with music producer extraordinaire Paul Shaffer assisting.

Tracks such as "R.E.S.P.E.C.T.," "New Orleans" and "John the Revelator" were recorded live off the floor

feels like a ton.) But for all of the advantages of DAT—and we're not going to get into a "but guns sound better on analog" discussion here, are we?—there is one enormous disadvantage: It can't be edited.

Of course, it *can* be edited machine-to-machine, but this is cumbersome at best due to the time-honored problems of any editing (such as classic 1/2-inch offline) that involves copying from one linear piece of tape to another. The slightest change in the program results in having to redo every edit that comes after it. Not too cool.

The simple solution, of course, is in the workstations. Not only can you edit your field recordings (regardless of what analog or digital format they were recorded on), but you can edit them with a precision that is simply impossible any other way. In short, I'm talking about editing a field recording and then bouncing a new, clean recording to another file within the workstation. What begins life as raw sounds scattered among a pile of DATs is now a series of files, ready to cut—no waiting for transfer, no worry if the tones were checked.

But one of the problems with the flexibility of editing field tapes on work-

stations is that you (or, at least, I) get lazy. You know you're personally going to be transferring all the material in and editing the tapes before your sound editors get ahold of them, so it's tempting to get sloppy with organizational niceties. The act of making written logs in the field is becoming something of a lost art.

Give yourself a head start in the editing process by, at the very least, numbering tapes as you record them and making clear voice slates. Some people find elaborate voice slates to be *de facto* unnecessary because a sound is what it is. Why do you need to know exactly how fast the car is going when it passes by, or the exact year and model number? Or the fact that it's noon vs. 6 a.m., or spring vs. fall, or that you are in the Everglades as opposed to the Atchafalya Basin? As long as you identify the recording as being of a swamp with insects and a few birds, you have all the information you'll need short of listening to the effect and putting it up against picture to see if it really fits.

Well, that's one theory, but not one to which Larry "The Archivist" Blake subscribes. I readily acknowledge that literalness can sometimes present itself in the guise of precision: Just because it is a recording of the Atchafalya Basin at 6 a.m. in the summer doesn't mean that it meets the dramatic needs of the scene that takes place at that time. Still, dramatic needs aside, we are at some level documenting the sound of our world, and if your bar walla was made in the bizarre Saturn Bar in New Orleans as opposed to a yuppie wine bar uptown, this should be duly and accurately noted for future generations.

Some basic rules: Load effects into edit files by subject so that you will have, say, all bar walla recorded for your film together. Also, finish a given subject first—i.e., load everything in, edit and bounce the files—before moving on. If you just load all your recordings in a grab-bag fashion, you will end up with like material spread across multiple disks and will need a lot of hard disks online to deal with one subject.

As you're loading everything in, keep logs (probably handwritten, unless you have two computers at your disposal) of the original source location. Yes, I know that you're going to do this once and for all practical purposes can throw away the original tapes. That is the goal, but I believe in an audio audit trail.

The crucial, absolutely necessary

M-1

MICROPHONE PREAMPLIFIER

(ACTUAL SIZE)

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

The Jensen JT-16-B Input Transformer. The world's best mic-input transformer. If you thought transformers were a compromise, you haven't heard the JT-16-B!

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

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

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

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

THE JOHN HARDY COMPANY

P.O. Box AA631
Evanston, IL 60204

Phone: 847-864-8060 Fax: 847-864-8076

CIRCLE #112 ON PRODUCT INFO CARD

parts of these logs are the descriptions of what happens in the take and its length. You should give each edited section a name at this point, although it need not be the final one, which will be given during the bounce.

To reduce the chance of having a fragmented disk, I load source material onto one drive and bounce the edited versions onto a fresh, separate drive. This way, you can compare the final bounced track with the edited original before wiping the original track from its drive (after it has been backed up, of course). I think it would therefore also be smart to keep a separate set of hard disk backups, one for the original field files that you load in and edit and one for the final bounced tracks. This way you know that the set of tapes or disks that contain your library's bar walla recordings will contain only the final files that you will be editing into your films, although you can have access to the original files in the odd event that you want to do any re-editing. Anal retentive? Yes. But libraries are about options after all.

As I am creating the bounced tracks, I place them in an edit session with two seconds of silence between cues. This

collection of tracks is placed within an 8-track-by-60-minute playing field. In other words, no track is longer than 60 minutes, and there are a maximum of eight tracks, or four stereo pairs. The final edited block can be copied to the widest possible choices of media, some of which (such as DASH or 2-inch multitrack) have a 60-minute maximum length, while Red Book CDs have only slightly longer running times. I know it seems like anathema to weld this series of fluid files onto a clunky linear medium like a DTRS tape or a semilinear one like a CD. However, the first time that you have to cut that sound in immediately and don't have access to restoring a backup (or access to a server that you can use to download to your local hard drive), you'll be happy that you did.

Yet another unique benefit of workstation editing is that you can easily edit multichannel material (either recorded on one machine or on multiple stereo recorders). You need to think the process through if you have some multitrack material (as in multiple recorders rolling) and some that is just from one recorder. I usually put the recorder that covered the most material on tracks 1-2 and the other recorders on the follow-

ing six (or more) tracks. Group the multitrack material together at the head of the 60-minute section as much as you can, even if it does not represent the chronological order of recording or even the most similar material. (This whole issue becomes real hairy if you are dealing with long backgrounds and your recordings start to drift away from each other, either because of slight sample rate mismatches between digital recorders or because you recorded on analog machines with no sync reference. If you do find yourself walking out of sync, don't regard the material as multitrack because you will create all sorts of phase havoc when you create your matrixed printmaster.)

Editors frequently disagree on the necessary length of backgrounds. True, while you don't want to have your library filled with 30-minute takes of nondescript room tones, your films will be better served if you have long takes of wallas, as I discussed last month. If you can cut your backgrounds so that they are self-looping, i.e., the heads and the tails match seamlessly, that's great. But don't spend too much time on this one because it's not essential. Along these lines, I think it's clear that you shouldn't

Westlake Audio - and THE DIGITAL STUDIO

The Pro Audio House Where Professionals Shop...



Westlake Audio has been in the business of selling pro audio gear since 1971. Before we take on a new product we test it on the front line at our world renowned Westlake Studios. Our experience in cutting edge studio environments gives us the first hand knowledge that our professional customers feel is invaluable when making a purchasing decision.

When it comes to the studio of the future, Westlake carries everything digital from Avid to Z-Link: recorders, consoles, workstations, effects processors, even digital mics and speaker controllers.

If you're ready to make the transition from analog to digital, and are looking for some good advice and great product support - come to Westlake Audio. We also carry digital products from Alesis, Apogee, BSS, Cedar, Digidesign, Mackie, Ramsa, Roland, Tascam, TC Electronics, Yamaha and Sony, plus much, more.



Sales ■ Service ■ Training ■ Installation

7265 Santa Monica Blvd., Los Angeles, CA 90046 ■ 213-851-9800 ■ Fax: 213-851-0182 ■ <http://www.westlakeaudio.com>

CIRCLE #113 ON PRODUCT INFO CARD

World Radio History

MAY 1998, MIX 165

begin and end a take on a fade in or fade out.

And finally, cut out all voice slates—that's part of the reason you need to keep good logs. You should create a simple database or spreadsheet template to log everything, with separate fields for cue name, description, length, original source location (DAT # and PNO or ABS time). If you are recording concurrent with the "first unit" while shooting the film, you might want to include a field for scene/take and also a box to check if a given take is part of a multitrack recording. The printed logs that you create will be the most handy

reference when you need to find which of your 20 swamp BGs will fit at a moment's notice.

Next month I'll talk about the final aspect of sound effects recording and editing: library organization. As always, I can be reached at P.O. Box 24609, New Orleans, LA 70184; fax 504/488-5139 and via e-mail at swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that he gets his mail at a post office one block away from where he grew up.

—FROM PAGE 161, BASH, BOOM, BANG of filmmaking as an assistant director, assistant editor and camera operator for various television, film and documentary projects before choosing to focus on production. When he moved to Los Angeles in 1980, he fell into the advertising industry, working on both the agency and production sides. He has produced for such advertising agencies as Saatchi & Saatchi/Pacific, Grey Advertising, GSD&M and Foote, Cone & Belding. He also worked as a consultant to MCA/Universal Studios Tour Hollywood in the pre-production research for the "Back to the Future" ride. Prior to starting Bash, Boom, Bang, John Bashew helped develop the sound design/music company Endless Noise Productions.

Pasqua joined Bash, Boom, Bang as a composer/musician. He has two solo jazz albums (*Milagro* and *Dedications*) under his belt, as well as several successful commercial scores for clients such as Nissan and Infiniti. Besides collaborating with some of the biggest names in jazz, including Joe Henderson and Peter Erskine, Pasqua has a passion for rock. He formed the heavy-metal band Giant in 1991 and topped the charts with "I'll See You in My Dreams." He also has toured and recorded with Bob Dylan, Carlos Santana and John Fogerty.

Chris Desmond cultivated his multifaceted and eclectic sound design and musical scores through the study of music in Iraq, Iran, Afghanistan, Greece and Tahiti. He has been combining music and sound design since 1983, when he co-founded Visual Music Productions. In late 1995, he opened his own shop, Entropy, where he continues to compose for long-term advertising clients.

Recognized for his rhythmic and textural scores that often blend Western and African musical styles, Roger Bashew was a Clio honoree for Planet Golf's "Planet Nine." He also was part of the creative team at Endless Noise Productions, before becoming part of Bash, Boom, Bang.

Currently, each musician works out of his own Los Angeles-based studio. Macintosh computers equipped with Opcode's Studio Vision are integral to each of the three facilities. Desmond mixes off a D&R Dayner 28x24 console, while Pasqua and Bashew prefer the Yamaha 02R. Each is set up with Sony monitors and 1/2-inch VTRs.

Most of the sound design is prepared in Pro Tools, though Roger Bashew has been experimenting extensively with



POWER TEAM MARKERTEK.

America's Largest Systems & Equipment Catalog.

www.markertek.com

America's Largest Web Site

For Audio • Video • Multimedia Supplies & Equipment

16,000 Products Orderable On-Line !



Our New 1998 Catalog Is HERE !

America's largest (328 pages with all new color section) & most complete supply and accessory catalog in the entire industry contains thousands of exclusive and hard-to-find items for all levels of Broadcast Video, Pro-Audio, Multimedia and Audio-Visual production.

Call • Write • Fax • E-Mail

SALE! PLUS FREE ADHESIVE!

MARKERFOAM™ ACOUSTIC FOAM GIANT 54"x54"

Immediate Shipping

2" Reg. \$29.95. Now \$19.99
3" Reg. \$39.95. Now \$29.99

KILL NOISE QUICK! High performance, full size sheets of super high density Markerfoam. EZ mount. Blue or gray. Super-effective sound absorption for studios. Markerfoam offers best value, looks professional and is proven in studios worldwide. Request Foam-Buyers Guide/Catalog, specs and free samples today. VISA, MC, AMEX, COD, P.Os. QUANTITY DISCOUNTS.

MARKERSTIK™ foam adhesive. FREE with any foam purchase in this ad. Limited Offer. A \$4.95 per tube value.

MARKERTEK BLADE TILES

HIGH PERFORMANCE
LOW, LOW COST!

\$3.49 per tile, 16x16x2". America's best acoustic tile value, only from Markertek. Charcoal or Blue. Also available: 16x16x3" (as shown) \$4.49 each or 16x16x4" \$5.49 each

SONEX

ALL THE COLORS & SIZES
PLUS GREAT PRICES!

MARKERTEK JUMBO SOUND ABSORB BLANKETS

Heavy duty, 72" x 80" padded blankets absorb sound whenever they're hung or draped. Fabulous for stage, studio and field use. Top professional quality at a super saver price. Weight: 6 lbs. Black. \$19.99

MARKERTEK®

VIDEO SUPPLY

800-522-2025 • 914-246-3036 • Fax 914-246-1757

4 High Street, Saugerties, NY (USA) 12477

E-Mail sales@markertek.com

CIRCLE #114 ON PRODUCT INFO CARD

BRYSTON PROFESSIONAL ST AMPLIFIERS

Introducing a New
Standard in Professional
Amplifier Design
and Performance

In the demanding professional environment, you need an amplifier that is transparent, neutral and uncolored. You want to hear the music, not the electronics.

Preserving the integrity of the source signal is paramount to Bryston's design philosophy.

Bryston amplifiers are versatile performers, designed for use in a variety of demanding professional and commercial applications, including high quality recording studios, radio and television broadcast facilities, theater and soundstage amplification, arena and nightclub installations and multi-amplified speaker systems of all types.



Listen past the equipment and experience the performance as intended. Bryston professional ST amplifiers, from the top. 8B ST 4 channel 120 wpc, 5B ST 3 channel 120 wpc, 4B ST 250 wpc stereo, 7B ST 500 watts mono. Not shown is the 3B ST 120 wpc stereo.

Our ultra-linear input buffer-with-gain feeds the amplifier channels from both balanced and unbalanced inputs, resulting in sizable reductions in noise floor and distortion.

Power supplies are completely independent per channel and employ multiple smaller filter capacitors, rather than single large filter cans, improving high frequency response.

Wiring harnesses have been completely eliminated, so that channels plug directly onto the power supply PCB, reducing resistance and improving current flow.

20
YEAR WARRANTY

Music
for a
Generation

Bryston Ltd. P.O. Box 2170, 677 Neal Drive, Peterborough, Ontario, Canada K9J 7Y4
Tel: (705) 742 5325 Fax: (705) 742-0882 World Wide Web Site: www.bryston.ca

CIRCLE #115 ON PRODUCT INFO CARD

BRYSTON



Need a Miracle?



MUSICIAN'S FRIEND COULD BE THE ANSWER TO YOUR PRAYERS.

It's your FREE guide to more than 3,000 of the most popular music gear products at the best prices you'll find anywhere. Mixers, PA systems, keyboards, amps, guitars, cables, lighting packages...everything but the stage.

THE MUSICIAN'S FRIEND BEST PRICE GUARANTEE

- We match any PUBLISHED price before or after the sale
- 2-day Express delivery
- 45-day money-back satisfaction guarantee
- Easy payment plan available
- Major credit cards accepted



CALL 1-800 776-5173 NOW & GET THE BEST MUSIC EQUIPMENT CATALOG FREE!

YES! Rush me the next 3 editions of

Musician's Friend



Join hundreds of thousands of satisfied musicians in receiving the #1 music catalog, absolutely free! CALL 1-800-776-5173, subscribe online at: WWW.MUSICIANSFRIEND.COM

or mail this coupon to:

Musician's Friend, Dept. 76-005 - P.O. Box 4520 - Medford, OR 97501

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

CYBERSHOP ANYTIME ONLINE AT: WWW.MUSICIANSFRIEND.COM

samples using the Kurzweil K2500XS. While sampling takes more prep time, he feels it is creatively more flexible. Desmond has been looking into upgrading his Pro Tools to 24-bit when Apogee releases its 24-bit A-to-D and D-to-A converters.

Most compositions use up at least 28 channels, and most are mixed to stereo or surround and sent out on DA-88. Desmond has done one Toyota spot in discrete 5.1, to be used as a theatrical trailer.

Functioning as both sound designers and musicians, Roger Bashew and Desmond strive to combine the two elements creatively. "When you organize your sound design from a music perspective, it takes on a whole different character," Desmond says. "Technology takes us to a new creative level, allowing us to integrate musical and non-musical elements to support the visuals in ways never approached before. I also think clients' expectations are higher: They are less impressed by the amount of toys you have and more demanding in what they want. Because of the technology now available, they know anything is possible."

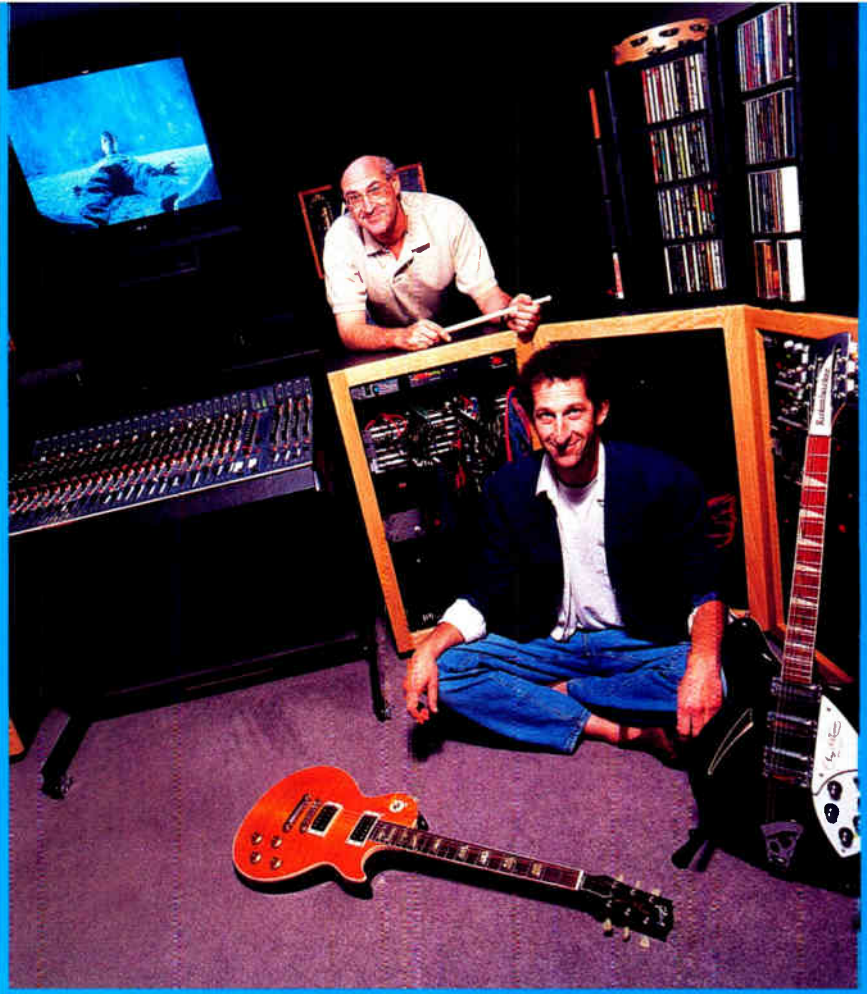
"While technology makes it possible for us to make instantaneous decisions, too many choices can complicate things," adds Roger Bashew. "Technology, oddly enough, doesn't get the job done faster; it just offers more options."

Most of the musical soundtracks are recorded at the individual facilities unless orchestration and Foley are required. Some time this year, the group plans to consolidate, bringing all three musicians under one roof with a brand-new facility that will have a live room, with three writing rooms and a conference room for clients. "I started Bash, Boom, Bang because I wanted to build a music and sound design boutique that would be musically diverse and creatively flexible," John Bashew says. "With this organization, I feel we've been able to strip away the layers that often separate the client from the creative process." ■

Kim Wilson is a freelance writer based in the Los Angeles area.

—FROM PAGE 161, *BAD ANIMALS SEATTLE*

boards to used Neves. By this time, we had already closed Studio A and B, and we found that having one music room just didn't work, especially when you're trying to pay off a \$2.5 million



John Bashew (standing) and Roger Bashew

investment."

Lawson has been a fixture in the Seattle production scene for more than 20 years, beginning as a radio personality at King Broadcasting under the assumed name of Scott Terry. He then worked his way up to production manager at the station, and after three years in that position, he decided to open his own 8-track studio, Steve Lawson Productions. That facility grew into three studios—two 24-track rooms and an 8-track room—by 1985.

Around this time, Lawson was approached by music producer Terry Date, who proposed the idea of coming in at night with music clients. This was the precursor to what was to become Bad Animals: Lawson did commercials by day, and Date did music at night. By 1990, they had outgrown the facility and moved into the old Kaye/Smith Studios.

In 1991, Lawson sold a minority interest in the business to Ann and Nancy Wilson of Heart, and together they built a mammoth recording facility called Studio X. It featured an SSL 4064, two Studer 827s, Sony 3324s and just about any

microphone you could think of. This was the official launch of Bad Animals Studios. Again, the company was split between music production and audio post-production. The studio capitalized to some extent on the popularity of the Seattle grunge scene by hosting a plethora of music acts over the next five years, including Screaming Trees, Heart, Tad, Sweaty Nipples, Soundgarden (two albums), Pearl Jam (multiple albums), and R.E.M. (two recordings).

But by 1997, Lawson realized that the studio was being pulled too hard in the different directions. At the same time, the Wilson sisters decided to take their careers in different directions, according to Lawson, so the Studio X facility was sold to Charlie Nordstrom, who still runs it as a music recording studio.

Now on its own, Bad Animals has a new focus and a new look. Studios A and B, which had been big rock 'n' roll rooms, were converted into three post-production suites called the Blue, Red and Green rooms. The facility also sports a large lounge fitted with a 60-inch TV and 5.1 Dolby Digital consumer

NEW

The Sound Effects of
ROGNY
AND
BULLWINKLE
AND
FRIENDS™

3 CDs
785 Sound Effects



Exclusively
Distributed by:



SOUND IDEAS

105 WEST BEAVER CREEK ROAD,
SUITE #4 RICHMOND HILL,
ONTARIO, CANADA L4B 1C6
TEL: (905) 886-5000
FAX: (905) 886-6800
U.S. 1-800-387-3030
Cdn. 1-800-665-3000
E-MAIL: info@sound-ideas.com

<http://www.sound-ideas.com>

™ & © 1998 Ward Productions, Inc. All Rights Reserved

CIRCLE #117 ON PRODUCT INFO CARD

system, for client approvals. All of the studios feature Yamaha 02R consoles and Avid AudioVision workstations for recording and editing. Sennheiser 416 microphones are used for vocal recording, and engineers lay back to Digital Betacam and Beta SP. For connecting to other studios via ISDN, they use an APT system managed through EDnet, as well as the CCS 2000, which connects easily to the Telos Zephyr. The Telos is the system most widely used by announcers working from home, according to Lawson.

"As far as outboard gear goes, we have a lot, but we don't use a lot," Lawson says. "We do equalization right inside the Avid, and there are two SPX 1000s in the 02R. The 02R is an unbelievably awesome console." The studio has Summit tube EQs, tube preamps and tube compressors, Eventide Ultra-Harmonizers, Symetrix 601s and other effects devices. Power is supplied by Crest amplifiers, and tracks are monitored through Meyer HD-1s and the new Mackie HR 824 speakers.

Bad Animals is currently doing commercials for clients such as McDonald's, Nordstrom, Lamonts and AirTouch Cellular and has been involved in numerous software and CD-ROM projects, including work with Humongous Entertainment on titles like *Putt Putt*, *Fatty Bear* and *Freddy the Fish*. The studio also does a lot of television work, including four seasons of sound design and mixing for *Bill Nye the Science Guy*, for which they have won two straight Emmys for sound.

Not all the work, however, is conventional. Crow's Nest Entertainment hired the studio to design a recent installation for CompUSA in Chicago. Bad Animals was given the task of creating an aural soundscape for the store entry. "The whole lobby has a sound design," Lawson says. "There's light jazz music playing in the lobby, and they have a three-story escalator, and we envelop you in sound as you go up it. There's four speakers going up the length of the escalator on the left and two on the right. So there's conversations going on around you, there's sound effects going on around you. We have the world's first three-story pinball game going on. It was really fun to work on that one."

Much as he would like to extend into more feature film work, Lawson admits that even with all of the film production work being done just north of Seattle in Vancouver, there is little or no offshoot work coming across the bor-

der. "The border could just as well be an Iron Curtain," he says. "Part of it is that the Canadian government and the province of British Columbia have really made the film industry their focus tax-wise and support-wise. The funding sources in Canada have been instrumental in saying, 'We'll fund your movie, but you're going to film it and do the post-production in Canada.'

"And L.A., even though it is so close, is really far away," he adds. "Just as Canada made a push to keep the film work there, so L.A., too, is making the push to keep everything in L.A. They were losing work like crazy." Still, Bad Animals has attracted national clients like Disney, Showtime and Paramount for remote ADR sessions and the like, and Lawson plans on further expanding into feature film and TV audio post-production in the years to come.

Lawson quickly points to his staff as being his greatest asset for turning over projects quickly and efficiently, adding that the greatest challenges are sometimes the most fun. "Dave Howe is our senior sound designer who came up to Seattle from Orlando for the lifestyle and pace of the Pacific Northwest," he says. "People have been trying to woo him away to Los Angeles and New York since he's been here, but he wants to stay here. Sound designers Gary Littell (formerly of Waves in Los Angeles), Mike McAuliffe and Suzie Brutke have also done an incredible job, as has the rest of the team."

On one occasion, they received a half-hour sound design and editing project that was delivered to them two days before deadline. They got the final locked print of the show at 4 in the afternoon the day before it was to be broadcast. "We had to feed it at 3 a.m. to New York so they could put the commercials in," Lawson says. "It was called *Incredible Inventions and the Search for Flubber*, hosted by Bill Nye, that talked about various inventions over the years and had clips of the movie edited in. It was one of those projects that was really tight for time, but I was extremely pleased with the way it turned out. The biggest reason for our success is that we really focus on the team approach and our clients' needs. Everyone here is extremely seasoned. It's pretty hard to throw a curve ball at them. When they swing the bat, they hit the ball." ■

Tim Moshansky is the author and publisher of the A-Z Guide to Film Production Terms.

Fill Your Rack With Switchcraft®...



Introducing the Front Access Patchbay Series... an exciting new reason to make Switchcraft your source for audio panels.

Our innovative front access patchbay gives you space where you've never had it before and convenience you've never dreamed of, in a quality package you've come to expect from Switchcraft. Our heavy duty slide-out tray gives you access to the 96 nickel-plated steel frame jacks **from the front** of the unit.

But that's only the beginning! See the photo above for all of the features and benefits, which make this panel

ideal for use in studios, tape editing rooms, mobile facilities and anywhere space is limited.

While you're at it, check out the patching products below. Don't forget our high quality patchcords, and industry-standard Q-G® microphone connectors.

Switchcraft is your one-stop shop for all of your broadcast interconnect needs. Call (773) 792-2700 ext. 243 today for a copy of our Audio Video Products catalog.



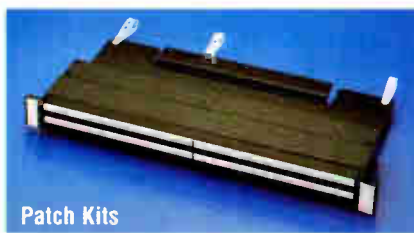
- 1/4" Nickel-plated steel frame jacks
- Rugged cable tie bar
- 3 1/2" or 1 3/4" panel height



- TT Nickel-plated steel frame jacks
- Rugged cable tie bar
- Extra wide labeling strips
- 1 3/4" panel height



- Extra wide labeling strips
- Fully-wired with EDAC connectors



- Choose from a variety of normalizing configurations
- 3 1/2" or 1 3/4" panel height (1/4" or TT)

Switchcraft®

5555 North Elston Avenue • Chicago, IL 60630
(773) 792-2700 • Fax: (773) 792-2129

Switchcraft® - Consistently Excellent Since 1946SM
www.switchcraft.com

SEE US AT NSCA BOOTH #161

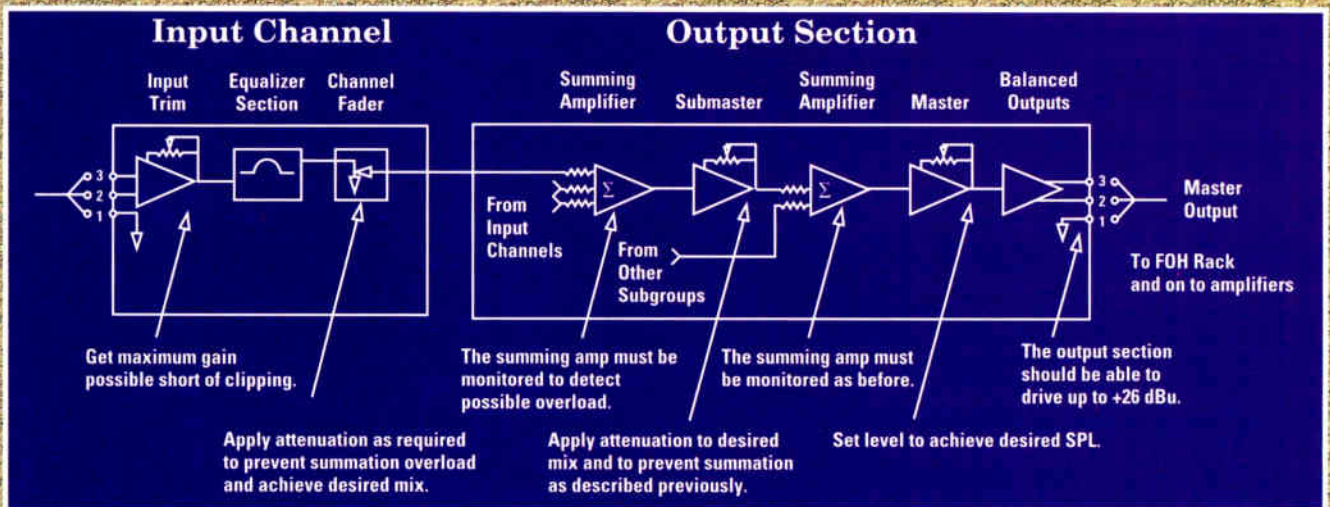
CIRCLE #118 ON PRODUCT INFO CARD

by Bob McCarthy

HOW TO MANAGE

SOUND

Navigate a Safe Course Between



The successful management of sound system gain structure may be likened to the task of piloting a ship down river to the sea. As captain, you must steer a course between the ominous Cliffs of Clipping and the sand bars of Noise Floor Shallows. When piloting a sound system, you must steer each signal channel through the mixer, processors and amplifiers and out into the open auditorium. At every stage, gain must be sufficient that you neither lose control and crash into overload, nor run aground into noise.

SYSTEM GAIN STRUCTURE

Gains and Losses, Clipping and Noise

You can think of gain structure as directions for getting from point A to point B. At each stage you need gain (+), loss (-) or unity gain, which is neither gain nor loss. Successful gain management depends on using these three tools appropriately.

GAINS & LOSSES

Gain is needed in two places. Gain at the microphone preamp amplifies delicate mic-level signals, measured in millivolts, up to line-level signals in the 1- to 10-volt range. The second place we need gain is at the end of the signal chain at the power amplifier, where the signal voltage and current are increased to speaker level. Gain may also be useful at other points in the system—gain is always “nice to have”—but it is not always necessary and can easily be misused.

Attenuation, or loss, is also necessary in two places. Wherever multiple channels are summed together, as in a subgroup or matrix, attenuation allows for control of the relative levels and prevents overloading any summing stages that follow. Finally, attenuation at the output master controls overall output level into the amplifiers.

Unity gain is the standard for most other places in the signal chain. Inputs and outputs for equalizers, delay lines, outboard gear and other processing gear are typically unity gain. To explore all the possibilities, let's follow the gain structure path in a typical sound system.

THE MIC PREAMP

The mic preamp must have enough gain to bring the signal up to line level. How much gain is enough? Just enough to almost clip the preamp on the loudest signal. Shout, bang on a drum, or get a musician to crank up his or her instrument and increase the preamp gain until it overloads. Decide on the overload point by means of an LED clip meter or your ear, not a VU meter (see sidebar for more on monitoring). Back off the mic pre gain a few dB to protect against a musician's ability to turn up further.

Why so close to the clip point? Console audio circuits typically exhibit lowest THD figures and highest S/N ratio just below clipping. One of the most common and costly gain structure errors occurs at this first step when you set

gain such that signal level at the mic preamp peaks at around 0 dBu (0 dBu = .775 volts). If the signal only reaches 0 dBu and the board can reach +26 dBu, you have given away 26 dB of S/N ratio and will be operating with higher average THD.

Don't give away usable gain at the mic preamp. Signal-to-noise ratio lost here can never be recovered, and if you have to bring the level up later you will bring noise up too. Set the input gain for the biggest peaks in the program material. If the musicians get really carried away you may have to back off the preamp, but you will probably notice flashing red LEDs long before you hear serious clipping.

SUMMING CHANNELS

In a very simple signal chain (such as a one-microphone or tape-playback setup) you can run every stage of the signal path from mic pre to amplifier at unity gain—there is little chance of clipping. But when you sum multiple inputs to a subgroup or auxiliary bus, and then sum multiple subgroups to a master, the combined energy of the signals will usually exceed that of the individual channels. Individual channel attenuation may be required in order to prevent overloading the summing stages.

OUTBOARD GEAR

Next in the signal chain are the various processing devices, such as external equalizers, delay lines and speaker processors. These devices are generally run around unity gain.

Digital devices such as delay lines can cause gain problems for the unwary. In digital devices, distortion rises dramatically in the “lower” bits; the noise specs of even the best devices are not as good as for analog circuits. So it is critical to drive the input hard, just like for the mic preamps described above. However, in an effort to force users into the upper bits some manufacturers set up the gain structure in their digital audio devices with 20 dB of gain at the input and 20 dB of loss at the output. Total gain is unity, but this +20/-20 arrangement makes it impossible to use the last 20 dB of headroom in the “upstream” driving devices. If your digital devices have input level controls, adjust the input and output stages to true unity and drive the devices at line level.

Radial Direct Boxes

TRUE TO THE MUSIC

- Flawless harmonic transmission
- Phase accurate beyond compare
- Less than 0.3dB deviation ~40kHz
- Built for the abuse of pro-touring

The Radial JDI

Jensen transformer equipped features a warm Bessel curve and zero-phase deviation. Ideal for keyboards, guitars and bass rigs.



"It should be called the un-DI - so clean you don't even know it's there!"
Will Lee
World's Most Dangerous Band

The Radial JDV

Class-A active transformerless design with vintage front end. Constant voltage supply, ultra-low noise circuitry. Ideal for all acoustics and electrics.



"More transparent and natural than all others"
Grant McAree, FOH Engineer
K. d. lang

The Radial JD4

4 channel JDI for keyboards, features front and back access jacks, pad, merge, polarity flip, filter and ground lift. Welded 14 gauge steel.



"Finally, a great sounding DI that surpasses the actives"
Gary Stokes, FOH Engineer, Sarah McLachlan



CableTek #114 - 1585 Broadway, Por. Coquitlam, B.C. V3C 2M7
Tel (604) 942-1001 Fax (604) 942-1010 e-mail: cabletek@sprynet.com

CIRCLE #119 ON PRODUCT INFO CARD

MONITORING GAIN STRUCTURE

A ship's captain has instrumentation available to ensure the safe passage of the ship. Radar can read the distance to the rocks, while sonar tracks the depth below the keel.

An audio engineer must choose his or her instruments for monitoring gain structure carefully. VU meters are visually appealing and widely available, but they suffer from some incurable ailments. First, VUs offer a usable range of only 20 dB, while the typical mixer has at least 100 dB of dynamic range. Furthermore, VU meters are usually calibrated so that 0 VU is around 0 dBu, which means there is 26 dB of usable range above the "red line" of the meter. Finally, VUs are too slow to accurately monitor signals with fast peaks. A hi-hat transient may overload its channel and yet the meter may only reach -10 dB. A pure-toned instrument, such as flute or organ, can pin the meter yet the signal may be totally clean. A VU meter on your console is like having a depth finder on your ship that only reads a small range and can't see sharp objects rising from the depths.

Peak LED meters that show the full range of the mixer's output are a better choice. They have a faster response and wider range, and are much more accurate than VUs. In a pinch, a clip LED alone can tell you what you need to know.

"UP 'SCOPE"

A useful, if underused, tool for gain structure monitoring is an inexpensive oscilloscope, which allows you to watch the music signal continuously and simultaneously monitor for clipping. Also, a 'scope does not have the slow ballistic characteristics of VU meters, which are notoriously slow to move. Feed the 'scope with a pre-fader solo bus signal, which allows you to check all points in the signal chain without repatching. Monitoring pre-fader (PFL) is important so that you can see the actual voltage levels.

Regardless of which tool is used, it is critical to establish what points in the signal chain are being monitored. Are they pre- or post-fader? Are there ways in which the system can be overloaded without being de-

tected? Any system has its overload point, but let's make sure we know about it if it does. Here's how.

Put in a sine wave and crank up the input preamp to just below clipping. If the fader is at 0 dB you should be in the neighborhood of +24 or +26 dBu in the channel direct out. If you have VU meters they will be pinned. Forget about them and find something that can measure dB. A VOM, oscilloscope or analyzer will do. If you don't have any instrumentation at all, use your headphones and listen for audible clipping (the addition of odd harmonics to the fundamental). Use the solo bus, but turn the headphones way down so that the clipping is only in the signal chain, not the headphone preamp.

If you set all submasters and masters to 0 dB, the output level should be the same at each stage and there should be no clipping. Check them on the solo bus. If they are not the same then the mixer's silk-screened markings do not match its actual response. Adjust faders to their actual unity gain positions.

Now let's find out if overload is detectable at the summing stage. If the input channel fader has range above the 0dB mark set it to +6 dB. If not, get a "Y" cord and patch the tone generator into a second channel and set its level identical to the first. Route both channels to the same submaster. The level into the submaster has now been raised 6 dB—it should overload. Check at the submaster and see if your metering indicates clipping. Now turn down the submaster by 6 dB. The level at the submaster output has been reduced, but is it still clipping at the submaster input? Listen and check the metering. If you hear clipping but it is not shown on the meter, you have a problem—the summing amplifier is not monitored by your meters and can be overloaded without warning. This occurs when the monitoring point is post-fader. In such a case there is no danger as long as you run your submasters at 0 dB, where pre-fader = post-fader. But this limits your ability to mix if you can't safely turn down your submasters. Fortunately, most modern consoles do not have this problem, but beware.

—Bob McCarthy

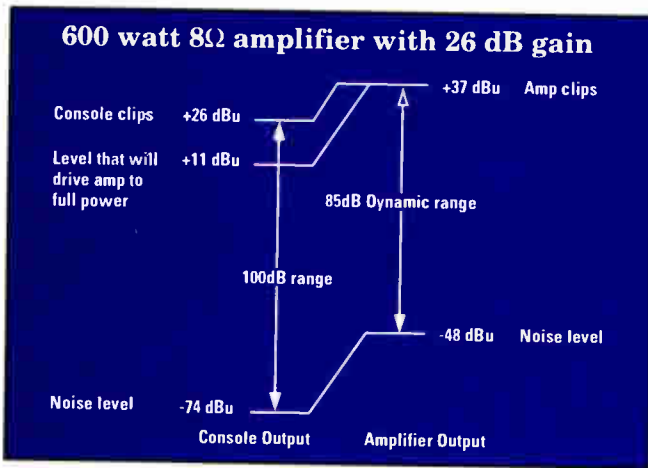


Figure A

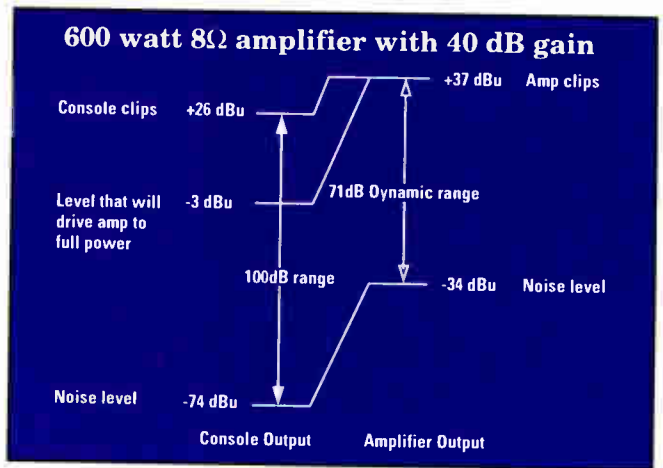


Figure B

The above figures demonstrate the effect of amplifier gain on dynamic range. In both cases, a 600-watt amplifier is used. Therefore the maximum power remains constant.

In Fig. A a voltage gain of 26 dB is used, which leaves 15 dB of headroom at the mixer output and a maximum dynamic range of 85 dB between amplifier clipping and the noise floor. In Fig. B the amplifier gain is increased to 40 dB. This creates 29 dB of headroom at the mixer output, yet the overall dynamic range is reduced to an undesirable 71 dB due to the large increase in noise amplification.

Change the course of music history.

Hearing loss has altered many careers in the music industry. H.E.A.R. can help you save your hearing. A non-profit organization founded by musicians and physicians for musicians, music fans and other music professionals.

H.E.A.R. offers information about hearing loss, tinnitus, testing, and hearing protection. For an information packet, send \$10.00 to: H.E.A.R. P.O. Box 460847 San Francisco, CA 94146 or call the H.E.A.R. 24-hr hotline at (415) 773-9590.



CROSSOVERS

Most professional systems are bi- or tri-amplified and include a crossover between the console output and the amplifier inputs. Many modern sound systems include speaker controllers, proprietary devices that are matched to the speaker cabinets and components and generally include crossover, limiting, equalization, delay and phase-correction circuitry. In addition to tailoring the sound of the speakers to a consistent standard, speaker controllers provide the facility to adjust levels in each listening area independent of the console output levels, which allows for standardized amplifier gain settings. Since speaker controllers do not have a flat frequency response, driving them at unity gain is not always necessary. For a two-way crossover or controller, set the input level so that the crossover point is at unity gain.

POWER AMPLIFIERS

The last point in the line-level control signal chain, the power amplifier converts the signal to speaker-level. This is the point in the system at which gain calculations get most complicated.

As an example, let's use a power amp rated at 600 watts into an 8-ohm load, which represents a voltage drive level of +37 dBu. A 300-watt amplifier

Barry Bongiovi

Photo: Robert Simko

on BASF tape

"BASF 931 performs beautifully on all our 48 track digital machines... giving us consistently lower error rates, precise tape tracking, and a smooth tape pack."

Barry Bongiovi is the general manager of Right Track Recording, one of New York City's busiest recording facilities... studio credits include albums with **Alice in Chains, Metallica, David Bowie, Pat Metheny Group, Jon Bon Jovi, Toni Braxton, The Fugees,** and **Venessa Williams.**

EMTEC Magnetics

Distributed in North America by EMTEC Pro Media, Inc. © US 1-888-295-5551 Canada 1-800-205-0070 or visit our web site at www.emtec-usa.com

CIRCLE #1 World Radio History CARD



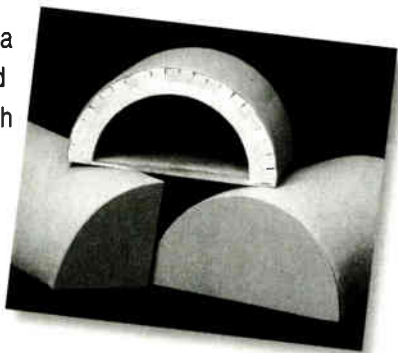
BASF DM 931 is an IEC compatible tape for DASH, PD and Magna-D recording. DM 931 is mechanically robust for signal stability, with exceptional coating smoothness for minimal wear after hundreds of passes.

 **BASF**



If only they'd work on your mother-in-law.

Geometrix sound absorbers can turn a lion's roar to a cat's meow. Constructed from 1" thick acoustical glass fiber with wooden supports, they are covered with Guilford of Maine fabric in your choice of 60 colors. ▲ Wall, corner and ceiling applications. Standard size 16" diameter x 48" high. Other lengths available ▲ .84 absorption at 125 Hz. Outstanding performance in all frequency ranges. ▲ Come to think of it, don't know why they wouldn't work on your mother-in-law. But you might have to buy two. ▲ Call for details and spec sheet.



Toll Free

1-888-765-2900

Acoustics First Corporation

2247 Tomlyn Street
Richmond, VA 23230-3334 USA
Fax: 804-342-1107
E-mail: acoustics@i2020.net
Web: <http://www.acousticsfirst.com>

CIRCLE #123 ON PRODUCT INFO CARD

PROJECT STUDIO EXPERTS



WORLDWIDE DELIVERY

The Largest Selection Of The Best Products In The Business



- ▶ DIGITAL & ANALOG MULTITRACKS & CONSOLES ▶
- ▶ EFFECTS, MONITORS, MICS & PRE-AMPS ▶
- ▶ KEYBOARDS, GUITARS & ELECTRONIC PERCUSSION ▶

CALL NOW

800-264-6614



OUTSIDE U.S.- 860-442-9600

FAX: 860-442-0463

CARUSO MUSIC

94 State Street ▶ New London, CT 06320 USA ▶ E-mail: sales@caruso.net ▶ <http://www.caruso.net>

CIRCLE #124 ON PRODUCT INFO CARD

creates a voltage drive level of +34 dBu (half the power, so 3 dB less), etc. A typical line-level device will drive up to +26 dBu, so we need a minimum of 11 dB of gain in the amp. With this amount of gain, the line-level devices and the amplifier would clip at the same time. This, however, is not desirable. The best scenario is that the amplifier clip first. In a bi-amplified system, the harmonic distortion caused by clipping in the low-frequency amplifier is filtered by the LF driver, which cannot reproduce the higher harmonics. However, if the clipping occurs before the crossover the distortion harmonics are passed to the HF driver, where they are clearly audible.

If we add 15 dB of gain to the amp for a total of 26 dB of gain, the amp will clip long before the line-level stages, unless there is already excessive attenuation in the gain structure.

Why not get 40 or 50 dB of gain? Then you won't have to even think about clipping any of the line-level stages. It is true that no line-level clipping will occur, but it also true that the quietest operating area of your mixer, the last 30 dB before overload, can no longer be used without running the amp into clipping. Remember that the amplifier raises the noise and signal together. Keep the amp gain under 30 dB and you will do fine.

Correct gain structure is easy to understand in theory, but once you start juggling 48 inputs, eight subgroups, eight outputs, delay lines, equalizers, controllers and amplifiers it can easily get out of control. A common mistake is to try to accumulate losses through a complex signal chain and then add makeup gain at the end. While this conservative approach prevents overloading in the line-level stages, it will raise noise levels.

The best strategy is a methodical approach. Get your gain early. Squeeze it down just enough to get through the summing stages. Then you have clear sailing to the amplifiers where they will give you full power and leave the noise in your wake. Bon Voyage! ■

Bob McCarthy is an independent engineer specializing in sound reinforcement alignment and design. He teaches Meyer Sound's SIM course and has written four books related to sound system alignment and design. He can be e-mailed at bobmcc@sirius.com.

PERFECT POWER.



4 AMPS THAT ARE AS SPECIALIZED AS YOUR SPEAKERS.

If all speakers were identical then maybe you would need only one type of amplifier. However, today's sound systems are comprised of complex multi-way speakers using high-power subwoofers, horn-loaded mid-ranges, and high-frequency compression drivers. Our four newest PowerLight™ amplifiers are designed to give each one of these speakers the right power for peak performance. So stop by a dealer near you for some ideas on how you might power your system, perfectly.

"HEAR THE POWER OF TECHNOLOGY"

| Model | Watts per channel | | |
|--------|-------------------|------|------|
| | 8Ω | 4Ω | 2Ω* |
| 1.0HV | 300 | 500 | NR |
| 1.5 | 450 | 700 | 500 |
| 1.6HVX | 450 | 700 | NR |
| 2.4MB | 1000 | 1500 | 2400 |

*3KHz, 1% THD

PowerLight™ 1.0HV

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

PowerLight™ 1.5^X & 1.6HVX

Tailor made for bi-amping your monitors or your mains, the PowerLight 1.5X and the PowerLight 1.6HVX offer a high-power channel with a high-efficiency Class H output circuit to power low frequencies, paired with a medium-power channel with an ultra low-distortion Class AB circuit to power high-frequencies channel. Built-in crossovers can also be added.

PowerLight™ 2.4MB

The PowerLight 2.4MB mono-block is a single channel amplifier that delivers 2,400 watts at 2 ohms while operating from a single 15 amp 120v AC circuit. It is ideal for driving multiple sub-woofers (up to 600 watts each to four eight-ohm drivers) as well as allowing an odd number of amplifier channels to be configured in a system.

*PowerLight™, "PowerWave" and "Hear the Power of Technology" are trademarks of QSC Audio Products, Inc. "QSC" and the QSC logo are registered with the U.S. Patent and Trademark Office. PowerLight Patents Pending. QSC Audio Products, Inc.: 1675 MacArthur Blvd., Costa Mesa, CA 92626 USA

World Radio History



QSC
AUDIO

www.qscaudio.com

CIRCLE #125 ON PRODUCT INFO CARD

NEW SOUND REINFORCEMENT PRODUCTS FROM WINTER NAMM

OUR ROVING CORRESPONDENT PICKS A BAKER'S DOZEN

The Winter NAMM show is the annual showcase that determines which sound reinforcement products will appear in retail outlets across America and around the world. Because its traditional winter home in Anaheim is undergoing renovation, Winter NAMM '98 moved to the Los Angeles Convention Center, familiar to many attendees and exhibitors as the site of the November 1996 AES show. This writer found the change of venue unfortunate. Gone was the casual campus atmosphere; the Jolly Roger, the Candy Cane and the Anaheim Hilton lobby at midnight were all missed. The good news was that the spacious West Hall had room for all those pro audio manufacturers whose senior status among exhibitors and/or clout saved them from banishment to NAMM's marketing Siberia, a basement hall that constantly reverberates to the sounds of conga



Beyer MCE-94



Beyer TG-X 10

new products and returned with this 13-manufacturer selection.

AKG (Nashville, Tenn.) showed the new IVM1 wireless in-ear monitor system (\$4,500). It includes Individual Virtual Acoustics (IVA) DSP that implements binaural sound effects and allows custom response curves to be tailored for individual

Beyerdynamic (Farmingdale, N.Y.) introduced four new wireless systems. The U400 and U500 UHF systems (each includes a handheld dynamic mic) are priced at \$1,999 and \$2,100, respectively. The new V200 and V300 VHF systems are almost half those prices. Beyer also introduced the 90 Series of studio,



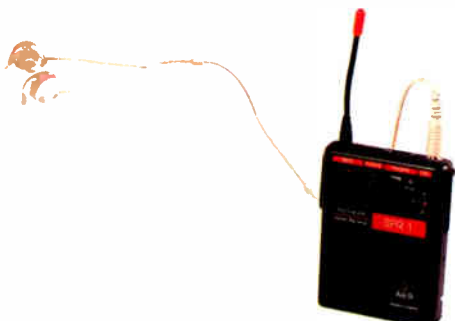
BSS Opal DPR-944

drum and Karaoke demonstrations. Undeterred by smoke machines and disco lights, I dutifully scoured the aisles in search of interesting

users. The frequency-agile IVM1 operates on one of 16 frequencies in the 766 to 952MHz range. AKG also introduced the WMS 60 VHF wireless mic system, available with four different capsules: the D880 from the AKG Emotion Series and the D3700, D3800 and the C5900 from the company's Tri-Power line. The WMS 60 operates on one of 12 frequencies in four frequency groupings from 138 to 250 MHz. Other big news from AKG is that prices for C-535 and C-3000 microphones have been slashed to \$322 and \$438.

handheld and instrument cardioid condenser mics (at prices from \$649 to \$599). A fourth member of the 90 Series, the MCE-94 instrument mic, can run on battery power. Finally, Beyer's new TG-X 10 (\$239) is a small supercardioid dynamic with an integral stand mount.

BSS (Nashville, Tenn.) introduced the newest and most intriguing member of the Opal series of rackmount processors. The DPR-944 (\$899) has four independent channels of dynamics processing. The two gates have parametric key filter control, and the two compressors each have a single parametric



AKG IVM1 wireless in-ear monitor system

BY MARK FRINK

—CONTINUED ON PAGE 185

TOUR PROFILE

ELTON JOHN

Big Sound for "The Big Picture"

Elton John's 30-year career is as stuffed with superlatives as his closets were once full of outlandish costumes (in recent years John has raised millions of dollars for AIDS charities by auctioning his clothes and personal possessions). He has successively broken sales records set by Elvis, The Beatles and, now that sales of "Candle in the Wind 1997" stand above 31 million units, Bing Crosby. 1995 saw sales figures of 12 million for his own records, plus another ten million for the Oscar-winning soundtrack to *The Lion King*, plus Grammy, Golden Globe, Brit, Polar Music, ASCAP and BMI awards. Topping off an extraordinary year, Elton John appeared on the 1995 Queen's Honor List as a newly minted Commander of the British Empire. Now 50 years old, the recently knighted Sir Elton John CBE shows no signs of slowing down and, several months into a world tour currently scheduled to continue into 1999, brought his seven-piece band into Oakland's New Arena in early February. *Mix* spent an afternoon and evening in the New Arena observing the setup, sound check and show.



PHOTOS STEVE JENNINGS



Front L to R: Alan Richardson, monitor mix engineer; Clive Franks, FOH mix engineer; Mark Dowdle, system engineer. Back L to R: Kirk "Eek" Shreiner, sound technician; Tom Foehlinger, sound technician.

HANG 'EM HIGH

P.A. and control systems were all supplied by Clair Bros. (Lititz, Pa.). To achieve 360-degree coverage, system engineer Mark Dowdle hung 80 Clair S4 cabinets in 12 "bumpers," each bumper comprising two columns between two and five cabinets deep. Six long-throw P-type S4 cabinets were hung per side, arranged three across in the top two rows of the three innermost columns. All of the remaining

S4s were the standard F-type. The "high hang" configuration, a Clair Bros. staple for arenas, relies on a half-ton chain hoist motor on each bumper to pull the lowest cabinets back and create a smoothly arced profile. The curved form not only helps create even coverage of the floor area, but it also improves sight lines for the most elevated audience sections.

Though the lowest S4 cabinets were angled down at the arena floor, a row of four Clair P2 cabinets suspended from a down-stage lighting truss supplied more focused front fill coverage. "The coverage is very precise," explains Dowdle. "The high-frequency coverage is aimed so that it matches up to the lip of the stage, which keeps the P.A. mix out of the vocal mics."

"Tuning" the P.A. system for the room was a joint effort by Dowdle and Clive Franks, who has been Elton John's FOH mixer since the early '70s. Dowdle made a first pass at EQ'ing the system using CDs as a test signal, and Franks then created a set of EQ curves using his own voice as a test signal through a Shure Beta 87, Elton's vocal mic. Since the P.A. was divided into six

"zones"—left and right short throw,

BY CHRIS MICHIE

—CONTINUED ON PAGE 188

ALL ACCESS

CHUMBAWAMBA

All Access
'97-'98
tour

CHUMBAWAMBA



TEXT AND PHOTOS BY STEVE JENNINGS



With a radio-friendly hit, "Tub-thumper," topping charts around the world, Chumbawamba has been touring extensively since October last year, hopping back and forth among Europe, the States and Japan. Mix caught the tour on its third leg, while the band were playing U.S. clubs and arenas.



Only keyboardist/vocalist Lou Watts wears in-ear monitors, the new Shure PM-660s. "I'd heard good reports about it," says monitor engineer, production manager Danny Stead, "so we're trying it out with Lou; she sings in two positions, and she likes the same sound, so it's easier with in-ears. They're custom-molded, so it cuts out a lot of noise onstage, and she can feel kind of closed in. We'll try different things though, like playing with the reverb; with it she feels more alive."



Stead (L) and FOH engineer Neil Ferguson have worked with the band for two and 11 years, respectively. Ferguson also serves as the band's co-producer and engineer in the studio. "Because we've worked together so long on the records," Ferguson says, "I know what's going through their minds; I know what they're after soundwise."



All five singers use Shure SM58 UHF mics. "I chose Shure because I like the sound," Stead says, "and also because of the 64 channels, which are switchable."



This time out the band isn't carrying any FOH gear, though Ferguson specs an Eventide H3000 UltraHarmonizer or a Yamaha SPX990 for use on vocals. The band are also travelling with ADATs, radio mics and drum modules. Ferguson says it's a big challenge working with different mixing consoles for every venue, as four of the eight bandmembers switch instruments and vocal positions throughout the show.



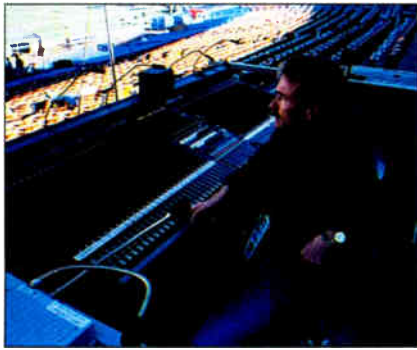
On drums are a Getz mic on kick and snare and various Beyer mics for overheads and on toms. Drummer Harry Hamer wears headphones and listens to a click track from ADAT. "Also on the ADAT we've got six channels for things like reverse cymbal sound, loops like a snare going round and round and other weird sounds that are on the album that you just can't reproduce live," says Stead.



Stead rented a Ramsa SB40 Series monitor board from Electrotec for this leg of the tour, using 26 input channels for a 12-way mix. At his suggestion, the band is now using sidefill monitors.

THE SPORTS PAGE

SPECIAL LIVE SOUND EDITION



SUPER BOWL SOUND

Sound for Super Bowl XXXII was a new contract for Burbank's AudioTek (ATK), which has also provided services for the Grammys, Oscars and Olympic ceremonies. Executive-in-charge Mike Stahl put together a stellar package of personnel and equipment. Heading the design of the entertainment system was Patrick Baltzell, a veteran of all the previously mentioned events. On the first day, I found myself at the top of a ladder with Jim "Redford" Sanders, CS&N's FOH engineer, hanging 70-volt speakers. Under the direction of engineer-in-charge Scott Harmala, site coordinator Bob "NW" Sterne and project manager Paul Liszewski, the equipment was installed over three weeks. They were assisted by Dave Lohr managing the compound and Geep Parker ramrodding the crew.

The speaker system was mounted on 18 custom-fabricated carts ringing the field. Each cart had a column of four L'Acoustic V-DOSC speakers aimed into the stands covering 20 degrees vertically, with each speaker bent 5 degrees from the next. The mix to the V-DOSC speakers was delayed by 85 milliseconds to synchronize with the Electro-Voice 1152 DeltaMax speakers hung under the stage in the center of the field. The speaker carts also had ATK M-5 proprietary double-12 monitors pointing back onto the field. From the lowest stadium section, Baltzell's Yamaha PM3500 controlled the entertainment system on the field, the V-DOSC carts and subwoofers. At the 50-yard line, Mike Parker's PM4000M controlled wedges on the stage and the wireless Garwood IEM mixes. Up in the press booths, a control room was set up for Dan Schipper's Soundcraft Series 5

console for Qualcomm Stadium's scoreboard system and various sub-systems.

TV entertainment engineer Andrew Waterman, engineering his seventh Super Bowl, manned the Neve 8058-FF console in the Le Mobile truck which rolled two locked Studer A-800 24-tracks. Ed Greene mixed halftime on a PM3500, and a Spirit 8-bus handled 24 feeds to the Internet. The live mics heard on the broadcast were shipped to the trucks on QSC's RAVE (Routing Audio Via Ethernet) system over fiber-optic cable.

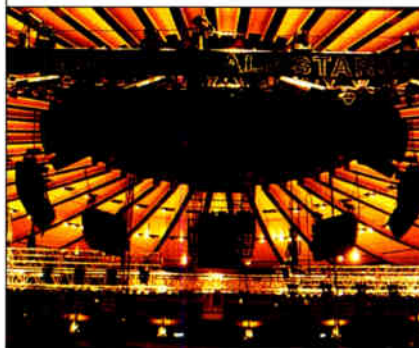
For those still curious about the "live or Memorex" angle to the halftime show, Baltzell says: "Queen Latifah, Martha Reeves, Boyz II Men and the



two young rappers at the top of the show were live, and so was Smokey's introduction of The Temptations."

—Mark Frink

NBA ALLSTAR WEEKEND



Concert-level coverage for Team Up, the game, and live half-time shows was provided by arrays of EAW KF860 loudspeakers positioned above the scoreboard at center court, providing full-bandwidth throw to the furthest seats in the Garden, about 250 feet.

Over the years, the NBA Allstar Game has expanded to include a weekend full of events. This year's festivities, held in February at Madison Square Garden, included "NBA Team Up," a program promoting involvement in youth activities and community service; the show included appearances by NBA stars such as Patrick Ewing, Tim Duncan and young Kobe Bryant, as well as performances by LL Cool J, 98 Degrees, Wyclef and others. In addition, the game's halftime show featured performers from ten current Broadway productions.

Sound reinforcement for the All-Star events was provided by On Stage Audio (Chicago). The system, designed by OSA's Jim Risgin, centered around arrays of EAW KF860 loudspeakers hung above center court. Risgin mixed on a Yamaha PM4000 console with sidecar. Jerome Fox, also from OSA, designed and mixed monitors on a Midas XL3 board. OSA engineer Dan Kasting managed the performers' wireless mics, which included 32 Sennheiser UHF and several Shure UHF systems. ■



The OSA team on hand to provide sound reinforcement during NBA All-Star weekend, court-side at the monitor mix position at Madison Square Garden. Left to right: Dan Kasting, Jim Risgin, Jerome Fax.

PHOENIX

INNOVATION & IMAGINATION

November 13-15, 1998

AUDIO



LDI98...

HEARING IS BELIEVING!

Break the sound barrier and take audio beyond the cutting edge at LDI98, North America's largest trade show for entertainment design and technology. See the best in professional audio equipment by the world's leading manufacturers - past and current LDI exhibitors include: Apex Systems, Clear Com, Crest Audio, Sennheiser/DAS Audio, Eastern Acoustic Works, EVI, GEM Sound, Level Control Systems, Meyer Sound, Neutrik, Professional Audio Systems, Soundcraft/Harman Group, Numark, BGW Systems, Community Professional Loudspeakers, QSC Audio, Samick, Turbosound and Cerwin-Vega.

From hot new products to in-depth workshops and hands-on design tutorials, LDI98 puts the sound in entertainment.



PHOENIX CIVIC PLAZA
Nov. 13-15 (Exhibits)
Nov. 12-15 (Workshops)
NEW! LDInstitute Nov. 9-13

www.etecnyc.net

Sponsored by: *Lighting Dimensions, Theatre Crafts International, Sound & Video Contractor, and ESTA/Entertainment Services & Technology Association*

Together with these other INTERTEC®/PRIMEDIA Publications:
MIX, Millimeter, Broadcast Engineering, World Broadcast News, Video Systems, Electronic Musician and Shopping Center World

PLEASE SEND ME MORE INFORMATION ABOUT **LDI98**

Exhibiting Attending

Name _____

Title _____

Company _____

Address _____

City _____ State _____

Country _____ Zip _____

Phone* _____

Fax* _____

E-mail _____

* Include country and city codes.
LDI98 • Intertec Trade Shows & Conferences • 9800 Metcalf Ave. • Overland Park, KS 66212 • 1-800-288-8606
Fax: 1-913-967-1900. For programming updates as they occur, call FAX-ON-DEMAND at 1-800-601-3858. (Available after June 1st, 1998)

World Radio History

LIVE SOUND

—FROM PAGE 180, WINTER NAMM

dynamic equalizer, similar to those in BSS's four-band DPR-901. In other BSS news, the FDS-355 Compact OmniDrive, Sound Bench PC software and the PPC-900 remote controller are now all cross-compatible, along with the other OmniDrive and VariCurve products. The new Version 1.1 software for the FDS-355 will be available on floppy disk, PCMCIA card or as a download from the Internet (www.bssaudio.com).



Crest Audio V-12 live performance mixing console

co.uk). New features include improved screen graphics, a single edit screen for each EQ band, a new limiter design and a fully implemented Master/Slave mode for operating two FDS-355s in stereo. The PPC-900 remote can also control the TCS-804 delay, which will be included in Sound Bench soon.

The X-Four from Crest Audio (Paramus, N.J.) is the company's most compact and affordable console. The 4-submaster X-Four features true LCR panning, six aux sends (two of them configurable as a stereo pair), four-band EQ with overlapping swept mids and an 80Hz highpass filter. The same EQ is available on the six aux send masters and on the 8x2 matrix, and EQ can also be switched to the subgroups and main mix. "Fader-swap" facility allows the board to be instantly reconfigured as a six-mix monitor desk. Inserts are dual 1/2-inch connectors and feature ground-compensated sends with balanced returns. The attention to detail throughout is obvious. For example, attractive illuminated cue switches appear at the



EAW JH15 monitor

bottom of each strip. The X-Four comes standard with four stereo inputs and is available with 8, 16, 24 or 32 mono inputs; prices range from \$5,000 to \$10,000. The construction features a steel frame, and the board's profile is only nine inches high. Depth is 27 inches, and the largest model is less than five feet long. At the other end of the monetary scale, Crest also showed the new V-12 large-format console, which features 12 VCAs and is loaded with many thoughtful refinements. V-12 consoles and sidecars may be linked for a

maximum configuration of 220 channels. Price is \$82,000 for 48 mono and four stereo inputs.

EAW (Whitinsville, Mass.) unveiled two new speakers. Designed in collaboration with JHE Audio Ltd., the JH15 floor monitor (\$1,299) contains a 15-inch woofer and a 1.4-inch exit compression driver on a large 60° CD horn. Slated for use on the upcoming Page & Plant tour, the JH15 features a steeply angled front baffle, which increases coverage area. The newest addition to EAW's Linear Activation Series is the LA 460 (\$2,399), a compact three-way trapezoidal enclosure. Less than three feet tall, the LA 460 includes the same components as the JH15 plus a horn-loaded 8-inch midrange driver.

Electro-Voice (Buchanan, Ill.) has revamped the N/DYM* line of dynamic mics and now markets them as purpose-designed for specific applications. The four handheld N/DYM models include two cardioid models, the entry-level 267 (\$140) and the female vocalist's 367 (\$200), and two super-cardioid models, the lead vocalist's 767 (\$242) and the top-of-the-line concert vocalist's 967 (\$282). Cardioid instrument mics include the 868 kick drum mic (\$282) and the 168 snare mic (\$182). The classic "egg" mic has been redesigned as the super-cardioid 468 (\$232).

Meyer Sound (Berkeley, Calif.) has completed its line of self-powered speaker systems with the addition of the USW-1P dual-fifteen subwoofer (\$3,900)

1-888-437-6375

CALL US NOW

1-888-437-6375

KEYBOARDS RECORDING PRO AUDIO



SYNTHESIZERS • DIGITAL PIANOS

PRO AUDIO • SOFTWARE

RECORDING GEAR • SAMPLERS

AMPLIFIERS • MIXERS/ EFFECTS

1-888-437-6375

THE NUMBER TO CALL FOR THE ROCK BOTTOM LOWEST PRICES ANYWHERE



HERMES MUSIC
7325 SAN PEDRO
SAN ANTONIO, TX 78216
<http://www.hermes-music.com>

1-888-437-6375

CIRCLE #127 ON PRODUCT INFO CARD

and the UM-1P/UPA-100P floor monitor (\$4,900). (The UPA-100P substitutes a 100°x40° horizontal horn for the UM-1's 45° conical horn.) Based on familiar and established nonpowered products, the Meyer self-powered speaker family now includes a model in every category.

OAP (Buford, Ga.) has added the SM-210 (\$1,279) dual 10-inch wedge to its Stage Monitor Series of floor monitors. This low-profile wedge is only a foot tall and, like its sibling the SM-212, features 6000 Series McCauley woofers and a vertically mounted 2-inch BNC compression driver on a 70°x50° DDS horn. OAP also showed the popular SM-183 three-way drum-box (\$2,594). Loaded with an 18-inch woofer and a separately enclosed coaxial 12-inch with a 2-inch compression driver, the SM-183 sits three feet tall and is angled at 35 degrees, making for a robust package that will please the most demanding drummers.

Sennheiser (Old Lyme, Conn.) showed the new Evolution Series, which includes four instrument mics, two with familiar profiles. The 609 (\$349) features a super-cardioid capsule and emulates the flat profile and frequency response of the now old but deservedly popular MD409. The compact cardioid 604 (\$249) is essentially a re-release of the 504, features an integral stand mount and comes with a clip for attaching it to a drum rim. The largest Evolution mic, the 602 (\$319), is an application-specific cardioid mic for kick drum. The 608



Electro-Voice N/D367
female vocal microphone

(\$299) is the world's smallest super-cardioid dynamic, weighing only 20 grams. The Evolution Series also includes four new handheld vocal mics at prices from \$129 to \$299. The 825 and 835 are cardioid dynamics, while the 845 and the 855 are super-cardioid; the latter of each pair offers more highs.

Rapeo Cable (Jackson, Mo.) showed a new line of small adapters and gadgets called "Blox," each built into 3-inch-long aluminum cases the size of an XLR barrel. Blox models include a cable tester, iso-transformer, phantom supply, pad and passive direct box. Prices range from a low of \$27.64 up to \$129 for the continuity checker with probes. My favorite Blox is the phantom-powered flashlight (\$55.69), which also runs on an internal battery—its red jumbo LED gets attention from across a room, and I've already thought of several uses for it.

NEWSFLASHES

Sound company Electrotec Productions (Westlake Village, CA) acquired a L-Acoustics V-DOSC loudspeaker system from Cox Audio Engineering (Sun Valley, CA). The speakers were purchased after Electrotec used a rented system for Bob Dylan's U.S. tour...Two of Unitel's mobile recording/broadcast trucks have been fitted with Calrec Q2 consoles. Both trucks have been busy lately with projects such as The Grammy Awards, The Billboard Music Awards, the MTV Music Awards and *Wheel of Fortune*...Doug McClement's LiveWire remote truck recorded two performances live for the movie *Blues Brothers 2000*: James Brown's duet with Sam Moore on "John the Revelator" and the finale, a battle of the hands-style competition between the Blues Brothers and the Louisiana Gator Boys, featuring stars such as Eric Clapton, Bo Diddley, B.B. King, Billy Preston, Lou Rawls, Koko Taylor and many others...Pepsi celebrated its 100th anniversary with a star-studded bash on the Big Island of Hawaii. Artists including Ray Charles, the Rolling Stones and Spice Girls performed in a purpose-built tent fitted with an EAW KF860 loudspeaker system provided by On Stage Audio (Chicago). Prodigy's current tour is also using an EAW system: 200 assorted cabinets provided by Concert

Systems of Manchester, UK...BSS Audio reports that Motley Crüe's tour is carrying a BSS Onmidrive FD388 crossover system. Equipment for the tour is being provided by AI Audio of Los Angeles...Gospel group the Gaither Vocal Band is touring with gear provided by Stage II Productions of Alexandria, IN. The tour is using Beyerdynamic U600 wireless mics for vocals...Texas is on tour in Europe using Soundcraft Series Five and SM24 consoles for FOH and monitors, respectively...Todd Rundgren's recent tour is using two Yamaha 03D digital mixers and one ProMix01 console front of house. The engineer is Larry Toomey, and the console was provided by Skip's Music (Sacramento, CA)...The Tea Party's Canadian tour is using gear provided by Jason Sound Industries (Toronto, Ontario)...Jands Production Services (Sydney, Australia) purchased 50 DPA4061 mics from Danish Pro Audio. The mics will be used in a local production of *My Fair Lady*...Country artist Toby Keith is singing into an Electro-Voice N/D767 and a Vega U2020 wireless mic on his current tour...P.A. installation company Eskimo Noise (London, UK) purchased five Klark-Teknik DN8000 loudspeaker processors to be used in clubs in London and Amsterdam. Sound Art (Winnipeg) supplied a Klark-Teknik digital EQ system for Blue Rodeo's Canadian tour. ■



RCF ART 500A self-powered speaker



DRIVE OUR BUSES IN ANY DIRECTION YOU WANT.

You decide where these busses go. Unlike conventional mixers where the busses are fixed, the unique GA (Group/Aux) Diversity features allow you to configure four busses for use as aux masters or group busses to suit different applications. So in the morning, the GA console can be a FOH console. In the afternoon, it's a monitor console. And by night, it's both. The Yamaha GA console is what you make of it.

The GA console, which comes in either 24-input (GA24/12) or 32-input (GA32/12) versions, has some other nifty features as well. You get four band EQ on the

inputs, three band EQ on the outputs, a two-mix matrix, PFL, AFL and channel on/off switches. And, you get the rugged construction, reliability, and sonic performance you have come to expect in a Yamaha console.

What's the fare? All of this flexibility costs only \$2,499 (GA24/12) or \$2,999 (GA32/12) which makes these consoles just the ticket for installations and rental companies with small budgets and big demands. For more information, please call (800) 937-7171 ext. 655 or visit your Yamaha Commercial Audio dealer.



GA32/12
GA24/12

©1996 Yamaha Corporation of America
P.O. Box 6600, Buena Park, CA 90622-6600
For more information, please call (800) 937-7171 ext. 665





"I wish everyone could hear this..."

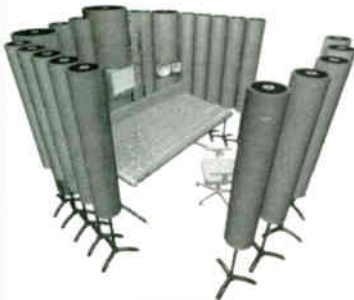
Bruce Swedlen

Barbra Streisand • Michael Jackson • Count Basie • Duke Ellington • Quincy Jones • Edgar Winter



TRACKING

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



MIXING

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

100% SATISFACTION GUARANTEED

800-ASC-TUBE

ASC ACOUSTIC SCIENCES CORPORATION

PO BOX 1189, EUGENE, OR 97440
541-343-9727/WWW.TUBETRAP.COM

CIRCLE #129 ON PRODUCT INFO CARD

LIVE SOUND

RCF North America (Upper Saddle River, N.J.) introduced the ART 500A self-powered speaker. Bi-amplified with 400 and 100 watts, it has a 15 and RCF's 850 2-inch compression driver. This high-powered pole-mount speaker is made of dampened polypropylene plastic and weighs 85 pounds. It has mic and line inputs, XLR loop-through, and EQ contours for Music (+4 dB at 100 Hz) and for Speech (+3 dB at 2 kHz). Other ART models include the lower-powered 400A and the 800AS powered subwoofer. Nonpowered versions are also available for installations.

to, Calif.) has boldly introduced a digital wireless system; a demonstration CD illustrates the sonic differences between cable, analog and digital wireless on a variety of guitars (hey, it was the NAMM show). The X905 system (\$895 for the guitar system) uses 20-bit digital conversion and operates on one of five carrier frequencies from 905 to 925 MHz. The 2U rack-mount receiver has a quad integral antenna inside the chassis, and an LCD screen indicates operating channel, audio level, battery life and the percentage of data being received. The transmitter has a range of more than 200 feet under average conditions and will run for 11 hours on four AA batter-



Symetrix 565E dual compressor

Symetrix (Lynnwood, Wash.) introduced the 565E dual compressor (\$429). Functionally similar to the Symetrix 425, the 565E uses a new Dynamics Squared™ topology to dramatically reduce distortion during gain reduction. The two channels of dynamics processing may be stereo linked and features include expander, compressor and limiter sections with separate threshold controls and LED metering.

Last but not least, X-Wire (Sacramen-

ties, X-Wire also showed a prototype handheld wireless vocal mic. I put on headphones to listen and was amazed to experience wireless transmission without the companding and high-frequency roll-off found in most analog radio transmissions. A handheld digital wireless system will be available in June, priced at \$1,095.

Mark Frink is Mix's sound reinforcement editor.

—FROM PAGE 181, ELTON JOHN

L/R long throw and L/R P2s—the process took some time, but, since system EQ was effected with TC Electronic's 1128 28-frequency programmable digital graphics, settings were easily recalled, compared and updated via a TC 6032 remote head. According to Franks, he typically arrives at a compromise setting based on both his own and Dowdle's preferred curves.

"I've done it that way for years and years," says Franks, referring to his room-tuning method. "I hear harmonics in my voice and in the room—I can hear a harmonic of a note, and if that stands out too much in my voice, then I'll pull that down. When you look at the graphic after I've finished tuning the room, it looks pretty much like a roller-coaster. If a frequency is bad, I'll hack it out...just to make the room smooth. Then I find I have to do very little EQ on each channel."

Franks has tried other "room tuning"

methods, including playing tapes and CDs and using pink noise and spectrum analyzers, but the results have been disappointing. "I've tried not doing it with my voice, but when Elton starts singing, it sounds cloudy or harsh," Franks says. "That never shows up when you just play a CD on its own. It's bizarre, really. [The record has] been so doctored and compressed and mastered that it always sounds good in the P.A., but live—you're starting from scratch each time. In the old days, they would send pink noise through the system at a pretty high volume and then use the graphic to try and get the flattest curve on the analyzer, which technically works, but then it just ends up sounding wrong. I found there seemed to be no life in my mixes. It seemed too flat."

Not content with merely ensuring that the sound at the console was tonally balanced, Franks also used a wireless Sennheiser mic to listen to his amplified voice in different parts of the arena,

Mackie
Dave Abbruzzese
MJJ Production
Bob Rock
Disney Studios
Robert Scovill

Gloria Estefan
TMI Studio
Roy Thomas Baker
Pete Townsend
Neil Finn
Cino Vancelli

WAKE UP YOUR SUBS!!



AND HEAR YOUR MUSIC COME ALIVE.

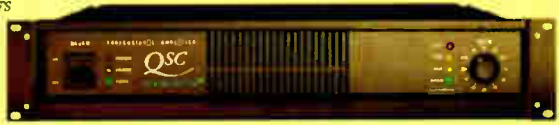
Today's subwoofers demand serious power to perform at their peak. That's precisely why we built the PowerLight™ 2.4MB Mono-Block—a single channel amp that delivers a thundering 2,400 watts of power at 2 ohms while operating comfortably on less than 15 amps (120VAC). It's guaranteed to provide a serious wake-up call to your subs. And since it's a QSC, you won't have to worry about them getting any unexpected shut-eye. To learn how PowerLight technology can bring your music to life, visit our website or call (800)854-4079.

"HEAR THE POWER OF TECHNOLOGY"

| Model | Watts per channel | | |
|------------|-------------------|------|------|
| POWERLIGHT | 8Ω | 4Ω | 2Ω* |
| 2.4MB | 1000 | 1550 | 2400 |

PowerLight™ 2.4MB Features

- PowerWave™ Technology
- Neutrik "Combo" (XLR & 1/4") and barrier balanced input connectors
- Advanced thermal protection
- Computer Control Data Port
- Patented Output Averaging™ short circuit protection
- "Touch proof" binding post output connectors
- Variable speed fan
- Power standby control
- Clip limiter (user defeatable)
- Detented gain controls
- DC, subsonic and thermal overload protection
- Full LED status array



*PowerLight™, "PowerWave™", "Output Averaging™", and "Hear the Power of Technology" are trademarks of QSC Audio Products, Inc. "QSC" and the QSC logo are registered with the U.S. Patent and Trademark Office. PowerLight™ Patents Pending. QSC Audio Products, Inc.: 1675 MacArthur Blvd., Carlsbad, CA 92008



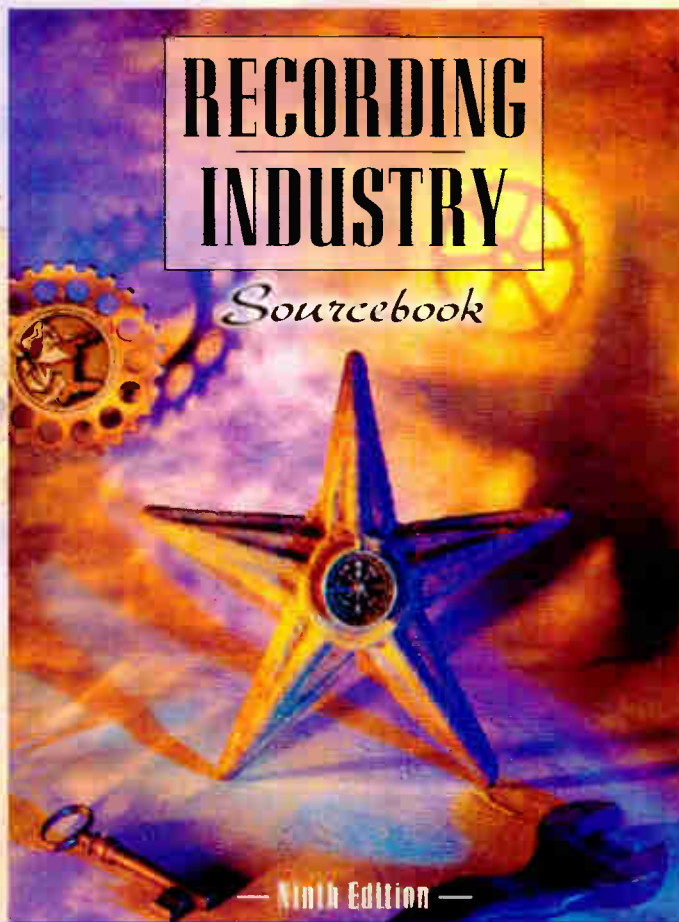
www.qscaudio.com

CIRCLE #130 ON PRODUCT INFO CARD



SERIOUS ABOUT MUSIC?

THE RECORDING INDUSTRY SOURCEBOOK IS THE ESSENTIAL NORTH AMERICAN MUSIC BUSINESS AND PRODUCTION DIRECTORY. FOR THE INDUSTRY PROFESSIONAL IT'S THE PERFECT DESKTOP—OR TOUR BUS—REFERENCE. FOR THE ARTIST, AN INSTRUMENT TO ACCESS THE BUSINESS OF MUSIC.



SOURCEBASE CD-ROM Now Available!

\$69.95 + tax and s/h (\$4.00 std. mail, \$5.50 UPS, or \$10.00 foreign): Item #1244

Buy the pair for \$124.95 + tax and s/h: Item #1244D

NEW to the 1998 NINTH EDITION are streamlined categories to quickly direct you to the information you need. This exclusive industry resource is loaded with essential information, and is clearly defined by tab sections for each category. The SOURCEBOOK's durable, spiral-bound construction will see it through repeated office reference or a cross-country tour.

THE RECORDING INDUSTRY SOURCEBOOK is the complete **SOURCE** for industry contact information, containing over 12,000 listings in more than 53 categories. Production categories include information about rates, equipment, credits, staff and specialties. Business listings include names and titles, phone and fax numbers, styles of music represented, whether or not unsolicited material is accepted and more.

"THE SOURCEBOOK IS THE ESSENTIAL GUIDE TO BREAKING INTO THE RECORDING INDUSTRY. FINALLY, SOMEONE KNOWS WHAT THEY'RE TALKING ABOUT."

SHAWN VEZINAW, TOWER RECORDS

"A MUST HAVE DIRECTORY."

MUSIC CONNECTION MAGAZINE

"INDISPENSABLE"

GUY ECKSTINE, NATIONAL DIRECTOR OF A&R
VERVE/POLYGRAM

Major Labels
Independent Labels
Label Distribution
Independent Distribution
Artist Management
Music Publishing
Music Attorneys
Business Management
Concert Promotion
Artist Directory
Record Promotion
Video Promotion

Public Relations
Music Media
Music Marketing
Record Pools
Copyright Clearance
Performing Rights
Industry Associations
Trade Events
Recording Studios
Remote Recording
Mastering Services
CD Services & Prep.

Record Producers
Recording Engineers
Production Coordinators
Pro Audio Sales
Pro Audio Rental
Equipment Maintenance
Studio Design
Tape Duplication
Record Pressing
CD Manufacturing
Audio Tape Supply
Equipment Manufacturers

Rehearsal Studios
Equipment Transport
Sound/Lighting/Staging
Music Video Production
Video Post
Multimedia Production
Music for Film/TV
Music Supervisors
Music Television
Music Libraries
Photography
Art Design

Digital Imaging
Recording Schools
Live Music Clubs
Airlines
Hotels
Restaurants
Air Charter Services
Limousines & More



ORDER INFORMATION:

\$79.95 plus \$9.95 shipping & handling US Mail; \$11.95 UPS delivery

To order by phone in the US call (800) 543-7771, by fax (800) 633-6219; outside the US: TEL (913) 967-1719, FAX (913) 967-1901 or send a check or money order made payable to: **Recording Industry Sourcebook**.

c/o Interco Publishing, P.O. Box 12901, Overland Park, KS 66282-2901

CIRCLE #131 ON PRODUCT INFO CARD

calling out the offending frequencies to Dowdle at the mix position.

NEW ARENA, NEW SOUND

Franks had initially anticipated difficulties with the sound of the New Arena in Oakland. Home to the Golden State Warriors basketball team, the decades-old facility suffered many of the sonic characteristics common to multipurpose arenas, including long reverberation times at low frequencies and reflections and flutter echoes from the many exposed surfaces, including the glass curtain wall that surrounds the ovoid building. However, the building was completely gutted and remodeled last year. The floor has been lowered, the seating area now extends almost to the roof line, and two levels of box "suites" have been added. Seating capacity is now 19,600, up from 15,000, and all new backstage and technical systems have been installed. The renovation was completed in November 1997, but Elton was the first major musical act to appear in the prosaically renamed New Arena. Franks was agreeably surprised by the new acoustic character of the building and was soon ready for an abbreviated soundcheck. "It's changed dramatically since they've rebuilt the interior," he reports. "It really tightened up the sound."

Typically, the bandmembers soundcheck each day, but Franks does not insist on a full band performance. "I don't like full soundchecks," he says. "It's pointless with everyone pounding away. Just bass and drums—that's all I need. It's got everything, from the lowest lows to the highest highs."

Working with bassist Bob Birch, Franks quickly found any ringing low frequencies and filtered them out with the system graphic EQs. "I then know that when he hits that one note, it's not going to obliterate everything," Franks explains. "Of course, when people come in, then things generally tighten up. You can sometimes open up the crossover and add a few extra frequencies back in."

Franks created the FOH mix on a 56-input Yamaha 4000 and used every input; in fact, Dowdle had to set up a small Mackie board to route CD and other playback sources. For compressors, Franks used dbx 160s for the lead vocal and spare channels, another two dbx 160s for the stereo bass DI, and six dbx 160As on backing vocals and synthesizers. The drums got Aphex gates, and the reverb inventory included a



Elton John's stage monitor setup includes stereo pairs of Clair 12AMs and 2x15 wedges (the downstage units, not shown, sit side by side to preserve sight lines). Screen at upstage edge of piano is for a TelePrompTer.

PHOTO: STEVE JENNINGS

do
they
really
know
pro audio?

A music store is a great place to buy your musical instruments. But sophisticated recording equipment like workstations, tape machines and high end signal processing are not the forte of music stores. Never has been, never will be.

At EAR, professional audio for recording, production and sound reinforcement has been our speciality since 1977. We offer expert advice from veteran professionals in the industry and sell professional audio equipment at nationally competitive pricing.

This business means more to us than just a quick sale. We're here for the long haul.

**PROFESSIONAL AUDIO
IS WHAT WE DO!**

*Digital Multitrack
Audio-Video/Workstations
Recording Consoles/Mixers
Signal Processing
Studio Monitors/Microphones*

EAR
PROFESSIONAL AUDIO/VIDEO

2641 E. McDowell Rd.
Phoenix, AZ 85008
602.267.0600
Fax 602.275.3277
<http://www.EAR.NET>
info@EAR.NET

CIRCLE #132 ON PRODUCT INFO CARD

Take 5.

Selenium Loudspeakers. Now with 5 year warranty.

- 1", 1.4", 2" compression drivers, Phenolic and Titanium
- 8"/10"/12"/15"/18" woofers, reinforced stamped steel and die cast aluminum frames
- Super tweeters, bullet and slot format
- 1", 1.4", 2" throat format horns, flat front constant directivity, bi-radial, exponential diffraction, molded ABS, PP, fiberglass or die cast aluminum.

Complete R&O and OEM solutions available.

ISO 9001 **SELENIUM LOUDSPEAKERS** **5 YEAR WARRANTY**

USA Sales Office and Warehouse: 15 East Uwchlan Ave. #424 - Exton - PA 19341 - USA - Phone: (610) 280-3595
 Fax: (610) 280-3598 - Toll Free: (800) 562-0510 - E-Mail: seleniumUS@aol.com - www.selenium-USA.com

Headquarters: BR 386, Km 435 - 92480-000 - Nova Santa Rita - RS - Brazil
 Tel: +55-51-479-1195 - Fax: +55-51-479-1120 - E-Mail: export@selenium.com.br

CIRCLE #133 ON PRODUCT INFO CARD

Lexicon 480L, two Yamaha SPX1000s, Eventide H3000 and H3500 Harmonizers, a SD3000 Roland delay and two Yamaha SPX1000s. The most recent addition to Franks' equipment list was a TC Electronic M5000, which he first heard when Dave Natale was mixing a Tina Turner show in New Zealand, where Franks has been living since the late '70s. Yamaha NS-10Ms, positioned over the meter bridge, served as cue monitors; a TC 1280 provided EQ and the delay necessary to match them to the P.A. signal's arrival.

Mics onstage included models from Shure, AKG and Sennheiser: All vocal mics were Shure Beta 87s, guitar amps got venerable Sennheiser 409s, and drum mics included an AKG D112 on kick, AKG C3000s for overheads, an SE300B with a CK93 capsule on hi-hat and ride cymbal, and C418s on toms and piccolo snare. The main snare was miked with a Shure 57 on top and an AKG C408 on the bottom. The piano sound was derived from three sources: Yamaha and Roland MIDI devices that sense Elton's keyboard dynamics, plus two Sennheiser 504 mics mounted inside the closed lid.

HERCULEAN MONITOR LEVELS

Elton John is justly notorious for his on-stage monitor levels, and monitor engineer Alan Richardson's setup consisted of two Clair 12AM wedges on either side of the piano bench for vocals only, plus a stereo pair of Clair double 15-inch wedges for the piano and band mix, all driven by Crest amps. The resulting SPLs would bring lesser men to their knees: Elton's middle name—Hercules—seems appropriate.

The rest of the monitor setup was fairly conventional: The band got two 12AM wedges each (driven with Carver amps), except for drummer Charlie Morgan, who took a split of the on-stage mics and created his own in-ear mix. And the two guitarists, Davey Johnstone and John Jorgenson, each had an additional pair of wedges positioned at the stage lip. "We call them the posing wedges," says Richardson, explaining that the extra wedges allowed the guitarists to stalk the front of the stage without leaving the monitoring environment.

Richardson created the dozen or so monitor mixes on a Yamaha PM4000M and EQ'd them with TC Electronic digital graphics, which he adjusted during setup by means of a remote head. Re-

SPEIR MUSIC CO.

800•219•3281

510 S. Garland Ave. Garland, TX 75040
GUARANTEED BEST PRICES!
 New/Used • M-F 9-7, Sat. 9-6

All Major Credit Cards

Customer Service 972-494-1601

CIRCLE #134 ON PRODUCT INFO CARD

IN CLUSTER DESIGN, IT'S ROUGHLY EQUIVALENT TO FINDING THE CURE FOR THE COMMON COLD.



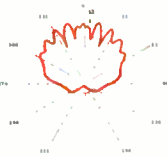
The TRAP Series 407e.

Introducing the TRue Array Principle.[™] System designers have been

trying for decades to make an array of loudspeakers perform like a point source. With less than perfect results.

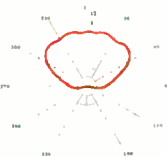
The challenge is combining multiple sources to create a coherent wavefront. Although the mathematical formulas

TYPICAL ARRAY



Problem: Three typical 60° cabinets in tight-packed array. Severe lobing problems.

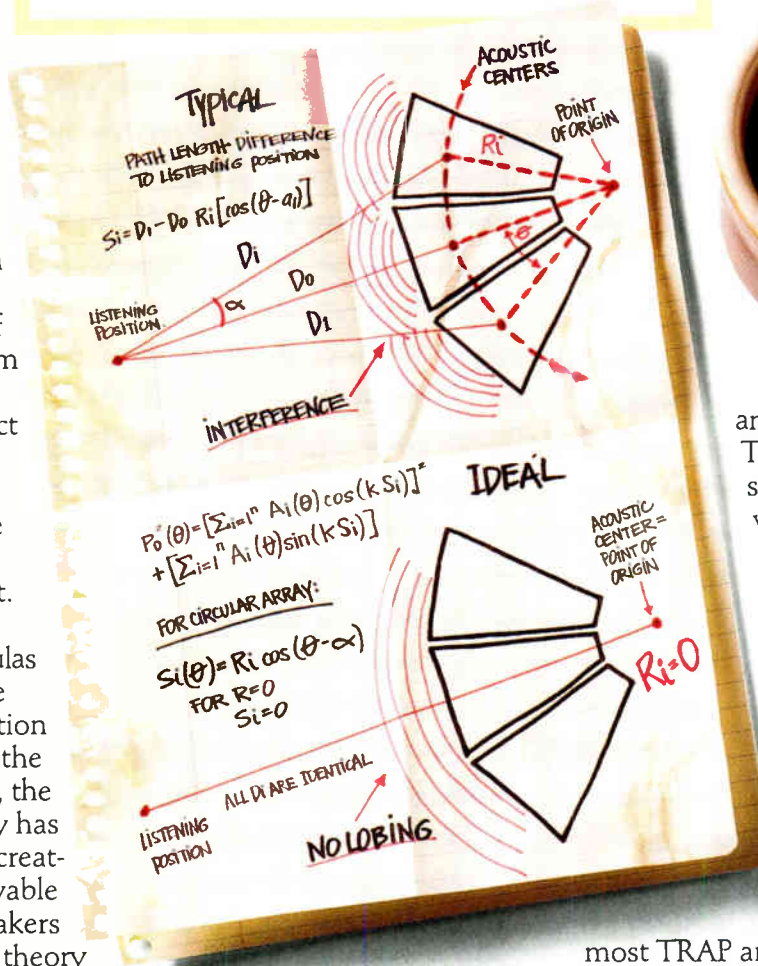
TRAP ARRAY



Solution: Three TRAP 407e cabinets in tight-packed array. Minimum lobing.

for wave propagation point to the solution, the difficulty has been in creating arrayable loudspeakers that put theory into practice.

Until now. Our new TRAP Series[™] loudspeakers deliver near-perfect array performance right out of the box. Simply tight-pack the cabinets—no complicated frequency shading or micro-delay processing is required.



Large, medium and small format TRAP Series loudspeakers cover a wide range of applications. And our easy-to-use flying hardware makes installation safe and economical.

It's even easy to simulate how well they work, because we'll give you EASE data for

most TRAP arrays. Just slip the

appropriate cluster into your design the same way you'd check a single cabinet, and see for yourself.

To find out more about our cure for the most difficult challenge in cluster design, just give us a call.



The Microtrap. The world's smallest arrayable cabinet. Shown at actual size (just kidding.)



RENKUS-HEINZ

17191 Armstrong Avenue, Irvine, California 92614 Phone 714-250-0166, Fax 714-250-1035
Dering Farm, Pluckley Road, Smarden, Kent TN27 8NL, UK Phone +44 1233 770855, Fax +44 1233 770866

CIRCLE #135 ON PRODUCT INFO CARD

EASE and EARS are trademarks of Acoustic Design Ahnert. TRue Array Principle and TRAP Series are trademarks of Renkus-Heinz, Inc. Patent pending. © 1996 Renkus-Heinz.

World Radio History

STUDIO MANAGEMENT

SOFTWARE

STUDIO SUITE™

NOW SHIPPING!

NOW SHIPPING!

↑

↓

Your Studio Name Here

AlterMedia © 1998-98

Tuesday, January 20, 1998 MAIN MENU

| | | |
|-----------------------|---------------------|-------------------|
| CONTACTS | PRODUCTION ORDERS | CALENDAR |
| TAPE LIBRARY & LABELS | SESSIONS | INVOICES |
| SONGS & TRACK SHEETS | MEDIA INVENTORY | RECORDING BUDGETS |
| ROOMS | EQUIPMENT INVENTORY | MAINTENANCE LOG |
| RECALL SHEETS | PATCHBAY LABELS | SAMPLE LIBRARY |
| PART STOCK | TO ORDER | BARCODES |

Mac / Win • Networkable • Relational

Requires Publisher Pro 4.0 (Publisher is a registered trademark of Publisher, Inc.)

Setup Open All Open Preferred Help About

only \$349.

by **AlterMedia™** Call **800/450-5740**

International: 770/303-0970

www.studiosuite.com

email: info@studiosuite.com

CIRCLE #136 ON PRODUCT INFO CARD

YOU MAKE the MUSIC

WE MAKE it EASY!

WRITE FOR YOUR FREE CATALOG TODAY!

GUITARS • AMPS • KEYBOARDS • DRUMS • PERCUSSION
PRO-AUDIO & RECORDING...AND OTHER COOL STUFF!

1-800-800-4654

THOROUGHbred

MUSIC

Mail this coupon to Thoroughbred Music to receive our FREE full color catalog. It's packed full of the best brands and selection! (MM)

NAME _____

ADDRESS _____ ST _____

CITY _____ PHONE _____

ZIP _____

MAIL ALL CORRESPONDENCE TO:
7726 Cheri Court Tampa, Fl. 33634
VISIT ONE OF OUR STORES IN
TAMPA, FL., CLEARWATER, FL., ORLANDO, FL., SARASOTA, FL.,
AND NOW OPEN IN NASHVILLE, TN.
visit our website at <http://www.tbred-music.com>

CIRCLE #137 ON PRODUCT INFO CARD

LIVE SOUND

verb units included a Yamaha SPX900, which Richardson used for a long (3.2 seconds) reverb on Elton's voice, two SPX990s and a Roland SDE 3000. Like Franks, Richardson patched dbx compressors into the stereo bass channels, and he used four channels of gating for the drums.

MUSICAL MIXING STYLE

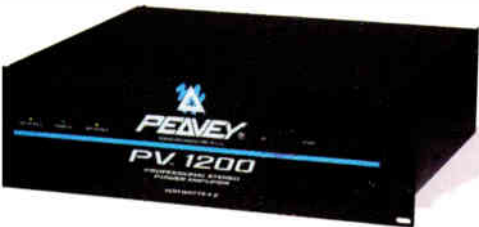
The single Oakland show was a sell-out, and the arena hummed with anticipation as the lights went down and the band took their places. Playing with neither a support act nor an intermission, Elton presented a set lasting about two hours and 40 minutes. Though songs from his latest release, *The Big Picture*, were included, the set consisted mainly of favorites from his extraordinary catalog of chart and radio hits, augmented by an incendiary "Great Balls of Fire" for an encore. With four backing vocalists, additional keyboards and percussion, plus guitarist Jorgenson's occasional contributions on saxophone, steel guitar and mandolin, the sound was full and complex; nevertheless, Franks' mix, though loud, was well-balanced and detailed.

Franks unabashedly admits that his mixing style is more musical than technical. A capable musician—he played bass on one of the three Elton John albums he co-produced—Franks obviously enjoys his job and became totally absorbed in following the musicians' performances and enhancing any spontaneous flourishes. "I listen to stuff possibly in a slightly different way to some engineers," he explains. "I listen to it as a musician; playing four or five instruments myself, I listen to the structure of what is being played and how everything relates to everything else."

Asked for his assessment of the sound of the New Arena, Franks was unequivocal. "Tell them I thought it was fantastic," he says. "It's one of the best-sounding halls that I have played in for a long time. I really enjoyed it, and being a studio-trained engineer, when you're working in an environment where the acoustics are good, it gives you the freedom to express yourself and not have to worry about the limitations. In that room, I could do virtually anything I wanted, and it wasn't a problem. They did a good job, whoever designed it. Congratulations."

Chris Michie is Mix's technical editor.

New Sound Reinforcement Products



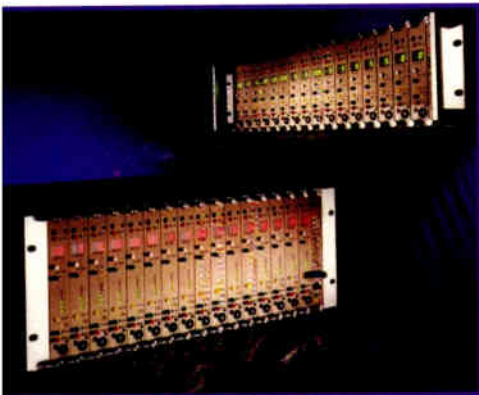
NEW PEAVEY AMPS

Peavey Electronics Corp. (Meridian, MS) introduces the PV™ 1200 power amplifier, rated at 600 watts per channel at 2 ohms, 425 watts/ch at 4 ohms and 250 watts/ch at 8 ohms. Bridged, the PV 1200 will output 1,200 watts into 4 ohms, 850 watts into 8 ohms. Peavey also introduces the PV 500 power amp, which is rated at 250 watts per channel at 2 ohms, 210 watts/ch at 4 ohms, 130 watts/ch at 8 ohms. Bridged, the PV 500 outputs 500 watts into 4 ohms and 420 watts into 8 ohms. Both amps feature Peavey's DDT™ speaker protection, ¼-inch inputs and outputs, and a two-speed fan. Prices are \$549.99 (PV 1200) and \$399.99 (PV 500).

Circle 314 on Product Info Card

CADAC REMOTE MIC SPLITTER SYSTEM

Cadac (Luton, Bedfordshire, UK) has introduced the Remote Microphone Amplifier/Splitter system, which allows for cable runs of up to 500 meters between stage and mix position. Consisting of two rackmount modules—the 16-input Mic Amp/Audio rack and a matching Remote Control rack—the system can accommodate up to 96 mic



inputs (six input racks, six remote control racks). Removable input channel modules provide 60 dB of gain adjustment in 5dB steps, and individual buttons select 48V phantom power and monitor, isolate and mute modes. Once set, local control may be disabled; channel settings may then be manipulated only by remote control via an RS-485 serial interface. The system offers six independent, electronically balanced line-level outputs for each input, up to three of which may be transformer-coupled. Additional features include master global functions for mute, zero gain and lock.

Circle 315 on Product Info Card

APOGEE STAGE MONITOR

Apogee Sound (Petaluma, CA) offers the FS-2 Ultra-Compact Stage Monitor, a relatively compact (22.5x13.6x19.25-inch) wedge monitor containing a 12-inch woofer and 2-inch throat, fluid-cooled HF compression driver mounted on a 40x60° horn. The bi-amped system offers a frequency response of 50 to 19k Hz, ±3dB; maximum SPL is 132 dB at 1 meter.

Circle 316 on Product Info Card

RADIAN ENTERS SR MARKET

Radian Audio Engineering (Orange, CA), best known as a loudspeaker component manufacturer, has entered the professional sound reinforcement speaker market with the introduction of its RP Series. The new loudspeaker range includes five full-range systems featuring coaxial elements and two subwoofers. All Radian models feature 13-ply Baltic birch cabinetry, perforated steel grilles and dual Neutrik NL4 Speakon connectors, and they are finished in waterproof, scuff-proof Duradian.

Circle 317 on Product Info Card

NADY 2-CHANNEL UHF WIRELESS

Nady Systems (Emeryville, CA) has introduced the Platinum 802 Series 2-channel UHF wireless system. Features include dual front-mounted antennae, XLR mic level and ¼-inch



adjustable line-level outputs, and DigiTRU Diversity™. Transmitter options include handheld, lavalier and head mics and instrument transmitters.

Circle 318 on Product Info Card

YORKVILLE UPGRADES ÉLITE SPEAKERS

Yorkville (Niagara Falls, NY) announces upgrades to its elite line of pro audio loudspeakers. New features include ¾-inch plywood construction with internal bracing, anti-resonant grilles, inset handles and connector plates, HF driver protection, Speakon and ¼-inch inputs, ATM Flyware options, integral stand adapters and wheels. Prices from \$499.

Circle 319 on Product Info Card



RECORDING NOTES

PELL MELL
THE TCHAD BLAKE WAY
TO "STAR CITY"

by Adam Beyda
 and Anne Eickelberg

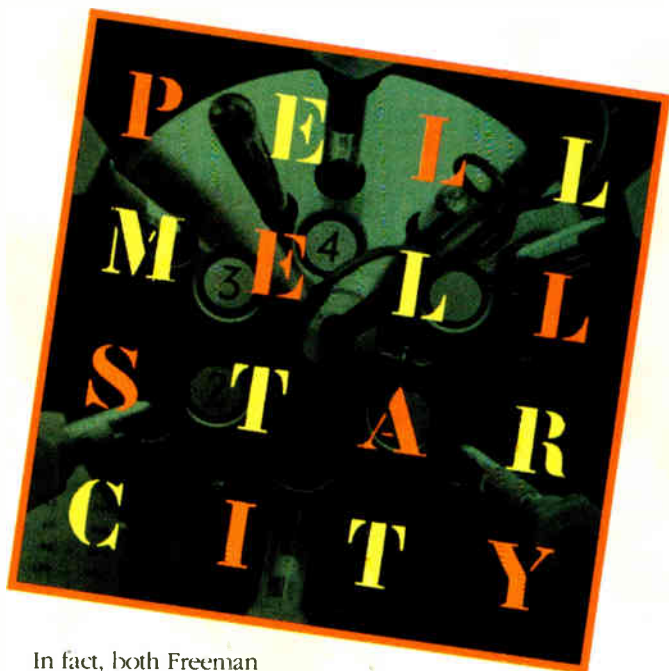
Long before the much-abused, catch-all label "alternative" proliferated, Pell Mell were making forward-thinking and melodic all-instrumental records. The band started in 1980, and for a few years all the members lived in the same state. Then everyone scattered, and Pell Mell reappeared only sporadically—when they felt the urge, the musicians would gather for a few weeks of jamming, then make DIY



PHOTO: GREG FREEMAN

Spalding in the amp bathroom

recordings. They released one EP and two LPs on the SoCal indie label SST before the post-Nirvana signing frenzy landed them a deal with Geffen. The resulting album, 1995's *Interstate*, made the band a college radio staple. They'd recorded the album mostly with engineer Tim O'Heir at the Boston studio Fort Apache but also did much of the recording themselves in bass player Greg Freeman's 16-track San Francisco studio.



In fact, both Freeman and keyboardist Steve Fisk (based in Seattle) are professional recordists. Fisk has produced and/or engineered for Screaming Trees, Beat Happening and the Geraldine Fibbers, and Freeman's engineering credits include Thinking Fellers Union Local 282, Faust and Royal Trux. With this background, it's no surprise that Pell Mell's records, on top of their musical interest, are loaded with imaginative and provocative sonics.

Their gorgeous recent release, *Star City*, is a treasure-trove of strange atmospheres and driving grooves, loaded with both ringing and noisy guitars, scintillating keys and an array of multisource analog bleeps and warbles. It's suggestive of everything from surf to old-school ambient,

and it manages to be simultaneously a sound bonanza and a model of restraint.

Yet even for a band known for exceptionalism, *Star City* was an anomaly. For one thing, it was recorded for Geffen, but soon after it was mastered, the band's major-label love-affair came to an abrupt end, when, as part of a recent wave of purges, that company dropped them. ("It happens at every major label," Fisk smirks. "It's as if all of a sudden all the bands you signed are like a drunken weekend you want to forget.") New York City indie Matador Records came to the rescue, snapping up the masters and getting the record into stores. And although in

—CONTINUED ON PAGE 201

Freeman (foreground) and Beerman, getting into their role as musicians



PHOTO: S. "HUSKY" HOSKULDS

FARM DOGS

CUTTING-EDGE
CAMPFIRE MUSIC

by David John Farinella

The \$20 bills are flying across the converted home gym at Bernie Taupin's home in California's Santa Ynez Valley. If co-producer/engineer David Cole declares that this is the best band he's ever worked with, members of the Farm Dogs—Taupin, Jim Cregan and Robin LeMesurier—



PHOTO: CHRIS CLIFFARO

L to R: Tad Wadhams, Tony Brock, Bernie Taupin, Robin LeMesurier and Jim Cregan



David Cole

gratefully fling Andrew Jacksons at him. And when the band returns the compliments, Cole quickly collects the 20-spots and flies them right back at the trio. This clowning and literal give and take is just part of the light, non-hustle-bustle atmosphere that Taupin originally hoped to find when he put together this band.

Cole has described the band's sound as "cutting-edge campfire music," and that seems as good a descrip-

tion as any, considering the bandmembers' style and pedigree: Taupin's illustrious career as lyricist for Elton John is well-known; guitarists Cregan and LeMesurier and drummer Tony Brock are longtime Rod Stewart sidemen; and bass player Tad Wadhams is fresh off the road with Sheryl Crow. But despite the serious chops, these musicians have a refreshingly low-key approach to music and recording. On their first album, the critically

lauded *Last Stand in Open Country*, the three current members and Dennis Tufano, who left the band to pursue acting, sat around in a circle to record a live, mostly acoustic album. After playing a select number of live shows, the band discovered that their folksy setting was fine for the studio, but they wanted to "plug-in" for the follow-up, *Immigrant Sons*.

Before the band and Cole started recording *Last Stand*

—CONTINUED ON PAGE 204

VICTOR WOOTEN

FEEL THE FUN(K)

by Robin Tolleson

Victor Wooten is certainly among the most heralded electric bassists of this decade, due to his adventurous playing in Bela Fleck's blue-hop Flecktones (six albums and heavy touring), a stunning all-bass solo debut, *A Show of Hands*, and cameos with Bootsy Collins, Buckshot LeFonque, Mark O'Connor, Steve Smith and others. His second solo album, *What Did He Say?*, is a bold showing of new Nashville sounds and an amazing tale of recording-on-the-fly with the Roland VS-880.

Wooten and co-produc-

ers Kurt Storey and J.D. Blair recorded several basics at the bassist's Nashville home, but many other parts, such as Fleck's banjo and Paul McCandless' soprano sax, were put down in dressing rooms. Bass parts were recorded in hotel rooms and on the Flecktones' tour bus. "On long rides, I can just plug



straight into the VS-880 and do it," Wooten says. "I love that machine. It's really made it easy for me. In a lot of ways, it doesn't beat a studio with good outboard gear and mic pre's and a real good engineer. But creatively, it's the way to go for me because if I want to record something on the spot, I can do it, and I don't have to redo it once I get into a real studio."

Wooten came up with the groove for the album's hip hop track, "Don't Wanna Cry," in a hotel room in Japan and recorded the whole thing, other than some bass melodies,

on his other favorite "toy," the Roland DR-5 ("Dr. Rhythm Section"). "I keep the DR-5 with me most of the time because I can

—CONTINUED ON PAGE 207



more BANG

JMC Series

If you want a real crowd pleaser, check out BST's top-of-the-line **JMC Series**. These amps are ideal for powering bass cabinets, thanks to an on-board low-pass crossover with four selectable frequencies and a subsonic filter, which keeps low frequencies from damaging drivers. Dual ac power supplies coupled with oversized toroidal transformers and MOSFET transistors deliver high power while maintaining accurate sound reproduction.

If you want more features and power for the money,
BST has amplifiers that will blow you away.

JMA Series

The innovative **JMA Series** is designed to be a workhorse. Power supply filtering, along with an oversized toroidal transformer ensure sonic purity and smooth, noise-free power delivery. Full thermal, surge, short circuit and tension load protection, as well as power-up and power-down transient muting, provide trouble-free operation.

BST
A Division of **ULTRAK**

for the BUCK

IRON BUTTERFLY'S "IN-A-GADDA-DA-VIDA"

by Russell H. Tice

In the fall of 1967, as psychedelic music began to bear financial fruit for record companies, the young Southern California rock group Iron Butterfly was unwittingly preparing to soar higher on the *Billboard* charts than any of their contemporaries. Following the recording of their first album, *Heavy* (1968), however, they were almost permanently grounded. The album was shelved for nearly a year while the band tried to separate from original manager David Winters. After several months of small gigs and legal harangues, the Butterfly suffered a severe amputation—original guitarist Danny Weis left with bassist Jerry Penrod to form the band Rhinoceros, and were soon followed by frontman/vocalist Darryl DeLoach (who went on to start Flintwhistle). Only organist/vocalist Doug Ingle and drummer Ron Bushy remained. Finding replacements Lee Dorman on bass and Erik Brann on guitar was only half the battle. Bushy remembers, "We had to put a group together and prove to Atlantic/Atco that it was worth their while to put the album out. That took a lot of hard work, probably three months of rehearsing. We pulled it off. They got us on a major tour with The Doors and the [Jefferson] Airplane."

While on the road, they unveiled a new song, entitled "In-A-Gadda-Da-Vida." Ironically, the song's origins are far removed from the heavy metal beast it became. Written by Ingle, the son of a church organist, it was much shorter and quieter when conceived, and it was called "In the Garden of Eden." Lee Dorman says of the song's beginnings, "'In-A-Gadda-Da-Vida' was like a country ballad when we first heard it, but by the time the band got done with it...well,

you can see what happened."

Ron Bushy actually lays claim to the name: "I was supporting the band by making pizza," he says. "I came home at three in the morning from working one night and Doug played me a song he was writing. He had polished off a whole gallon of Red Mountain wine as the evening wore on. He played this song on the keyboard for me and sang it. He was so drunk that it came out 'in-a-gadda-da-vida.' I thought it was really catchy so I just wrote it down phonetically. The next morning we woke up

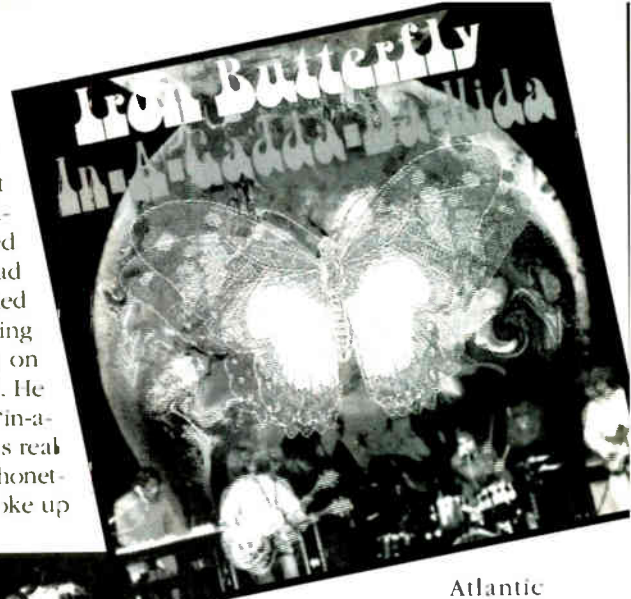


L to R: Erik Brann, Ron Bushy, Lee Dorman and Doug Ingle

and looked at the writing, 'In-A-Gadda-Da-Vida,' and decided to keep the title."

As the group became more comfortable with the song and its concept, it expanded more and more in live performance. Dorman recalls, "We were about eight minutes into it. Then we got an opportunity to go on the road with the Jefferson Airplane, and by that time, 'Vida' was up to 10, 11, 12 minutes and moving along." When the tour got to New York, it was time to record.

"I believe it was a commitment album that they had to have done for



Atlantic by a certain date," engineer Bill Stahl remembers. "They asked where the Vanilla Fudge had done their album and they told them Ultra-Sonic [in Hempstead, Long Island]. I believe that's how it came about. I think it was done in three days."

Stahl, the owner of Ultra-Sonic, had opened his facility in 1962, and owned one of the first 2-track machines. "I had a sel-sync so that I could do recording on one track and then adding on the second; that was not common in a studio at that time," he says. "Les Paul was the only other one who had it."

The studio had gone through quite a few changes in the ensuing six years, but according to Stahl, it was still quite a pioneering facility: "We went to 8-track probably in 1965. We bought the first 8-track machine off the floor of the AES convention in New York, which was a Scully. The previous 8-tracks were Ampex 300s converted

to 8-track, which I think CBS had. But this was the first 8-track machine designed as an 8-track machine. That machine was the first one that showed up the problems in the slitting process of the tape. In the curing process at the time, the 1-inch tape that they were making would curl, so it was very difficult to get spec on the outside tracks. We wound up having all the tape manufacturers sending us tape, coming out and recording things, trying to get the tape to work. So the machine was kind of ahead of the tape,

S. "Husky" Hoskulds at Sunset Sound Factory.

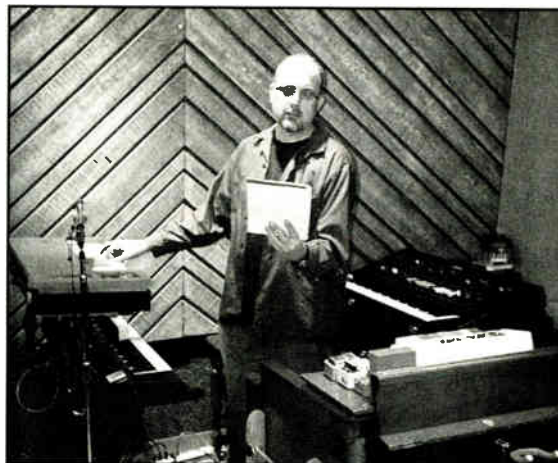
Blake regularly works in Sunset's B room, which features a vintage API, modified and fitted with Neve Flying Faders automation. "Once we were [in L.A.], Freeman says, "we just turned it all over to Tchad, completely. And my mind was just blown 18 hours a day. We'd go in and set up for a basic track, with all four of us playing live. We'd have a headphone mix that was pretty normal, but he runs everything in mix mode from square one, as if he were mixing from the very beginning. We'd listen to the playback, and we'd be speechless because it was so incredible-sounding."

"One thing I really don't like is recording without knowing how things are gonna sound in the end," Blake explains. "So I've always tried to record with, say, the drum sound being the [final] drum sound we want. I'll get a drum sound while the band's playing up the song, put it on tape, listen back, and more times than not it's fine. It's all done very quickly. I try to hear everything at once—not just drums, not just bass—and I like it to be spontaneous."

And indeed, the sessions were freewheeling. Freeman says that the material the band brought into the studio was rough and that a lot of fleshing out happened on the spot. While the band tracked, Blake would be doing his thing and sending lots of compression and effects to the studio's Studer A827 (at 15 ips with SR). Fisk says that Blake would create keyboard themes via editing. "He would fall in love with some detail or something I'd do in between one thing and another—real 'Eno card' kind of stuff, where you accidentally do something that's much cooler than what you could ever think of."

Blake's spontaneous approach was complemented by his innovative methods and use of unusual gear. For instance, a huge part of the drum sound on *Star City* came from the overhead mic, a Neumann binaural head dubbed Gongoli. ("It was named that by S.E. Rogie, a guitar player from Sierra Leone," Blake explains. "I put it in front of him as we were getting ready to record. He looked up, his eyes went wide and he said, 'Oh, Gongoli!' A friendly spirit from his village was named Gongoli, and I guess Gongoli looked like the Neumann binaural head! So it sort of stuck.") Blake placed

Gongoli at just above cymbal level, in front of the kit (see photo). "Then one snare mic, a kick mic, sometimes a hat mic and a floor tom mic, and usually the [binaural] head picks up the rack tom, the cymbals and the hat. But I always put one mic in the center of the kit, fairly close to the kick and snare, that goes through a pretty radical compressor that I'll mix in." On Beerman's kit, Blake used a Shure Level-Lock. "It's a mic-level podium compressor, and drums drive the thing so hard it distorts and compresses like crazy. You can actually make it sound like a backwards drum kit if you turn it all the way up. That's just nice to mix in a little bit. Then I also use SansAmps on the drums; a little bit



Fisk at the keyboard com

PHOTO © "HUSKY" HOSKULDS

of distortion on the kick and snare goes a long way."

Apart from Gongoli, Blake's mic choices and placement tended to be fairly straightforward. He'd get sounds by using unconventional sources (such as cymbals from Toys R Us) and effects or processing. On guitars, for example, Blake would just use either a 57 or a KM84 on the amp, sometimes a Coles, rarely using more than one mic. The B room at Sunset has only one small iso booth (where the kit was set up), so Blake ran a line out to the bathroom, where he placed the guitar amps (all small ones, including Whites and Alamos). He'd run Spalding's signal through a compressor direct to tape, "or if he wanted a phaser or vibrato, that'd be in his guitar line. I usually don't like chorus much. If somebody wants a chorus, I'll break out my vibrato box."

Generally speaking, Blake eschews reverb, preferring a more dry, in-your-face kind of sound. He'll often create ambience using compression. "I almost never record room or ambient mics," he says. "I'll send the head to compressors

and then go to two other tracks of the tape, and those'll be my ambient mics—basically compression. I just mix them in slightly. The compressor I've used the most in the past ten years is the Spectra-sonics 610. They're solid-state compressors that distort a bit—even at their lowest setting they're compressing more than you can imagine! I'm not sure what they're doing, but whatever the EQ curve is, it's wild." Blake also has some old broadcast compressors that he'll use occasionally for a kick, a snare effect or a guitar. "My favorite compressor that I use on everything is the Distressor," he adds. "It's amazing. It's great on vocals, and a lot of the guitar sounds for Pell Mell were through the Distressor."

Some of the keyboard parts were replaced during overdubbing, when a lot of percussion and unusual sounds were added, as well. ("Part of the philosophy of the recording is just to have a bunch of junk around at all times," Blake says, "a lot of stuff that can be inspirational to everybody.") Fisk played an array of instruments, including a Compact Fast Two Combo Organ. "It's a non-collectible dinosaur gaffe from Farfisa," Fisk says. "It has its own elliptical speakers, which we miked to get the key click." He played a Baldwin Fun Machine, which he says is "a home organ, probably mid-'70s or later. It has auto-accompaniment universes like Habanera, Waltz, Rock 1 and 2. It has a little interactive bar that you can tap to switch it from major to minor. The rhythm machine is gorgeous; it's all white noise."

More conventional keyboards got a lot of unconventional treatment. "We did a thing on one song where I was playing a Celeste through a SansAmp," Fisk says, "and the SansAmp was going through a wah-wah pedal that Tchad had up on the console; I don't know if he was using both hands or one, because I was in the other room playing, but he was making it sound like this insane Miles Davis fuzz Rhodes at double speed. There were like three or four tracks of it. That was kind of cute."

Leaving the recording to Blake gave Fisk a chance to focus on his role as a musician and to get a wholly different angle on his sound. "It's a matter of trust," he says, "it's a free-fall: I didn't look at the knobs, I didn't ask what compressor he was using. When he would say, 'Oh, I don't want to put it through an amp, a DI would be great,'

How do you get your 24-bit music on to 16-bit CD...

THINKING OF GOING HIGH RESOLUTION? Are you considering upgrading your digital system, for improved detail and overall quality? Remember, you'll still have to master to 16-bit for DAT and CD, 20-bit for other formats — and lay tracks on your 16-bit MDM. So how will you keep that clear, pristine 24-bit sound?

The answer: Apogee's UV22®. It's used by nine out of ten of the top mastering facilities in the US, on over 90% of their albums — that's a load of hit records.

UV22 takes a high-resolution digital audio signal and flawlessly translates it on to media like CD, retaining virtually all that 24-bit detail. UV22 is not dither, it's not bit-mapping, and it's not noise shaping. It's magic*.

Originally available in our UV-1000 mastering system, UV22 is standard on our hardware products such as the AD-8000 and is available in our MasterTools® plug-in for Pro Tools®. Now it's increasingly available in third-party products, like Mackie's Digital 8-Bus console and SADiE's workstations — with many more to come.

Whether you're mastering to DAT or CD, or tracking on a 16-bit digital multitrack, UV22 gets your high-resolution music on to your master — without losing a bit.

Apogee's UV22. Ask for it by name.

* "Any sufficiently advanced technology is indistinguishable from magic" — Arthur C. Clarke.

without losing
a single bit?



Apogee

ELECTRONICS

www.apogeedigital.com

APOGEE ELECTRONICS CORPORATION,
3145 Donald Douglas Loop South,
Santa Monica, California 90405, USA.

Tel: +1 310/915-1000 Fax: +1 310/391-6262.

Email: info@apogeedigital.com.

UV22 & MasterTools are registered trademarks of Apogee Electronics Corporation. Other trademarks are the property of their respective owners.

CIRCLE #152 ON PRODUCT INFO CARD



PHOTO © "HUSKY" HOSKULDS

Beerman in the booth with Gongoli

I'd think, 'Okay, Tchad says a DI is fine. Don't worry about the keyboard sound; don't worry about what I know from my experience as a producer and engineer; this is Tchad doing it, and I love what Tchad's aesthetic is.'"

Freeman also concentrated on being a musician (his bass was recorded direct, with a SansAmp) but paid a little

more attention to Blake's machinations and style. "I've never seen anyone apply really basic stuff as well as Tchad," Freeman says. "If something like the bass or a tom or kick is in a certain range, nothing else goes in that range. It's the kind of stuff that, when you read the book, it's chapter one: Keep the frequencies and the instruments separate. He was totally aware of that at all times and took great pains to make space for everything." In the mix, Freeman was jazzed by Blake's sense of arrangement, "like when a part would come in or go out. It wouldn't always be on the one or the change. Things would drag in or tail over or stop for a little bit for no apparent reason, then come back in. That sort of thing was pretty impressive."

"As far as arrangement goes," Blake elaborates, "I rely quite heavily on mute-button arranging—I love it, it's really fun. We all seemed to be into the slash and burn thing when it came time to mix, which I'm happy for."

Sure, it was a fruitful collaboration, but with so many engineers in the house, wasn't there a lot of dissension? "No, not at all," Freeman replies. "We wanted Tchad to do his thing—just sitting back and going for the wild ride was the whole point. I mean, there's like

half a dozen people I could think of who I'd enjoy working with like that, and he's definitely the number one guy. It was phenomenal to be able to watch him. I learned tons."

For his part, Blake says that working with musician/engineers didn't pose any particular problem. "Everybody had something to say, but the best ideas won out, whoever's they were. The process was really fun; everybody seemed to be on the same planet. It's one of the most fun records that I've done." ■

—FROM PAGE 197, *FARM DOGS*

in *Open Country*, Taupin's home gym and racquetball court had to be converted to a recording space. "Bernie had written these songs at the ranch, and he wanted to bring everybody up there to capture the mood of the Santa Ynez Valley," Cole says, "so he asked me to put together a studio." Cole broke out a tool belt and a book on acoustics written by Jeff Cooper to put together the vocal booth in the racquetball court. (For the second album, he added a drum room in front of the vocal booth for Tony Brock's kit.) After he finished the original construction, he had the equipment completely set up and was planning to have a week or so to test everything out, until the band walked in at about 10 that morning. "By noon, they had written the first song, and Jim turned to me and said, 'Let's put that down.' So that was my two hours of soundcheck," Cole remembers with a laugh. "We hit 'record,' and by dinner time we had our first song recorded. After dinner, we ran in and did vocals. It was baptism by fire from where I was sitting. But it was a very creative, productive environment. Bernie had a handful of finished lyrics that he'd written specifically for this project, and he handed them out, the guys looked them over and they would pick one that piqued their interest. Bernie might have a musical idea of where it should be. He might say, 'I hear this as a Neil Young song if it were recorded by Springsteen on *Nebraska*.' It was pretty amazing being there as they wrote and recorded the music at the same time."

To keep up with the organic situation, Cole kept the technology relatively simple. The songs were tracked on three Alesis ADATs through a Mackie 32-8. If he needed more than 24 tracks, he brought in another ADAT machine and made submixes for the vocals. For microphones, he turned to the Audio-

FREE WEB SITE ON IUMA!

it's big!

IUMA is the hottest Web spot for independent musicians. Over 20,000 people visit IUMA every day.

it's true!

Disc Makers will put your music on the Internet Underground Music Archive (IUMA).

it's yours!

If you make CDs, cassettes, or 12" vinyl records with Disc Makers.



Call Disc Makers today for a complete brochure:

1-800-468-9353

www.discmakers.com/iuma

Outside USA call 609-663-9030; FAX 609-661-3450

DISC MAKERS
EXPECT MORE

AVL0298-13

CIRCLE #142 ON PRODUCT INFO CARD

CARVER

P R O F E S S I O N A L

For more information regarding Carver Professional accessories, contact your local Carver Professional dealer or call 503.978.3344

get the connection...

A division of Phoenix Gold International, Inc. • 9300 North Decatur • Portland, Oregon 97203

Tel: 503.978.3344 • Fax: 503.978.3302 • www.carverpro.com

CIRCLE #143 ON PRODUCT INFO CARD

West L.A. Music GUARANTEED LOWEST PRICES!

EVERY MAJOR BRAND!

DIGITAL AND ANALOG RECORDING • WORKSTATIONS
MIXING CONSOLES • EFFECTS PROCESSORS • MICROPHONES
DAT AND CASSETTE DECKS • STUDIO MONITORS
CD RECORDERS • COMPUTERS • SOFTWARE
KEYBOARDS • SYNTHESIZERS • SAMPLERS • SOUND SYSTEMS
GUITARS • AMPS • DRUMS AND ACCESSORIES

WE WILL BEAT ANY DEAL!



Legendary drummer Hal Blaine with drum Mgr. Glenn Noyes.



Producer Mickey Most with West L.A. Music's Paul Gurvitz.



Former Doors member Ray Manzarek with staff member.

"WHERE THE PROS SHOP"



We Ship Everywhere! Call Today!

WEST L.A. MUSIC

11345 Santa Monica Blvd. Los Angeles, CA 90025
Two blocks West of the San Diego (405) Freeway
(310) 477-1945 Fax: (310) 477-2476

ALL MAJOR
CREDIT CARDS,
FINANCING,
AND LEASING.

CIRCLE #144 ON PRODUCT INFO CARD

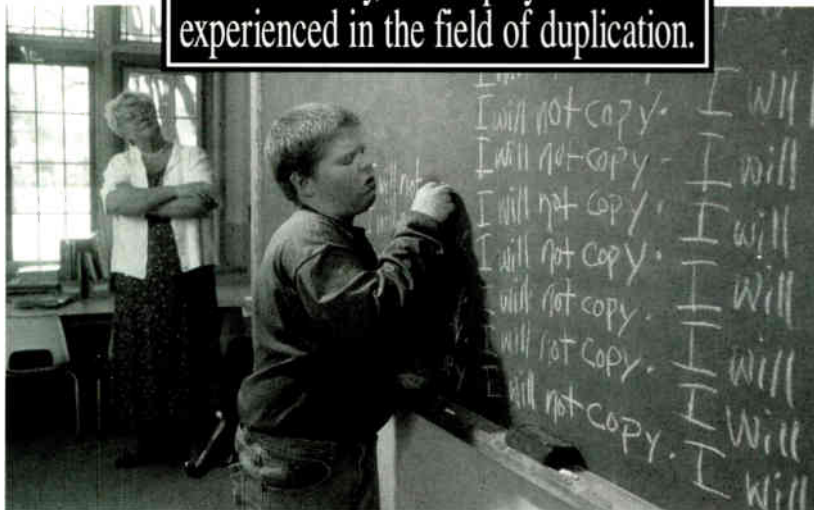
Technica family, relying on the 4050 for vocals, 4051s on guitars (which replaced his former favorite acoustic guitar microphone, an AKG 452), and, on Brock's drum kit, a number of Audio-Technica clip-ons for the tom-toms, an EV RE20 for the kick, a Shure 57 on the snare and a pair of Geffel UM70s for overheads. They listened to everything through Sony headphones (powered by a Furman HA-6 amp) and Tannoy PBM-8II monitors. The only other tools he had at his disposal were a handful of dbx 160X limiters and some Boulder mic pre's that he used for the vocals. For a touch of drum ambience and a bit of space around the band, Cole hit an Alesis Quadraverb occasionally.

"One of the challenges and constraints I put on myself was to record this album within the budget that we had," Cole explains. "I didn't have a lot of high-tech gear to play around with, and because we were in the middle of the Santa Ynez Valley, I couldn't call up and just rent something or bring in a bunch of expensive tube gear. I purposely said, 'Okay, this is what I have to work with; how can I get the best possible sound out of it?' I like that challenge. It took me back to my roots of guerrilla recording, where you're thrown in a room, here's what you have to work with, make the best sound."

Though both *Last Stand in Open Country* and *Immigrant Sons* were recorded to digital machines, Cole turned to a Neve desk and half-inch analog at Ocean Way Studios in Los Angeles for overdubs and mixing. "I prefer running the music through the Neves at some point to get that warm analog sound," he says. "And by mixing to half-inch, we get a little of the analog compression."

That analog warmth, in turn, helped the wonderful collection of vintage Martin, Guild and Gibson guitars that Cregan and LeMesurier contribute to the band's sound. In fact, Cole worked hard to get a clean tone from the decidedly non-effected players. "Guitar, in general, is more than just a melodic instrument; it's part of the rhythm and almost percussion track, especially the slide guitar," he says. "What I do is pretty basic; I'll put my head down and listen to where I get the sound and put the mic there. It's amazing how many people just throw a mic in front of an instrument and go and hit an equalizer to dial in the sound they want. Whereas if you start with a great sound, pick the appropriate mic and have a decent instrument, mic placement will give you 90 percent of what you're looking for. I don't recommend it

Obviously, our employees are experienced in the field of duplication.



John Holden, ASVC employee and former standout student.

At American Sound & Video, we know our stuff. And because we've been in the media duplication business for over 30 years, we know the most important ways to win your trust: Personalized service, state-of-the-art technology, quick turnaround and reasonable prices. So call today for a quotation. Of course, we'll even put it in writing.

**AMERICAN
SOUND & VIDEO**
Repeat After Us.

Call 1-800-471-0456 ext. 1002.

www.asvc.com

CIRCLE #145 ON PRODUCT INFO CARD

for the snare drum, though," he adds, laughing.

The vocal tracks on *Immigrant Sons* were straightforward, as well, with Cole relying on the natural reverberation of the racquetball court for the haunting album closer "Stars & Seeds," and a bit of trickery for "Deep Dark Secret." As he explains it: "I wanted it to be fairly oppressive and have an edge to it, so I pumped Bernie's vocal out through an Auratone [speaker]. I have one of those little kid's toys that has a microphone and a little speaker, and it's a voice changer. You can dial it up or down and it will pitch up or down. I left it at normal pitch, but I liked the cheesy sound with the little speaker on it. I cranked that up, miked the Auratone and miked the little speaker on the plastic toy to get some break-up and radio-telephone kind of voice sound out of it."

Sure, the band plays an organic style of rock reminiscent of the Eagles, Poco, The Band and Warren Zevon, and sure they didn't use a different effect pedal or sample every other second, but the way they recorded the album all in one room, all live, gave Cole pause. "An ideal situation for an engineer would be each guy in a booth with a micro-

phone and a pair of headphones," he says. "But part of the charm of Farm Dogs and the way we recorded this was that we were all in the same room together. We were fortunate that the room we recorded it in was complementary to the type of music we were recording. A kind of constructive bleed is what we went for. On some of those songs, you hear clothing moving around, and that's all part of the genuine honesty of the record. Warts and all, here are the Farm Dogs.

"As an engineer, I understand all about distortion and levels and proper recording techniques, but as a producer I also understand that the vibe wins," he continues. "So, if I catch something on a first take that maybe hits the red or wasn't the perfect technical recording, if we listen to it and react to it and it still gives us goose bumps, I'm not about to redo it for the sake of the VU meter. It's important to make those choices, and all these guys are veterans of making tons of records; they know that worrying over some technical aspect has no merit when it comes to sacrificing the creative process. We're all pretty much in accord with, 'Hey, if it ain't broke, don't fix it.'" ■

—FROM PAGE 197, VICTOR WOOTEN

plug my bass in and practice with it," Wooten says. "The vocals were recorded later in a dressing room with an Audio-Technica DAT mic. I got the idea for the vocals while sitting on the bus, so I ran in the dressing room, set up and sang them in as a demo. When we solo'd the track later, getting the mix on the vocals, I could hear Paul McCandless warming up in the background on horn, but we kept the tracks because they had the flavor of what I wanted. I didn't want to risk losing that."

Wooten also stacked the vocals for an interesting effect. "On the verses, I would slow the machine down and sing to it so that back at normal speed, my voice is raised and thinned out, and kind of sounds female," he says. "Then I would sing a lower part the same way by speeding the tape up and singing the part in. Then you slow it back down and my voice fills out and sounds like a different person. I would usually sing a couple parts in normal and then put a high one and a low one in."

Wooten also recorded the piano solo on "The Loneliest Monk" on the DR-5, "then we squashed everything to make it sound like an old record was playing,



The ZSYS Digital Detanglers:
z-8.8, z-8.8r
z-16.16r, z-32.32r
and now the z-64.64r

If digital was supposed to make things easier, why do you have a snakepit behind your rack of digital gear?

Tired of battling the constant tangle of cables every time you need to configure and reconfigure your set-up? Wondering how you're going to make *this* AES/EBU device talk to *that* S/PDIF device? Let a ZSYS Digital Detangler take care of your digital audio interface problems so you can get on with more important things. Whether you need 8, 16, 32 or even 64 ins and outs.... manual, remote, or software control.....even format conversion and custom configurations one of our Detanglers is perfect for you.

ZSYS—The last name in audio engineering.

Z-Systems Audio Engineering
4641-F NW 6th Street
Gainesville, Florida USA 32609
Tel: 352-371-0990 Fax: 352-371-0093
z-sys@z-sys.com <http://www.z-sys.com>

ZSYS

and then I sampled a needle going off a record and put that on there.” Wooten loves the raw feeling of the record and enjoys putting on extra sound bites, bits of conversations, cords buzzing and false starts. “The music’s still there, but it makes the listener feel like they’re getting something extra,” he says. “They want to hear your voice. That stuff’s fun.

“And I left a lot of mistakes, because making mistakes is part of what I do best, I guess,” Wooten laughs. “Making mistakes and trying to get out of them is part of what makes it creative. How you adapt. I like how I can get out of mistakes. Because I make so many, you have to get good at it. A mistake doesn’t necessarily mean it’s bad. It just means it’s something that you didn’t mean to play. So a lot of times when you listen back to it, it’s better than what you would have thought of. A lot of times it captures more of what you’re actually going for. So working with Kurt Storey and J.D. Blair on this record, I had a couple other pairs of ears to help.”

“Vic allowed us to come in and have some input, and that was real cool of him,” says Blair, who has been accompanying Wooten on full-size and cocktail-size drum kits in support of his two albums. The drummer was responsible for many of the grooves on *What Did He Say?*, as was engineer Storey. “We did a show in Fayetteville, Arkansas,” Blair recalls, “and Kurt had the idea during soundcheck to loop our vocals live and loop the drums. He came up to the stage and was tinkering with stuff, and said, ‘Say something Vic.’ And Vic was saying, ‘What did he say, what did he say,’ and we just started playing off that in soundcheck. It was pretty killer, and we tried it live that night. When we got back to Vic’s house, we just tried to duplicate the way it went down live that first night.”

“We were recording to a Tascam DA-88 at my house, and I was plugged straight into the board,” Wooten recalls. “A lot of times I’ll go through a direct box into the board, but I’ll also use a preamp, and I can blend the two sounds. On rare occasions, I’ll mike an amp. I haven’t found that I can get the best of sounds miking an amp, for the clarity that I’m looking for in most things. On a lot of my projects, especially if I’m doing solo bass, I’ll just put a mic live on the bass to get a lot of that attack, frets and all that. It’s like having piezo pickups or something—it just adds that high-end touch and makes it very clear. But most of the time I’ll get two tracks—a direct and a pre-

amp of some sort—and blend the two.

“Kurt is good at getting sounds on the drums,” Wooten continues, “and he says that the living room is the best drum room at my house. It’s a log home, so it’s all wood and has a high ceiling.” Wooten was recording upstairs with the engineer in the “control room,” a then-unoccupied bedroom, and the bassist and drummer only saw each other when Wooten would walk to the top of the staircase to offer instructions or encouragement. In Blair’s words, the recording session was “a blast. If Vic is really pumped on something, he rushes out of that room upstairs and is looking at you from the top of the steps, ‘Yeah, okay, what would it sound like if we do this?’”

Wooten notes that the album’s grandest track, “The Sojourn of Arjuna,” was pieced together, starting with the bass. “I had the four-chord groove thing,”

**I left a lot
of mistakes, because
making mistakes is
part of what
I do best, I guess.
Trying to get
out of them
is part of what
makes it creative.**

—Victor Wooten

Wooten recalls, “and Bela and Roy [Flecktones percussionist, known as Future Man] liked it when I was messing around with it at soundcheck, so I came up with the melody. Paul McCandless played that melody for me while we were out on the road. I hooked up a Shure 58, put it on the bell of his soprano, and added a little reverb that’s inside the VS-880. We recorded Bela in the dressing room, too, with a mic and the VS-880, and we recorded Rod McGaha’s trumpet in his living room. Sat on his couch and hooked up a mic and some headphones. Some of those bass parts were recorded in my hotel room, and some were recorded on the bus because I doubled the melodies with fretless bass and electric bass. I did some of that riding down the road. I gave Roy two

tracks on the VS-880, and he played to a submix of it while we were on the road. Two tracks, straight in, and he can get his own blends inside the Synthaxe.”

Wooten took the VS-880 back to his parents’ home in Virginia to record his father singing “Bro’ John” and his mom over the telephone for an appearance before “Heaven Is Where the Heart Is.” He hooked his DAT recorder up in the hospital to tape his unborn daughter’s heartbeat and brought in a large cast for his reworking of the jazz classic “Cherokee.” “I wanted it to be a fast tempo, and I programmed an arrangement on the DR-5 on my way to James Genus’ house in New York and had James play to it on the VS-880. Then I did my bass part on the VS-880. I’m not so good at that jazz bebop playing, so I fixed my part quite a bit. And I like the VS-880 because I can set up an auto-punch, try something, and if it doesn’t work I just hit ‘undo’ and it’s back to the way it was. I took it home and had my brother Regi add some guitar and my brother Joe add keyboards at my house. Then I had Raymond Massey come over and play a totally different drum set, and Kurt recorded that. I was in Virginia and got my brother Rudy to add one sax part and Jeff Coffin to add a tenor part while he was playing with the Flecktones. I had Rod McGaha come over and add trumpet. Then Roy came over and said, ‘Just let me ride all the way through it on the cymbal.’ At first I couldn’t hear it, but it really helps smooth things out.”

John Lennon’s “Norwegian Wood” was played on one bass and recorded on the VS-880, “reverbs and all,” says Wooten. “We didn’t do anything to it in mastering or anything else. This was done in New Orleans before a show with Medeski, Martin & Wood. After our soundcheck, I just went in the dressing room and started coming up with the arrangement. I put it down in pieces and made it sound seamless. There are some alternate changes and things in there that I recorded as I came up with it on the spot. That was my tenor bass, which is strung up a fourth higher. I do a lot of solo playing on that because it brings the pitch up just a little and makes it clearer. When you’re playing chords on the bass, sometimes it can get muddy, so that cleans it up a little bit.

“If people are getting the fun vibe from this music, then I’m happy,” Wooten says. “Like the music or not, if you can feel the fun that we are having, then that’s great. And we definitely are having fun.” ■

MEDIA & MASTERING NEWS

CD ALBUMS DECLINE IN RECORD BUSINESS RECESSION

Bucking trends in most other sectors of the economy, U.S. shipments of prerecorded music product (net after returns) took a 6.5% dive in 1997 to 1.06 billion, falling to their lowest level since 1993. As reported in year-end figures from the Recording Industry Association of America, the value of industry shipments fell to \$12.2 billion, a decline of 2.4% compared to 1996.

to 173 million units), and cassette singles (down 29%). Anyone hoping for a continued resurgence in vinyl was disappointed as well, with LP units slipping 7% to 2.7 million and vinyl singles sliding 26% to 7.5 million.

Not all the news was bad, however: CD singles continued their growth streak with a healthy jump of 54% to reach 67 million units. And music videos kept their momentum, as well, climbing 10% to 18.6 million units.

even performance since 1994, the decline in 1997 seems to confirm once and for all that the "CD Boom" (consumers switching their existing collections over from LPs) has run out of steam. Since newly proposed audio formats offer benefits targeted toward the high-end rather than the mass market, the labels can't count on yet another replacement technology to rescue their shrinking revenues. To really snap out of their slump, they may have to fall back on discovering

The Recording Industry Association of America's 1997 Year-end Statistics
Manufacturers' Unit Shipments and Dollar Value (in Millions, net after returns)

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | % Change 1995-1996 | 1997 | % Change 1996-1997 |
|---------------------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|--------------------|-----------------|--------------------|
| (Units Shipped) CD | 149.7 | 207.2 | 286.5 | 333.3 | 407.5 | 495.4 | 662.1 | 722.9 | 778.9 | 7.7% | 753.1 | -3.3% |
| (Dollar Value) CD | 2,089.9 | 2,587.7 | 3,451.6 | 4,337.7 | 5,326.5 | 6,511.4 | 8,464.5 | 9,377.4 | 9,934.7 | 5.9% | 9,915.1 | -0.2% |
| CD Single | 1.6 | -0.1 | 1.1 | 5.7 | 7.3 | 7.8 | 9.3 | 21.5 | 43.2 | 100.9% | 66.7 | 54.4% |
| | 9.8 | -0.7 | 6.0 | 35.1 | 45.1 | 45.8 | 56.1 | 110.9 | 184.1 | 66.0% | 272.7 | 48.1% |
| Cassette | 450.1 | 446.2 | 442.2 | 360.1 | 366.4 | 339.5 | 345.4 | 272.8 | 225.3 | -17.4% | 172.8 | -23.4% |
| | 3,385.1 | 3,345.8 | 3,472.4 | 3,019.6 | 3,116.3 | 2,915.8 | 2,976.4 | 2,303.6 | 1,905.3 | -17.3% | 1,522.7 | -20.1% |
| Cassette Single | 22.5 | 76.2 | 87.4 | 69.0 | 84.8 | 85.6 | 81.1 | 70.7 | 59.9 | -15.3% | 42.2 | -29.5% |
| | 57.3 | 194.6 | 257.9 | 230.4 | 298.8 | 298.5 | 274.9 | 236.3 | 189.3 | -19.9% | 133.5 | -29.5% |
| LP/EP | 72.4 | 34.8 | 11.7 | 4.8 | 2.3 | 1.2 | 1.9 | 2.2 | 2.9 | 31.8% | 2.7 | -6.9% |
| | 532.2 | 220.3 | 86.5 | 29.4 | 13.5 | 10.6 | 17.8 | 25.1 | 36.8 | 46.6% | 33.3 | -9.5% |
| Vinyl Single | 65.6 | 36.6 | 27.6 | 22.0 | 19.8 | 15.1 | 11.7 | 10.2 | 10.1 | -1.0% | 7.5 | -25.7% |
| | 180.4 | 116.4 | 94.4 | 63.9 | 66.4 | 51.2 | 47.2 | 46.7 | 47.5 | 1.7% | 35.6 | -25.1% |
| Music Video | | 6.1 | 9.2 | 6.1 | 7.6 | 11.0 | 11.2 | 12.6 | 18.9 | 34.1% | 18.6 | 10.1% |
| | | 115.4 | 172.3 | 118.1 | 157.4 | 213.3 | 231.1 | 220.3 | 236.1 | 7.2% | 323.9 | 37.2% |
| Total Units | 761.9 | 806.7 | 865.7 | 801.0 | 895.6 | 966.6 | 1,122.7 | 1,112.7 | 1,137.2 | 2.2% | 1,063.4 | -6.6% |
| Total Value | 6,254.8 | 6,679.4 | 7,541.1 | 7,834.2 | 9,024.0 | 10,046.6 | 12,068.0 | 12,320.3 | 12,633.8 | 1.7% | 12,236.8 | -2.4% |
| Total Retail Units | | | | | | | | | 833.9 | | 817.6 | -2.0% |
| Total Retail Value | | | | | | | | | 10,768.0 | | 10,786.8 | 0.2% |

The 1997 figures do not mark the first time in the 1990s that the music business has contracted from the prior year. But in 1991, the steep 7.4% decline could be explained away by a U.S. economy in recession, while 1995's drop was too mild (0.9%) to provoke deep concern. This time however, the fall affected even the industry's flagship configuration, the CD album, which now accounts for more than 70% of units sold. CD shipments were down 3.3% to 753 million, valued at \$9.9 billion. It was the first time in memory that the CD stumbled on its steady upward climb.

Other losers in 1997 included prerecorded cassettes (down 23%

and promoting new music that people like well enough to buy.

The spin doctors at the RIAA tried to put a happy face on the 1997 results, playing with the statistics to show that shipments to traditional retailers were not so bad (only a 2% decline), and that the real problem was a 19% contraction in "special markets" such as mail order, record clubs and "non-traditional" retail outlets. But a downturn is still a downturn. If anything, the argument that these outlets suffered because they tend to specialize in back-catalog serves only to underscore the real challenge facing the record business.

Considering the industry's un-

LACQUER CHANNEL STRIKES BACK AT PROJECT MASTERING

The continued spread of digital audio workstations may be putting mastering capabilities in the hands of more and more users, but it takes more than a computer with EQ and compression capabilities to make a mastering engineer. So Lacquer Channel, a Toronto mastering house with credits including Peter Gabriel, U2 and Rush, has initiated a Project Evaluation Program (P.E.P.) to "reaffirm the need for professional mastering for today's music projects by letting artists test

BY PHILIP DE LANCIE

KEYBOARDS

**BEFORE YOU JUMP...
CALL US LAST!**



- SYNTHESIZERS
- DIGITAL PIANOS
- RECORDING GEAR
- PRO AUDIO
- SAMPLERS
- AMPLIFIERS
- MIXERS / EFFECTS
- SOFTWARE

**CALL OUR SALES STAFF
OF MIDI EXPERTS**

All Major Brands!

RICH

music

1-800-795-8493

260 South 1-35 E • Denton, TX 76205 • FAX (940) 898-8659
Hours: Monday - Friday 10 - 6:30, Saturday 11 - 5
<http://www.richmusic.com>

VISA • MASTERCARD • DISCOVER • AMERICAN EXPRESS

CIRCLE #147 ON PRODUCT INFO CARD

**COMPACT DISC • CASSETTE
& RECORD MANUFACTURING**

**Green Flesh
STAINED
Band's Image
Color Separator: GUILTY!**

Local guitar les...

**POOR REPRODUCTION IS NOT
A VICTIMLESS CRIME!**

QCA IS COMMITTED
TO STAMPING OUT THESE
SENSELESS ACTS!

**CALL TOLL FREE
1.800.859.8401**

For Your Free Catalog



Serving the Music Industry for Over 45 Years.

2832 Spring Grove Ave., Cincinnati, OH 45225
Tel: 513.681.8400 • Fax: 513.681.3777
E-mail: qca@pol.com • web: www.pol.com/QCA

CIRCLE #148 ON PRODUCT INFO CARD

MEDIA & MASTERING

drive' the mastering process."

"We want to prove that any recording destined for release needs professional mastering," says Lacquer Channel's Scott Murley. "A good mastering job can greatly improve a studio recording, whereas a poor job—or no job at all—could undermine months of hard work." Under P.E.P., artists can bring their source tapes to the Lacquer Channel for a free consultation with a mastering engineer, who will review the material and demonstrate how professional mastering could enhance the sound of the final release. The company operates two mastering suites for CD premastering, and Murley says it is "the only mastering facility in Canada that still cuts lacquer for vinyl LPs."



Telex EDAT digital master editing and duplication system

DIGITAL BIN FOR IN-CASSETTE DUPING

Minneapolis-based Telex Communications introduced the EDAT digital master editing and duplication system for in-cassette applications in the project studio, radio, religious and talking book markets. The PC-based system uses a 4GB hard drive to store programs for editing, EQ and fades, and interfaces with a variety of in-cassette duplication recorders, including real-time and 2x KABA systems, 8x Telex 6120 XLP machines, and 16x Telex 6120 XL and ACC +000 systems.

MASTERING NOTES

Engineers David Glasser and Charlie Pilzer of Airshow Mastering won a Grammy for their mastering and restoration work on the Smithsonian reissue "The Anthology of American Folk Music—the Harry Smith Collection." Glasser, who heads Airshow's new facility in Boulder, CO, has also been



Airshow crew: Owners David Glasser (L), Ann Blonston and Charlie Pilzer (seated) are joined by assistant engineer Eric Conn in the new Boulder, Colo., Studio A.

working on a Pete Seeger tribute album featuring contributions from Bruce Springsteen, Ani DiFranco, Roger McGuinn and Judy Collins, among others. Pilzer runs Airshow's Springfield, VA location...Frankford/Wayne Mastering Labs has added two new SADIe systems, making a total of three SADIes in use at the New York City facility...



Ed Thompson (R), chief engineer for Ivory Classics, recently remastered Grammy Award-winning pianist Earl Wild's (L) original 1945 version of "Rhapsody in Blue" using a SADIe digital audio workstation with a UV22 plug-in. Also pictured (center) is producer Michael Rolland Davis.

SADIe also reports that Ivory Classics, a New York label devoted to classical piano recordings, used one of its systems for the restoration and remastering of Grammy-winning pianist Earl Wild's 1945 recording of Gershwin's "Rhapsody in Blue." The label also used the system, featuring the Apogee UV22 plug-in, for Wild's newly recorded two-CD set of Chopin nocturnes...Quadim Mastering Studios (Westlake Village, CA) reports that engineer David Donnelly has been hard at work on projects including Geffen band She Moves, Curb Records's Jonathan Pierce and *The Heart of Chicago, Volume 11* for Reprise Records.

Pure Power...Pure Sound!



Call 800-854-2235 for immediate delivery from our factory and save!

YOU CAN'T BUY BETTER SOUND
 Face it. The two most important things to consider when buying pro-sound gear is how good it sounds and how long it will last. Otherwise, it's just not worth it. At Carvin, we put great sound and bulletproof reliability first.
 Carvin power amps deliver the finest sound reproduction from high speed output stages with slew rates exceeding 50v/μs (roughly twice that of our competitors). Crystal clear output from models up to 2000 watts deliver rock-solid bass and shimmering highs with no distortion.
 Our new C1600 and C2400 mixing consoles will enhance your sound dynamics with ultra low noise, high headroom, audio taper faders, silky smooth controls, active equalizing & 24 bit digital effects. Try a custom system on our 10 day trial and find out why Carvin is the value leader for quality & price! Call 800-854-2235 for prices & a free catalog.

"A best buy"..."The Carvin DCM1500 - with its detailed top end, punchy low end... sounds great."

© Nov 1997 Miller Freeman, Inc.
 Reprinted by permission from Bass Player magazine

"Carvin gives the end user a roadworthy, high-powered amplifier (DCM2000) at a price that is almost too good to be true. Little wonder, then, that these amps have been showing up in quite a few local bands' rigs."

© Pro Audio Review, March 1998
 - Ringer Williams III: Systems Engineer



HT400, HT750, HT760M, HT1000, DCM1500 & DCM2000

HT & DCM SERIES POWER AMPS

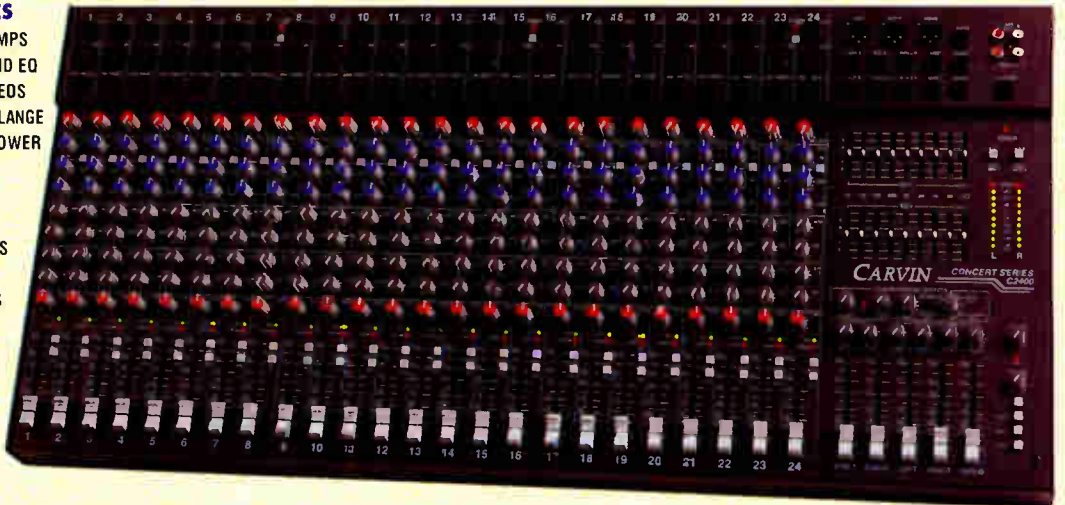
- SHIMMERING HIGHS, DEEP BASS WITH NO DISTORTION
- BRIDGABLE, XLR & 1/4" INPUTS, LIMITERS, GROUND LIFT
- MIL-SPEC CIRCUIT CARDS, REINFORCED STEEL CHASSIS

C1600 & C2400 MIXING CONSOLES

- HIGH HEADROOM ULTRA LOW-NOISE PREAMPS
- 3 BAND ACTIVE EQ WITH MID SHIFT - 9 BAND EQ
- 75 Hz CHANNEL FILTERS, SIGNAL & PEAK LEDS
- 24 BIT EFFECTS: CHORUS, REVERB, ECHO & FLANGE
- XLR BAL OUTPUTS-GROUPED PHANTOM POWER

CARVIN CONCERT SPEAKERS

- STUDIO SOUND AT CONCERT LEVELS
- HIGH POWER COMPUTER TUNED ENCLOSURES
- SOLID 7 PLY POPLAR HARD WOOD CABINETS
- OURATUFF II™ STEEL CORNERS & SPKR GRATES
- TWIST LOCK SPEAKON™ & 1/4" JACKS



CARVIN
 The Professional's Choice

www.carvin.com

USA, Alaska, Hawaii, Canada
 FREE CATALOG 800-854-2235 M-F 7-6, SAT 10-4 PST
 CARVIN 12340 World Trade Dr., San Diego, CA 92128

AVAILABLE FACTORY DIRECT or at the following Carvin stores: ● San Diego, CA 619-487-8700 ● Hollywood, CA 213-851-4200 ● Santa Ana, CA 714-558-0655 ● W. Covina, CA 626-332-5727 ● INTERNATIONAL: ● Europe (EU) 31-53-431-3731 ● Australia 618-8331-9246 ● Brazil 511-530-9436 ● Columbia 571-347-5266 ● Greece 30-351-23521 ● Guatemala 502-251-8417 ● Mexico 5-5-209-6114 ● Iceland 354-552-1185 ● Indonesia 62-32-567-4680 ● Norway 47-22-42-43-00 ● Philippines 632-921-3021 ● West Indies 599-9-461-4139

CIRCLE #149 ON PRODUCT INFO CARD

COAST TO



PHOTO: MAUREEN DRONEY

Oasis owner/engineer Eddy Schreyer

L.A. GRAPEVINE

by Maureen Droney

This month, L.A. Grape continues a tour of some of the area's mastering facilities, checking in with Precision and Oasis.

Eddy Schreyer's Oasis has been open for going on two years now; a return visit to the two-room facility found Schreyer finishing up Warner Bros. Recording artists SFP (Something For the People) and putting the last touches on the new Van Halen record.

Watching Schreyer at his desk, it becomes obvious how well thought out the ergonomics of his setup are, with its tilt-down monitor and everything just half an arm's length away. He's fine-tuned the room since opening and is par-

ticularly happy with his Hot House 2000 amps—"The finest I've had in this room," he says. "These Mosfet amplifiers sound terrific with my dual 15 Tannoys."

Other equipment Schreyer favors includes A/D converters by Manley, Apogee and Studer, and the upgraded digital Weiss EQ system with 88.2, 24-bit sampling. "It's much improved with the doubled sample rate," he says. "It has a much smoother EQ curve. We also use various Avalon and Manley analog units."

About 70% of Oasis' masters come in on DAT. "Unfortunately," he laughs, "if something comes in on DAT, I do prefer the 48k sample rate because I'll take that DAT analog; I don't sample-

rate convert. If you are doing a digital mix, I really like the 24-bit Paqrat system. With this format I try to process entirely in the digital domain. However, I haven't heard a

—CONTINUED ON PAGE 215

NY METRO REPORT

by Dan Daley

The Audio Engineering Society celebrated its 50th anniversary in New York on March 11, a half-century to the day after its inaugural meeting in 1948. The anniversary celebration was held at the Bell Atlantic NYC corporate headquarters at Sixth and West 42nd Street.

That day 50 years ago, a group of audio professionals gathered at RCA Victor Studios on Sixth Avenue to hold their first meeting and to hear a lecture by Dr. Harry Olson on loudspeaker design. The conclave attracted the attention of the said *New York Times*, which reported the event with the head-

line "Vacuum Tube Used as Record Needle; Noise 'Suppressor' Shown to Sound Experts—It Reproduces Tones Beyond the Range of Hearing. New Acoustic Group Is Told." That small troupe eventually evolved into today's 12,000-plus-member AES, with chapters in North and South America, Europe, the Far East and Australasia.

Scheduled to be among those attending the 50th anniversary celebration were several original members of the AES, including guitarist/inventor Les Paul, past organization executive director Donald Plunkett, Jerry Minter, Edward T. Canby, Emory Cook, Louis Goodfriend, E.L. Grayson, Jack Hartley,

—CONTINUED ON PAGE 216



Engineer Bruce Swedien mixed the latest release from Atlantic recording artist Nicole Renee on the SSL 9000 J Series console at New York studio Right Track.

COAST

NASHVILLE SKYLINE

by Dan Daley

The subject of the overall health of the Nashville studio business is something that I'll be writing more about for the July issue of *Mix*. In the meantime, however, Masterfonics, which is one of the senior members of Nashville's top tier of studios, filed a Chapter 11 bankruptcy petition

at the end of January. The action has become a barometer of the business in Nashville. It reflects the apprehension that many feel in the wake of declining country music sales and because of the general flatness of the U.S. music industry, as well as the rapid growth that the studio community here has undergone in the past two years.

In 1995, Masterfonics owner Glenn Meadows opened the Tom Hidley-designed

The Tracking Room, a \$3 million-plus, 5,500-square-foot facility that featured Nashville's first SSL 9000 J console. It was a move that opened the floodgates for a citywide round of upgrades and new high-end rooms. By the beginning of this year, six more major rooms had come online at three facilities, and Nashville had five 9000 boards operating. These upgrades and openings represented nearly \$4 mil-

—CONTINUED ON PAGE 218



PHOTO: E. ADAM STOCKHILL

Last year Sausalito, Calif., facility The Plant rebuilt the tracking room in its Studio B and installed a 64-channel Neve 8068 in the control room. Recently in B, producer/engineer Neil King (in the Motörhead shirt) and assistant Chris Manning (glasses) recorded and mixed Vallejo forTVT Records. Studios A and B and the remodeled Mix 1 have also hosted recent sessions for Metallica, Joe Satriani, Kenny Wayne Shepard and Sammy Hagar. The Dave Matthews Band tracked their new album at The Plant, with producer Steve Lillywhite.

SESSIONS & STUDIO NEWS

NORTHWEST

What's the Frequency?: R.E.M. spent a couple of months at San Francisco studio Toast recording their next Warner Bros. opus with producer Pat McCarthy, engineer Charlie Francis, engineer/studio owner Craig Silvey and assistant

Robert Shimp...Hit Mecca engineer Alex Nesmith co-produced and engineered tracking sessions for Geffen recording artist Kai at Russian Hill Recording in San Francisco with producer Fitzgerald Scott...In at Avast Recording (Seattle): Built to Spill, with producer Phil Ek, and Sleater-Kinney, with John Goodman at the helm. The studio recently installed an API Lega-

—CONTINUED ON PAGE 222



Laughing Tiger Studios (San Rafael, Calif.) offers two 48-track rooms. Pictured is Studio A, with its modified AMR 2400 console. Other gear includes a Studer A80 2-inch 24-track, ADATs, KRK 9000 and Tannoy PBM-8 monitors, and an extensive collection of mics and outboard. The studio opened two years

ago in its present location and has recorded projects for The Merman (Atlantic), Vinyl (Four Corners) and Jim Belushi (House of Blues). Laughing Tiger also offers mastering and complete lock-to-picture capabilities and recently launched its own production company.

Producers
and Engineers

UNITED!



Join These Founding Members...

The community of creative music producers and audio engineers has established the MPGA to create a forum to assure the proper direction of our craft. Our goal is to represent the interests of our profession, the music, and to define the creative role of producers and engineers in the professional audio industry of today and tomorrow. This is a unique opportunity to join the quest to secure intellectual rights, special members services, and to establish audio standards. Don't let this opportunity pass. This is about your future. Support your profession!

Chuck Ainlay, Billy Altman, David Amlen, Brooks Arthur, James Barton, Kevin Beamish, Terry Diane Becker, Walter Becker, Michael Beinhorn, Michael Bishop, Niko Bolas, Bob Brockman, Bob Campbell-Smith, Brian Capouch, Guy Charbonneau, Ed Cherney, Joe Chicarelli, Tena Clark, Bob Clearmountain, Peter Collins, John Cuniberti, David Donnelly, Barry J. Eastmond, Frank Filippetti, Michael Frondelli, Ethel Gabriel, Phil Galdston, Paul Gallo, Dan Gellert, Lou Giordano, David Goggin, Larry Hamby, Julian Herzfeld, Ross Hogarth, John Jaszcz, Phil Kaffel, Richie Kessler, Barry Knox, Steve Krause, Tommy LiPuma, Greg Ladanyi, Gary Ladinski, John Lagrou, Kyle Lehning, Stewart Levine, Mitch Maketansky, Steve Marcantonio, Arif Mardin, Joe Mardin, Tony Maserati, George Massenburg, Mark Mazzetti, Richard McIlverly, Steven Miller, Mike More, Hank Neuberger, Ron Nevison, John Paterno, David Pearce, Csaba Petocz, Chuck Plotkin, John Potoker, Timothy Powell, Robert Power, Dan Pritzker, Phil Ramone, David Reitzas, Guy Roche, Nile Rodgers, Lisa Roy, Elliot Scheiner, Al Schmitt, Howard Schwartz, Allen Sides, Rick Slater, Rick Stevens, Chris Stone, Bruce Swedien, Steve Sykes, Kit Thomas, David Tickle, Stephen Tillisch, Bill Tullis, Bud Tunick, Ed Ulloa, Paul Verna, Tony Visconti, John Volaitis, Matt Wallace, Don Was, Mathew Wilder, Mark R. Williams, Joe Wissert, David Z



Founding Sponsors:

AMS Neve • Audio Intervisual Design • AudioTechnica • BASF/EMTEC Magnetics • DTS • Euphonix • JBL • KRK • Mix Magazine • Neumann • Pro Sound News • Quantegy • Sony • Studer • SSL • Terminal Marketing • Yamaha

Visit our website at www.musicproducer.com for info and application. Or contact the MPGA at: 216 N. Lucerne Blvd. Hollywood, CA 90004 Tel: 213-465-7697 Fax: 213-465-7793

CIRCLE #150 ON PRODUCT INFO CARD

great digital compressor that faithfully maintains the depth and clarity of this format, so processing in the digital domain can be restrictive."

Schreyer concurs with the others *Mix* has interviewed—he likes what he's heard of the bit-splitting format. "One of the projects I've done on that format was a Michael Jackson song that Mick Guzauski did using the Paqrat. It was clean and transparent with great depth—of course, that's Mick! He mixed 'Change the World,' which I mastered—last year's Song of the Year—and that came in on DAT. This was a 16-bit, 44.1 master and still sounded great. I think the bit-splitting format sounds excellent, but I still prefer 30 ips ½-inch."

Schreyer has always been an ace with Sonic Solutions and is finding ever more uses for his systems. "As far as the creative process in mastering goes, it's unsurpassed," he comments. "I've done overdubs, and on occasion I've saved clients thousands of dollars in remix costs by taking the TV track and acapella vocals and synching them up. In one instance, we inserted a new lead vocal along with the instrumental and two pairs of stereo background vocals—less than 40 minutes later we had a great mix. People are doing this kind of thing at home; it's not that big a deal, but the fact that you can do it with high quality in mastering, and not have to do that iffy recall, is a real plus."

Oasis is also seeing the resurgence in mastering for vinyl. "People are submitting mixes to go to vinyl," Schreyer comments, "but they often need a lot of work; they need to be sonically tweaked, compressed, balanced. These guys who mix at home often end up with tapes where the bottom is raging, the top is screaming, and you can't physically cut it. One thing about working with vinyl [is] it will teach you how balances should be. It forces you to do the right thing."

Schreyer also finds that improperly maintained and set up ½-inch machines are becoming a common problem. "Because of the simplicity of the DAT recording medium—hit Record and roll—a lot of assistants have not been properly trained on machine alignments, azimuth, record bias, elevated level, etc. If the ½-inch machine isn't set up properly, a DAT will sound better."

In the brief time that it's been open, Oasis' work load has increased to the point that Schreyer is opening a complete second mastering room. "Gene Grimaldi will be operating the second

room," Schreyer informs us. "I personally trained him for four years, and I believe that Gene has a great natural talent and a passion for mastering."

"Probably the most important achievement for Oasis and for myself," Schreyer adds, "was making a client-friendly environment where everyone can have input during the EQ process without being intimidated. That's so important, because the more comfortable the client is, the better the exchange between us and the higher the level of creativity."

Recent and upcoming releases from Oasis include Fiona Apple, H-Town, Coolio, Daz Dillinger and Polydor UK's Kele Le Roc.

Dropped in for lunch at Precision Mastering, a daily ritual overseen by hospitable studio manager Caryl McGowan. There I managed to snag chief engineer Stephen Marcussen for a few minutes before he returned to work on the Don Smith-engineered and produced new release by Cracker.

In business since 1979 at the same location, Precision has developed a large roster of clients with credits that include the Rolling Stones' *Bridges to Babylon* and *Voodoo Lounge*, Collective Soul, Tom Petty's Grammy-winning *Wildflowers*, Alice In Chains, Counting Crows, Sade and Beck.

"We're fortunate to have a lot of longtime clients," Marcussen says, "and people seem to be comfortable here. For example, Don Smith and I have been working together for 20 years. We do things a little differently at Precision: For one thing, we break the mastering process up into two different elements—EQ and sequencing. Where at some cutting rooms one person does the whole project, I'm fortunate enough that all I do is EQ tapes. After EQ, Don [Tyler] or Ron [Boustead] typically edit, sequence and space."

Marcussen's suite features a lot of Manley equipment, including Infinity speakers powered by Manley amps and a Manley console. "It's not conventional," is all we could get him to say about his setup. "There's not much to it, but it's very pure, very clean and clear."

Analog vs. digital? "My clients generally are analog people," Marcussen says, "although I see a real interest since the beginning of this year in the bit-split format on DA-88, which I think is great. When you compare it to the sound of DAT, you say, 'What took so long?' Editing may be a problem, but if you can just mix to it, get it as good as you can and then let your cutting room take care

Record Deals.

Publishing Deals.

Film/TV Music Deals.

Foreign Deals.

We're Not Kidding...

But you won't know that unless you call this toll-free number and request our FREE information kit.

1-800-458-2111



TAXI

The Leader in Independent A&R

CIRCLE #151 ON PRODUCT INFO CARD

of the rest for you, I think it's going to be great. I hope a lot of mixers look at it and treat it as a real format, because I think it sounds very good."

Marcussen also complained about engineers who don't properly maintain their ½-inch machines, particularly because "a good ½-inch master will almost always beat a DAT's sound," he says. "It's unfortunate, really, that DAT is so convenient, especially for the people at the labels—they get a FedEx of the mix, and it's already a copy, then they may copy it and send that to the cutting room! Here we're striving to make every last little connector perfect and of the highest quality, then we get sent a copy of a copy. People should be running at least two first-generation DATs and should be very clear on what's a master."

Precision just recently switched over to Sonic Solutions editing and storage, having previously held out for magneto-optical AKAI D1000s. "It was time to embrace the 20- or 24-bit word length," Marcussen explains. "Now we've hubbed everything and can access Sonic from all our rooms. Being audio purists, we try to keep everything first-generation, so we do keep projects on disk as long as possible; that means, of course, that we have to have tons of storage."

There are two suites at Precision, Marcussen's and Don Tyler's, which is "equipped similarly to mine" Marcussen says. "Don's a very talented up-and-comer who divides his time between his clients like 4AD and Bong Load

Records and editing and assembling for my clients." There's also a workstation room. A third production room, to be staffed by Boustead, is in the works.

Challenges in mastering lately? "Nobody makes an album from beginning to end anymore," Marcussen says. You have the consistency of an artist, but he or she is working with four, six, maybe 12 producers, engineers and studios. You have 12 different peoples' idea of what sounds right, and to put all those pieces of a puzzle together is a challenge. Then, of course, you have movie soundtracks, with even more people to please."

Tyler brought up the importance of digital editing and how it's become an expected service of a mastering house by clients. "We restructure songs and fly in parts," he says. "It used to be ten songs and you just had to worry about the timing gap between them. Now it's a bit like a second mixdown where you can add parts and make real changes. It's the last step in the creative process, and it can get very extreme if you want—we recently had the Jayhawks satellite in a background part for a section on a John Hiatt record."

Other recent projects in at Precision have included Soul Asylum, Richie Sambora, Matchbox 20, Jerry Cantrell, Elliot Smith, James Iha and Agents of Good Roots, with an upswing also noted in DMM projects for vinyl. ■

Fax your L.A. news to 818/346-3062 or e-mail to msmdk@aol.com.

—FROM PAGE 212, NY METRO REPORT

Norman Pickering, Fred Seebringer and Gerald Shirley.

The Clubhouse in Germantown added a Studer A827 multitrack deck earlier this year, part of the studio's vintage-*niche* strategy. The tape machine is linked to what studio manager Daniel Goodwin calls "an incredibly immaculate" Neve 8058. There is also a large collection of equally vintage guitar amps.

The Clubhouse is in its tenth year and is one of the community of studios in upstate New York that fall within the magic "two-hour-drive-from-Manhattan" radius that also includes Bearsville and Dreamland. "It's denser up here in terms of the number of studios than people think," Goodwin says, "but that also means that the competition is immense." Like its neighbors, The Clubhouse relies upon location as a marketing tool: The distance to Manhattan has to be far enough to truly make clients feel as though they've escaped the city, but close enough so that they don't feel isolated. Bucolic surroundings help; the two-room facility is situated on the east bank of the Hudson River and has river views. The main recording room is large and is the focus of the other foundation of marketing the studio—vintage equipment. "To a degree, you can choose your location, but you can definitely choose your niche," Goodwin says. "There's a lot of people who really want to achieve that sound of the classic hit records, and that's what this kind of equipment in a room like this can do."

The facility's second studio is a contrast—a Pro Tools-based studio that counterbalances the vintage-heavy A room. The combination has been enough to pull as much as half of the studio's revenues from New York City, the rest from a populous independent record label and band community in the region. Independent labels, including Bar None and Razor & Tie, have been a mainstay at the studio, as they have for many New York facilities in the past five years. But major-label artists have also found their way to The Clubhouse, including Natalie Merchant and Rusted Root.

"There's definitely enough work up here to support most of the studios that have been around here awhile," says Goodwin, who declined to state the studio's rates but agreed they were on a par with mid-level studios in Manhattan. "The thing is, we can offer people equipment that's better than mid-level, as well as the vibe of the area. So we hold our



At Precision: Stephen Marcussen (l) with producer/engineer Don Smith during mastering sessions for the new Cracker release. At rear is engineer Martin Pradler.

MIX[®]
P R E S E N T S

StudioPro'98

**The Technology & Business
of Audio Production**

**Thursday & Friday,
June 25-26, 1998**

**New York Marriott Marquis,
New York City**

- **Two information-packed days of panels and workshops with the leaders and innovators of professional audio.**
- **In-depth presentations by experts in the technologies and issues that are shaping the business today.**
- **Panel discussions with world-renowned producers and engineers on the art of producing, engineering techniques, business topics and more.**
- **Don't miss the information event of the year for recording professionals.**

To receive additional information and registration materials, call Daniela Barone at (510) 653-3307 or fax (510) 653-5142.

STOP!

Before you order any DJ equipment, call for our

FREE

132 page color catalog!



Looking For the Latest in DJ, Recording or Lighting Gear?

The Pro Sound & Stage Lighting catalog brings you all the hottest gear and makes it easy to compare the equipment feature for feature. You'll find what you're looking for at the guaranteed lowest price. Even better, you can call our friendly pro staff 7 days a week with any of your questions. Plus, you'll usually get your order shipped within 24 hours. So what are you waiting for? Call to get you free copy in the mail today!



PRO SOUND & STAGE LIGHTING™

1-800-672-4268

Outside the U.S.A. 1-714-891-5914

Mon. - Fri. 6am - 10pm

Sat. & Sun. 8am - 5pm (PST Call Times)

Online Catalog - www.pssl.com

Fax Toll Free 1-888-PSSL-FAX (777-5329)

11711 Monarch St.,
Garden Grove, California 92841

CIRCLE #153 ON PRODUCT INFO CARD



Woody Harrelson and his songwriting partner/co-producer Jerry Joseph tracked songs for their project *Children at Play* in Studio D (Sausalito, CA). Studio co-owner Joel Jaffe co-produced and engineered, with assistance from Ted Rodden. Standing are (L to R) Rodden, Jaffe and Joseph.

Next to Harrelson is studio owner Dan Godfrey.

own outside of the city pretty well."

Firehouse Studios is for sale, according to facility owner Yoram Vazan, though he says he hopes to see it stay part of New York's hip hop community. Starting in Brooklyn in 1989 and later moving to West 28th Street, Firehouse was an early hip hop standard, providing a base for producers such as The RZA, DJ Premier and Easy Mo Bee, and records for artists including Wu-Tang Clan, MC Lyte and Gang Starr.

Vazan, who came to New York from his native Israel in 1981, started the studio with a 16-track analog machine with a small board and built it up over the years into a 24-track facility with a Peavey AMR-2400 console, Westlake BBSM12 monitoring, Pro Tools digital editing and extensive MIDI. Vazan cited the steady proliferation of home studios as putting pressure on the economics of studio operation, and his decision to move his family back to Israel, as reasons for the sale. ■

New York items? Fax to East Coast editor Dan Daley at 615/646-0102 or e-mail damurwriter@aol.com.

—FROM PAGE 213, NASHVILLE SKYLINE

lion in consoles alone. Meadows felt optimistic that the studio would come out of the filing intact, but he added that what pushed him to the edge—rate depressions, upgrade costs, the prolifera-

tion of personal studios, less work and record companies tightening budget strings—were systemic problems not limited to his facility. In Nashville, with more studios per square mile than anywhere else, these problems are particularly difficult.

At press time, the situation was quiet, and Masterfonics' finances are being reorganized over the course of what will likely be a year or so. But other studio owners were watching closely and pondering their own next moves.

Meanwhile, upgrades and new rooms keep on coming. This June, Seattle-area independent producer Trevor Johnson is slated to open Bulldog Recording, a Hidley-designed one-studio facility that is the first sizable studio to open in the upscale Nashville suburb of Franklin. Bulldog, which is being constructed by longtime Hidley contractor Michael Cronin, is also the first purpose-built 5.1 surround audio studio to come to Nashville. The room, which cost approximately \$1.6 million, including the building and equipment, will have four isos and a 96-input Euphonix CS3000. Monitoring is Kinoshita, with the front three speakers soffit-fitted and the rear surrounds in concrete abutments.

Johnson, whose living has come mainly from real estate transactions in recent years, says the studio will be completely for hire, and he is confident that he can make a go of it despite the economic difficulties that Nashville is

Electronic Musician

Presents The

PERSONAL STUDIO BUYER'S GUIDE

In the 1999 Personal Studio Buyer's Guide you'll find:

• COMPREHENSIVE PRODUCT CHARTS LISTING THE IMPORTANT FEATURES AND PRICES OF THE HOTTEST, HIPPEST RECORDING EQUIPMENT.

• HELPFUL TECHNIQUES AND HINTS ON HOW TO BUY THE BEST GEAR FOR SPECIFIC CREATIVE NEEDS.

• TIPS AND TRICKS FOR RECORDING, MIXING, AND MASTERING YOUR HOME PRODUCTIONS.


• MANUFACTURER LISTINGS SO YOU CAN FIND THE ULTIMATE GEAR YOU NEED!

Available at the usual places • July 1998

The 1999 Personal Studio Buyer's Guide will truly be a "must have" resource for first-time studio builders, personal studio owners, recording musicians, and gearheads.

The guide will be polybagged with the July issue of *EM* for paid subscribers, and available on newsstands wherever *Electronic Musician* is sold.

SAVOY JAZZ • ROCK & ROLL HALL OF FAME • STRICTLY RHYTHM
 REPRISE • RAVE MUSIC • ARISTA • SONSON MUSIC • BLUENOISE
 WARNER BROTHERS • SONY • MAW RECORDS
 HYBRID • DIGITAL DUNGEON • TOUCHWOOD • BEGGAR'S BANQUET
 THYM • ALULA • ATLANTIC • ROCK & ROLL HALL OF FAME
 RISTA • REPRISE • SAVOY JAZZ • RAVE MUSIC • ARISTA
 VOY JAZZ • RAVE MUSIC • ARISTA • SONSON MUSIC • BLUENOISE
 SE • HYBRID • DIGITAL DUNGEON • TOUCHWOOD • BEGGAR'S BANQUET
 CHW • MAW RECORDS • SONY • MAW RECORDS
 MUSIC • WILLIAMSON • L DUNGEON
 CK NORTH SO • ARISTA • SONSON MUSIC • BLUENOISE
 GAR'S BANQUET • ROCK & ROLL HALL OF FAME
 STRICTLY RHYTHM • SONSON MUSIC • DENON
 TOUCHWOOD • MAW RECORDS • UPAYA • ROCK & ROLL
 RTH • SONSON MUSIC • DENON



DIGITAL MASTERING AND EDITING

Rick Rowe

SADIE CDR REDBOOK • SONY PCM 1630 • DAT • EXABYTE DDP

TRANSFERS FROM ANY / TO ANY FORMAT
 AUDIO POST:
 DIALOG EDITING/SYNC • MULTITRACK MIXING • SOUND DESIGN
 SOUND FX EDITING • MIX TO PICTURE

630 9TH AVE SUITE 1012 NY, NY 10036 • 212.262.2626 • OUTSIDE NY 1.800.847.4123

CIRCLE #155 ON PRODUCT INFO CARD

experiencing. "Franklin is its own vibe," he says, "and I intend to market not only the studio but the entire community as such," indicating that he plans to approach other area studios such as The Castle, Sound Kitchen and Bennett House to assemble a regional studio association. "I can subsidize the studio for a while, but it's going to have to pay for itself at some point, so you can bet I'm going to be aggressively marketing it."


Recording Arts installed new Dynaudio M-3 monitors in its control room. The monitors, bi-amped with Bryston ST amps with Avalon Class A cross-overs, are mounted freestanding, and the room was tuned later by Bob Hodas. "There's a trend toward freestanding monitors," says studio owner Carl Tatz, who positioned the room as a mixing facility in Nashville's increasingly specialized studio community. "That's been happening in a lot of California studios, and all the major mastering houses have their monitors freestanding. It just sounds better."

Abtrax has installed an Otari 24-track RADAR hard disk recording system and Otari 96-fader Elite console at its five-year-old single-room facility in Berry Hill, an independent township with its own mayor, town hall and private speed trap operation smack in the middle of Nashville itself. (The township is a mini-Music Row unto itself, and its studio density rivals that of its larger cousin. It's also the center of some of the better personal studios in the area, a fact encouraged by the town's mixed-use zoning regulations.) Abtrax owner Jerry Abbott says a high level of equipment allows him to keep his rates more than adequate at \$750 per day, but still affordable for a mid-level to upscale clientele that ranges from publisher projects to Marty Stuart, George Jones and Wynonna. But if there's one single thing that helps put Abtrax over, it's the Texas connection.

"When I came up here about seven years ago, I'd heard that 70 percent of everything that goes on in Nashville is done by Texans," says Abbott with a laugh. "Well, at least that much of the business is done based on personal relationships, too. I'd spent the better part of 45 years living in Texas, so when you see that the studio's client list includes Delbert McClinton, Gary Nicholson, Lee Roy Parnell and other Texans, you can see that they're right about that. It's good to be a Texan in Nashville." ■

Send Nashville news to Dan Daley at danwriter@aol.com or fax 615/646-0102.


Cabling Solutions from Gepco



Gepco supplies audio cable, video cable, cable assemblies, breakout boxes and more.

Gepco distributes ADC, Kings, Neutrik, Switchcraft, EDAC and more.

Innovative, Quality Audio and Video Cable Products



GEPACO 1-800-966-0069
 INTERNATIONAL, INC.

CIRCLE #156 ON PRODUCT INFO CARD

5th Annual Latin-American Pop Audio & Music Expo

Miami '98

**Miami Convention Center
May 29 - 31, 1998
Miami, FL**

Miami, this unique cosmopolitan city is the principal gateway to and from Latin-America. It is USA's Latin-American music capital and boasts the most actively growing musical and post-production population, third, only to New York and Los Angeles. Its people, Latin; its music, Latin; and its business, very Latin, all which make Miami the perfect choice for our fifth and most significant show to date.

Catering to Central America, the Caribbean and South America, Miami will allow visitors from all countries to attend the show in a neutral site. Manufacturers will be able to service all Latin-American countries, and the window of opportunity will be broadened, with a focus on Latin-American distributors, dealers and consumers alike.

SSI will maintain the highest standards for its seminars, featuring highly renown professionals, while continuing to lead in bringing education and information to the rapidly growing and very important Latin-American market.

We invite you to participate in what will be yet another groundbreaking event for SSI and music professionals, as we look at this great site as the hottest focus of the Latin-American music industry, the vibrant city of Miami.



<http://www.ssiexpos.com>

Official Hotel:



**Studio
Sound
International**

Contact: Chris Adams

400G High Point Dr. Hartsdale, NY 10530 USA Tel: (914) 993-0189 Fax: (914) 328-8819

Specify if Exhibitor or Visitor Information

cy...African pop sensation Rigo Star mixed his new Ima Records album at San Francisco's Coast Recorders with engineer Tom File and assistant Zac Allentuck...William Rieflin of Ministry recorded a solo LP with musicians including Robert Fripp and Trey Gunn at Soundhouse Recording, Seattle. Scrane and Carmen Rizzo engineered...The Cherries recorded their Badman Recording debut, *Crotchrocket*, at the label's studio in San Francisco...Bay Area contemporary soul combo Tom, Dick & Harry recorded their eponymous Tripek Records release at Music Annex (Menlo Park, CA) with producer Allyn Rosenberg, engineer Tom Size and assistant Matt Campagna...

SOUTHERN CALIFORNIA

Saxophone legend John Klemmer completed a new project for Chicago Records at Goodnight L.A. Studios in Van Nuys with the production team of Peter Love and Dave Donnelly...Warner Bros. artists M.A.D. Kutz remixed songs in Ameraycan Studio A (L.A.) with producer Rodney Terry, engineer Michael "Jazz" Nally and assistant Brandon Abeln...The Foo Fighters mixed a new song for *The X-Files* movie soundtrack at Scream Studios in Studio City. Bandleader Dave Grohl produced and Adam Casper engineered, assisted by Douglas Trantow...At Skip Saylor Recording (L.A.), Twist Top mixed their Capitol debut with producer Rick Neigher, engineer Neal Avron and

assistant Ian Blanch...Producer/engineer Cliff Norrell overdubbed and mixed for Outpost artists Home Grown at Louie's Clubhouse in Hollywood. Victor Janacua assisted...Kitaro put the final touches on a new Domo Records release at Mad Hatter Studios (L.A.), with engineer Peter R. Kelsey...

NORTHEAST

At the Music Lab (Hollis Hills, NY), engineers Matt Piso and Vito DeLaura remixed Celine Dion's "My Heart Will Go On" for Sony/550 Music. Programming was handled by Lou Gimenez and Mark Schaffel...53 Days wrapped up work on their second independent release at Audio Magic in Buffalo, NY. Tom Robinson engineered, with Dan Calabrese assisting...David Morales has been canped out at Mystic Recording Studios (Staten Island, NY) tracking and mixing for artists including the Spice Girls, Mariah Carey and P.M. Dawn...Sony/Mushroom recording artist Suze DeMarchi (lead singer of Australian group Baby Animals) spent six weeks working on a new solo project at Longview Farm Studio in North Brookfield, MA, with producers Nuno Bettencourt and Anthony J. Resta. Carl Nappa engineered, and Jesse Henderson assisted...Patti Scialfa tracked and overdubbed for Sony at New York City's Sear Sound with producers T-Bone Burnett and Craig Street, engineer Roger Moutenot and assistant Tom Schick...D.J. Spooky tracked and mixed for Outpost with engineer Dan Yashiv on the



Live Oak Recording (Berkeley, Calif.) owner Priscilla Gardiner is seated at the studio's newly installed 64-input Otari Elite console. In its 14 years in business, the facility has hosted sessions for artists ranging from poet Maya Angelou to musicians including Boyz II Men, En Vogue and Mazzy Star.

SSL 4000 G Plus at M.A.W. Studios (New York City)...Spooky Ruben recorded for TVT Records at Water Music in Hoboken, NJ, with producer/engineer Steve Lyon and assistant Todd Parker...Stiff Johnson and Mike Klein co-produced a new record for funksters Moon Boot Lovers at Tongue & Groove Studios (Philadelphia)...Gee Street artists Olu overdubbed and mixed in the Neve room at East Side Sound (New York City) with engineer Ed Tuton and assistant Fran Cathcart...

SOUTHEAST

At Tree Sound Studios (Atlanta), Sony Music artists Color Me Badd mixed the song "Kissing You" with production crew Noontime and engineer Neal Pogue. A&M recording artists Cold tracked and mixed the single "Look" with producer/engineer Pete Thornton and assistant Shawn Grove...Classic Recording (Franklin, TN) had producer Garry Jones in working on vocal sessions with gospel group Brian Free & Assurance, with engineer/studio owner George Cumbee at the board...Medium Cool/Restless artists Perfect, featuring former Replacement Tommy Stinson, recorded and mixed in Studio A at Ardent Studios (Memphis, TN) with producer Jim Dickinson and engineer Bob Krusan...George Massenburg stopped in at Ocean Way Nashville to engineer a 40-piece string session for EMI artists The Rankins. Massenburg is co-producer on the project, with David Campbell. Also in the studio was Vince Gill, tracking for MCA Nashville with producer Tony Brown and engineer Steve Marcantonio...Shanice Wilson tracked vocals for her upcoming LaFace release at Atlanta's Patchwerk Studio. Carl-So-Lowe produced and Mike Wilson engineered...Sweet Honey in the Rock recorded for their 25th anniversary project with producer Ysaye Barnwell and engineer Jim Robeson at Bias Recording (Springfield, VA)...At Nashville's Emerald Sound, Paul



Situated on seven acres of land in Central Point, Ore., A Wing & a Prayer Productions is now in its second year of operation. The 1,500-square-foot recording/mixing studio is equipped with a 48-input SSL 6056 E/G with Total Recall, Genelec 1031A and Auratone monitors, 48 tracks of ADAT and an Otari MTR-90II 24-track. Owner/engineer Ron Davis is a 20-year industry veteran whose recent accomplishments include the 1996 S.F. Bay Area Jazz Album of the Year, Dave Ellis' Raven.



DSP's Postation P

—FROM PAGE 43, NAB98

surface worth checking out. At the show, Margarita Mix announced the purchase of five systems for its expansion into Santa Monica (scheduled for completion by January). The five-suite facility will serve as a flagship for DSP and as a beta site for its networking sys-

tem, which will link suites via Fibre Channel and Ethernet links.

Manufacturers of hard disk recording systems are going high-res. AMS Neve's new 24-bit AudioFile 98 features waveform displays, multilevel undo, strip silence, OMFI import and 4.3- and 9.1GB drive support. AMS Neve also introduced a new offline Media Toolbox to improve workflow and cut turnaround time; tools include offline archiving, restore and backup; OMFI 2.0 import, AIFF and .WAV conversion; and cue sheet management. Otari (www.otari.com) introduced RADAR II, the 24-bit next generation of its stand-alone hard disk recorder. (For more on RADAR II, see the Technology Spotlight on page 130.)

Akai's (www.akai.com) DD8 digital audio dubber Version 2.0 offers 24-bit, 96kHz audio, plus bidirectional conversion capability with any OMF-compatible DAW. Existing DD8s can be up-



Beyer
M 8000

TOP 10 COOL GIFT ITEMS FROM NAB

NAB had plenty of megabuck whizbangs, but here are our Top 10 affordable, must-have products, listed alphabetically:

Beyerdynamic's (www.beyerdynamic.de) M 8000 is a modern TG-X Series dynamic capsule housed in a beautifully crafted, brass suspension cradle for that vintage 1930s/'40s look. Retail: around \$400.

Gefen Systems' (www.gefen.com) M&E Pro Intranet software with Gefen's sound effects database combine to allow searching and auditioning of thousands of sound effects online from several libraries. Once you find the right sound, simply enter your credit card number and download the sound you need—from a PC or Mac.

JLCooper Electronics' (www.jlcooper.com) new MCS Panner was designed for its MCS-3400/3800 Media Command Stations, but this compact, three-axis joystick panner with backlit LCD, eight user-defined keys and MIDI output worked perfectly with Panasonic's WR-DA7 digital console. Should be no sweat to adapt to other mixers or DAWs as well.

Musicam's (www.musicamusa.com) Mynah™ (\$800) is the world's first software-only audio codec—add this Windows 95/NT application to your Pentium PC, ISDN terminal adapter and ISDN line and send broadcast-quality stereo audio in real time to hardware codecs or as files to PCX card-based systems.

OneMusic's LiquidTrax music library (www.firstcom.com) provides basic versions of themes (in nearly 20 categories, from Americana to world music), along with stereo submixes that load into an 8-channel workstation for creating custom mixes that fit *your* project.

Schoeps (www.posthorn.com) LC 60U and LC 120U are highpass filters in double-ended XLR barrel connectors for in-line insertion on field recording mics. The units have either 60- or 120Hz, -18dB/octave Butterworth filters, but best of all, they will pass phantom power!

Switchcraft's (www.switchcraft.com) TTP96FA is a 96-point TT patchbay built into a 1U rack tray that slides out to provide front (!) access to the IDC terminations. Somebody should have thought of this years ago!

THAT Corp.'s (www.thatcorp.com) 2002 high-tech VCA module is pin-compatible with the dbx 202 VCA used in various SSL, Sony, Neve, Harrison and MCI consoles. Specs include a 130dB dynamic range; 100kHz (± 0.1 dB) frequency response; and 0.004% distortion.

TMH Corp. (www.tmlabs.com) showed Tomlinson Holman's Test & Measurement CDs, a four-disc set for checking analog and digital sound system performance (stereo/surround monitoring setup, acoustical tests, electroacoustic procedures for speaker evaluations and more), either by ear or using simple gear such as a sound level meter.

Whirlwind's (www.whirlwindusa.com) pocket Qbox combines a 440Hz generator with headphone out, internal speaker and mic, LEDs for checking phantom or intercom power, and 1/4-inch and male/female XLR connectors for receiving/sending mic or line-level signals at -20/-50/+4 dB. Retail: \$169. ■



Akai's S6000 and S5000 samplers

graded to 24 bit/96 kHz via a DD8 Version 2.0 CPU upgrade kit. Akai also introduced two hip samplers, the S5000 (\$1,995) and S6000 (\$2,995). The rack-mount units feature a 64-voice system (upgradable to 128 voices), using DOS disk format and .WAV files as native sample format—PC .WAV files, including Web-downloadable files, can be loaded directly for instant playback. The S5000 has eight analog outs plus stereo master analog out; the S6000 has 16 outs plus stereo master. The S6000 also features balanced stereo ins and a removable front panel that doubles as a remote control.

With more than 1,400 exhibitors, there were many more exciting debuts at NAB, and we'll be showcasing these products in the upcoming months. Meanwhile, NAB returns to Las Vegas from April 17-22, 1999. See you there! ■



LEARN THE ART OF RECORDING

You can get the practical, real-world skills needed to successfully start your career as a recording engineer, producer or studio musician. •Hands-on approach, learning by doing •Previous experience not required •Complete 300 hours of training in less than 2 months •6 studios filled with the latest equipment •Small classes, excellent personal attention •Job placement assistance •Financial aid available •Low cost, on-campus housing



For free brochure, call or write today

1-800-848-9900 1-614-663-2544

THE RECORDING WORKSHOP

455-X Massieville Rd
Chillicothe, Ohio 45601

Ohio State Board of Proprietary School Registration #80-07-0696T

CIRCLE #159 ON PRODUCT INFO CARD

For Your Next Session... Bring Along a New Companion

The NEW DC224ADC Analog to Digital Converter



Simultaneous outputs: AES/EBU, S/PDIF coax and optical

Three clock sources: Internal, external word clock and external AES

Analog or digital inputs with shaped dither for 16, 20 or 24 bit quantization

TROISI A/D AND D/A CONVERTERS

AVAILABLE AT THESE FINE DEALERS:

Sonotechnique (800) 449-5919

Parsons Audio (781) 431-8708 Westlake Audio (213) 851-9800

Advanced Systems Group, LLC (510) 654-8300

Broadcaster's General Store (352) 622-7700

Phone (978) 692-7768 • Fax (978) 392-9869 • <http://www.troisi.com>

CIRCLE #160 ON PRODUCT INFO CARD

Brandt overdubbed and mixed for Warner Bros. with producer Josh Leo and assistants Ben Fowler and Allen Ditto... Buddy Guy mixed for Jive with producer/engineer David Z and assistant Todd Gunnerson at The Sound Kitchen in Franklin, TN... Producer Brendan O'Brien worked on Gordon's new 57/Epic Records release at Southern Tracks Recording (Atlanta). Nick Didia engineered, assisted by Ryan Williams... Rhonda Gunn tracked for her second Damascus Road release at The Bennett House (Franklin, TN) with producer Billy Smiley... Eric Knight recorded his self-produced new 28 Records album, *Near Life Experience*, at Criteria Recording in Miami with co-producer/engineer Keith Rose... At The Castle (Nashville), Stir tracked for Capitol with producer Justin Niebank and engineer Jim Demain, and Terri Clark mixed for Mercury Nashville with producer Keith Stegall, engineer John Kelton and assistant Paula Montondo... Country rockers Atlanta overdubbed for a self-produced upcoming live record at Entertainment International Studios (Atlanta) with co-producer Darryl Harvey and engineer Jan Nerud...

STUDIO NEWS

Tiki Recording (Glen Cove, NY) recently redesigned and expanded its studios B and C. Studio B is equipped with a Trident TSM console, with 64 channels of Megamix automation, and 32 tracks of DA-88... Redwood Digital (Woodside, Calif.) took delivery of its third Genex GX-8000 MO disk recorder from Trew Audio, Nashville... Time Warp Studios (New York City) recently added Audiomate moving fader automation to its 52-channel DDA DMR-12 console... Also adding 24 channels of Audiomate was Rax Trax in Chicago, to its Neotek Elite... Nashville studio JamSync installed a Studio Technologies Model 58/59 system controller and remote for their new surround monitor system. ■



Bonnie Raitt recorded for her new Capitol release, *Fundamental*, at L.A. studio Sound Factory with producers Tchad Blake (L) and Mitchell Froom. Blake engineered the sessions.

¡Live from Latin America!

If you're taking your audio products on the road to Latin America, *Mix—Edición en Español* is the only Spanish phrase you need to know.

With approximately **23,000** copies per **bimonthly** issue, *Mix—Edición en Español* is the most widely-distributed professional audio and music publication in the Spanish-speaking world!

Your ads in *Mix—Edición en Español* reach **live sound** and **recording** professionals, aspiring pros and musicians in virtually every country in Central and South America, plus Spain and Spanish-speaking regions of the United States.

Mix contract advertisers are eligible for special discounts in *Mix—Edición en Español*. Call Dan Hernandez for details on your company's discount level.

MIX[®]
EDICIÓN EN ESPAÑOL



There's only one source for professional audio and music coverage in Spanish: ¡*Mix—Edición en Español!*

July/August 1998

Ad Close: May 4

Materials Due: May 11

Publisher • Jeffrey Turner
(510) 653-3307
Advertising Director • Dan Hernandez
(510) 653-3307

6400 Hollis Street #12 • Emeryville, CA 94608
tel (510) 653-3307 • fax (510) 653-5142

**SUBSCRIPTION
INFORMATION
510-653-3307**



Lobo Recording

2103 Deer Park Ave.
Deer Park, NY 11729
(516) 242-0266 or (516) 243-2983
Fax (516) 243-3964
e-mail: music@loborecording.com
<http://www.loborecording.com>

Located 35 minutes east of NYC, Lobo Recording is the place to achieve your creative goals. Recent acquisitions include an SSL 9096J, Neve VR 72, Studer D827 and Yamaha C7 Grand Piano. Other equipment includes Amek Angela IIs, Studer A827s, A80s, ADAT XTs 64 tracks and an extensive list of microphones and outboard gear. Please call for more info.



The Sound Lab

1006 E. Guadalupe
Tempe, AZ 85283
(602) 345-0906; Fax (602) 345-6966

Located ten minutes from the Phoenix airport, Arizona's finest audio facility features a Neve VRP 48-channel console with Flying Faders Automation, Otari 32-track digital DTR900, analog, and 32 tracks of ADAT XT. Our Yamaha concert grand, vintage Neumann and AKG mics, Gretsch drum kit, along with the finest in outboard gear provide a selection without compromise. Enjoy experienced professionals in a relaxed atmosphere with Arizona's world-class amenities nearby! Package rates available on hotel, car and studio time. Highest quality at the best price.



Triad Studios

4572 150th Ave. NE
Redmond, WA 98052
(425)-881-9322; Fax (425) 881-3645
e-mail: info@triadstudios.com
<http://www.triadstudios.com>

From solo piano to 30-piece strings, we've been recording music for more than 16 years. We have everything you need: Custom Neve 5106 48-channel console w/ automation, Mitsubishi Westar 52-channel console w/ automation, scads of great outboard gear including Joemeek, Lexicon and SSL. 24 tracks of analog 2-inch, Sony PCM 3324, DA-88s and ADATs. Sonic Solutions Digital Audio Editing. On-site, one-off CDs available.

QUAD

Recording Studios

Quad Recording Studios

723 7th Ave.
New York, NY 10019
(212) 730-1035; Fax (212) 730-1083
<http://www.quadstudios.com>

Quad Recording is excited to announce the opening of its Penthouse studio, beautifully designed as a tracking and mixing room and featuring a 96-input SSL G+ with Ultimatum. Opening up a fifth studio is a wonderful way for Quad to celebrate its twentieth anniversary. Studios A and III each have an SSL 9000J console, making Quad the only facility in New York with two of them. Studios B and C each have SSL 4000E consoles with G Series computers and Total Recall.

UMC
Ultimate music corporation

Ultimate music corporation

40 Lopez Avenue
Cambridge, MA 02141
(617) 576-2855; Fax (617) 576-8094
e-mail: info@U-music.com
<http://www.U-music.com>

A two-room digital music production facility located near Boston, featuring Otari and Tactile Technology consoles. We offer up to 96 tracks of tape and disk-based multitrack recorders including Sony 3324, RADAR, ADAT, DA-88 and Pro Tools. All rooms are fitted with world-class outboard gear from Focusrite, Avalon, Manley, API and an extensive collection of new and vintage keyboards. All this set in a relaxed and elegant environment. Call for our brochure or additional information.

Sheffield
AUDIO-VIDEO
PRODUCTIONS

SSL / DIGITAL / ANALOG

Sheffield Remote Recordings

13816 Sunnybrook Rd.
Phoenix, MD 21131
(800) 672-3220 or (410) 328-7260
e-mail: sheffield@sheffielddav.com
<http://www.sheffield@sheffielddav.com>

Sheffield is America's largest SSL recording truck. This is not just a remote truck, it is a complete audio facility. Add to this the best crew in the remote business. Partial credits include The Grammy Awards, MTV Music Awards, Live from the House of Blues and Aerosmith.

Las Vegas Mastering

Las Vegas Mastering

1006 E Sahara Ave.
Las Vegas, NV 89104
(888) MASTERS
e-mail: tomparham@earthlink.net
<http://www.tomparham.com>

California-based Tom Parham Audio has opened a new location in Las Vegas, offering state-of-the-art CD mastering and digital bin cassette duplication. The new mastering rooms include Sonic Solutions w/NoNoise, Apogee AD 8000 w/UV22 24-bit converters, Manley variable MU compressor and Electro Optical leveling amplifier, Focusrite Blue 315 mastering EQ, Drawmer 1961 Tube EQ, TC Finalizer, Z-Sys and complete Pro Tools 24 system for 32-track recording.



Different Fur Recording

3470 19th St.
San Francisco, CA 94110
(415) 864-1967; Fax (415) 864-7966
e-mail: dfur@differentfur.com

26 years of recording all styles of music. Custom service in a creative atmosphere featuring Solid State Logic 4056E/G TR and Studer 800 & A80s. Renowned acoustic piano sound. Excellent selection of microphones & outboard gear, Sonic Solutions digital mastering. Clients include such cutting-edge artists as The Kronos Quartet, Primus, George Winston, Harvey Mandel, Robert Cray, Charlie Hunter Quartet, Tuck & Patty and a host of Windham Hill artists. Contact Susan Skaggs, VP/General Manager.



Troposphere Studios

One Naylon Place
Livingston, NJ 07039
(973) 994-2990; Fax: (973) 994-2965
e-mail: troposphere@garden.net
<http://www.garden.net/users/troposphere>

Conveniently located in northeast N.J., just 20 miles outside of NYC, Troposphere Studios offers its clients a huge, 7,000-sq.-ft., acoustically tuned facility designed for tracking, mixing, and film or video lockup. We feature an SSL 4048 G+ Series console with Total Recall, an Otari MTR 90II 2-inch 24-track, and a large selection of microphones and outboard gear. Our spacious iso booths and 38x40-foot live room also offer comfort to the performer. In short, Troposphere Studios is one of a kind.



XTREME STUDIOS

747 Bellevue Avenue East
Seattle, WA 98102
(206) 720-0301; Fax (206) 720-0164
e-mail: xnms@xtremestudios.com
<http://www.xtremestudios.com>

The only SSL G+ in a remote truck. Designed by studio bau:ton, Steve Smith's mobile recording studio features an LCRS monitoring system with Dynaudio speakers, Meyer HD-1s, Tannoys, and NS-10s, Studer and Sony multitracks, Grace, Millennia, Neve and Avalon mic pre's and an extensive mic collection. Xtreme also offers mastering and multimedia services. Clients include Sony Music, DreamWorks, Disney, Westwood One, MTV, MGM, Fox and Showtime.



Paradise Sound Recording Inc.

P.O. Box 410
Index, WA 98256
(800) 877-MTNS (6867); Fax (360) 793-7713
<http://www.ParadiseSound.com>

SSL 4056G console
Otari RADAR digital system
Otari MTR90 24-track
Digidesign Pro Tools
Kodak CDR
Vintage microphones
Spectacular mountain view
Indoor plumbing!!!



Showplace Studios

347 South Salem St.
Dover, NJ 07801
(973) 328-4400; Fax (973) 328-4933
<http://www.showplacestudios.com>

48-track analog recording, featuring Studer A800. One of the largest collections of awesome vintage gear anywhere. Mixdown Studer A820 1/2-inch 2-track and automated Amek console featuring all Neve modules. Top-quality sound and staff at reasonable rates. Large live room, stone area and iso booths. Great vibe, gear and experience brings your music to its full potential. Showplace Studios—where the past meets the future. Neve, Pultec, RCA, Teletronix, UREI, Neumann, Helios, EMT, Lexicon, Tubetech, Langevin, etc.



THE PROFESSIONAL'S SOURCE FOR PHOTO,

FOR ORDERS CALL: **800-947-5508**
 212-444-6698

OR FAX (24 HOURS): **800-947-9003**
 212-444-5001

Store & Mail Order Hours:
 Sunday 10-5
 Monday thru Thursday 9-7
 Friday 9-2 • Saturday Closed

On the Web: <http://www.bhphotovideo.com>

PRO HEADPHONES



K240M Studio Headphones



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

FEATURES-

- Integrated semi-open air design.
- Circumaural pads for long sessions.
- Steel cable, self-adjusting headband.
- 15Hz-20kHz, 600Ω

SONY MDR 7506 Pro Headphones



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

FEATURES-

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

beyerdynamic DT 770 Pro Headphones



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

FEATURES-

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

SENNHEISER HD 265/HD580 Pro Headphones



The HD-265 is a closed dynamic stereo HiFi/professional headphone offering high level background noise attenuation for domestic listening and professional monitoring applications.

The HD 580 is a top class open dynamic stereo HiFi/professional headphone that can be connected directly to DAT, DCC, CD and other pro players. The advanced design of the diaphragm avoids resonant frequencies making it an ideal choice for the professional recording engineer.

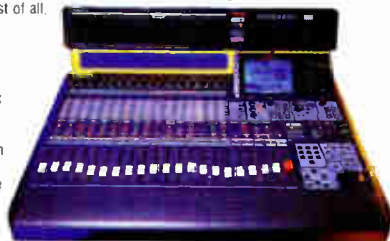
MIXING BOARDS

Panasonic RAMSA

Stop dreaming about your digital future, it's here! The Panasonic/Ramsa WR-DA7 digital mixer features 32-bit internal processing combined with 24-bit A/D and D/A converters as well as rroving faders, instant recall, surround sound capabilities, and much more. Best of all, it's easy to use, and it's available NOW!

FEATURES-

- 32 Inputs/6 AUX send/returns
- 24-bit converters
- Large backlit LCD screen displays EQ, bus and aux assignments, and dynamic/delay settings.
- 4-band parametric EQ
- Choice of Gate/Compressor/Limiter or Expander on each channel
- 5.1 channel surround sound in three modes on the bus outputs
- Output MMC
- Optional MIDI joystick



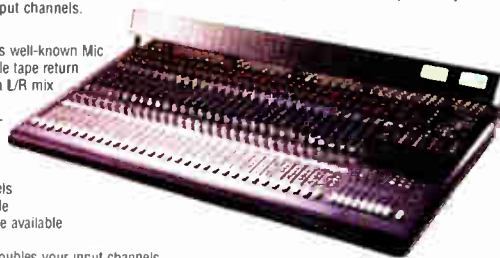
MACKIE

8 Bus Series Mixing Consoles

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

FEATURES-

- Each channel includes Mackie's well-known Mic preamp and a -10/+4 switchable tape return
- 8-assignable submasters and a LR mix master
- 4-band EQ with true parametric (3-control) Hi Mids, Lo Cut filter
- Extensive routing capabilities
- Available in 16/24 & 32 channels
- Optional Meter Bridges available
- Optional 24-E Expander console available
- Rugged all-metal chassis
- In-line monitoring effectively doubles your input channels



MS1202VLZ 12-Channel Compact Mic/Line Mixer

- Gain control, pan, 3 band EQ, and 2 Aux sends.
- 4 mono, 4 stereo channels (12 inputs total)
- Great for "extra inputs" on the fly.
- Phantom power



MS1402VLZ 14-Channel Compact Mic/Line Mixer

- Mic preamps w/Trip control (channels 1-6).
- 60mm "long" faders.
- Mute switch routes to all 3&4 bus.
- Low-cut filter • Phantom power.



CR1604VLZ 16 x 4 x 2 Mic/Line Mixer

- 7 Aux sends, 3 band EQ.
- Large 10-segment LED meter.
- Lowest noise/Highest headroom.
- 16 studio grade mic pre s.
- 3 different setup positions.
- Low-cut filter • Phantom power.



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

SENNHEISER

LX7 Professional Mixing Console

The LX7 was designed by Soundcraft co-founder Graham Blythe. Built in the UK, it uses surface mount technology to ensure accurate, consistent insertion of all components into LX7's PCBs. Roadworthy construction and 25 years of audio console experience put this newest addition to the Spirit line at the top of the heap.

FEATURES-

- 24 Ultramic preamps
- 100mm ALPS faders
- 7 bus outputs
- Comprehensive 4-band EQ includes 2 swept mids and 15dB of boost or cut
- Separate stereo input section
- Use in FOH applications as well as studio recording
- Internal power supply



MONITORS

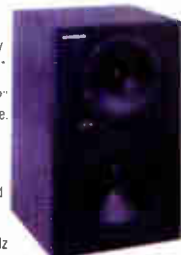
MACKIE

HR824

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

FEATURES-

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



SENNHEISER SPIRIT Absolute Zero

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

FEATURES-

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



TANNOY

PBM 6.5II

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

FEATURES-

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

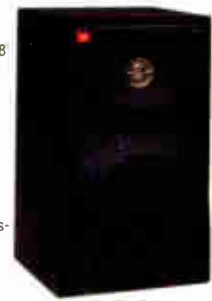


JBL SPECIAL

4206 & 4208

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

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



TO INQUIRE ABOUT YOUR ORDER:
800 221-5743 • 212 239-7765
OR FAX 24 HOURS:
800 947-2215 • 212 239-7549

New Address:
420 Ninth Ave. (Bet. 33rd & 34th St.)
New York, N.Y. 10001

MIC PREAMPS

dbx

Blue Series 786 Precision Mic Pre-amp

The dbx Blue Series 786 is a top-quality mic-preamp featuring the dbx 8 module. It's ultra-pristine signal path reveals the true characteristics of any microphone.

FEATURES-

Ultra high-drive transformer coupled outputs.
20dB pad, phase invert
+48V phantom power



- Super-low Z input switch
- dbx Type IV Conversion system digital output option

Focusrite

Green 3 "Voicebox"



The Voicebox provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice, and full Focusrite dynamics. Use it as a stand alone unit for direct-to-digital recording, or as an upgrade for the input section of a console.

FEATURES-

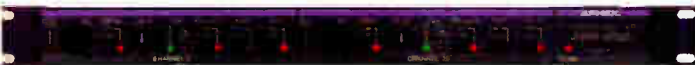
Same mic pre section as found on the Green Dual Mic Pre includes +48V phantom power, phase reverse, and a 75Hz high-pass filter. Mute control and a true-VU response LED bargraph are also provided. EQ section includes a mid parametric band with frequency and gain control as well as a gentle bell shape to bring out the character of the voice.

Dynamics section offers important voice processing functions of compression and de-essing combined with a noise reducing expander.

Single balanced Class A VCA delivers low distortion and a 100:1 ratio as low as -96dBu

APHEX

107 Tubessence 2 channel Mic Preamp



The 107 delivers outstanding sonic performance. It features Tubessence technology, front panel balanced inputs on both channels and LED metering, all in a single rack space.

FEATURES-

- 2 independent channels with front panel XLR inputs
- Low cut filter for 80Hz, 12dB/octave
- Up to 64dB of gain available
- Polarity inversion switch with LED indicator
- 20dB pad with red LED indicator, 2 LED input meter
- Individual channel remote mute capability
- Full +48V phantom power with red LED indicator
- Switchable +4dB/-10dB output with 1/4" TRS phone jacks

COMPRESSORS

dbx

"Blue Series" 160S Stereo Compressor

The dbx 160S combines the best features of all the great dbx compressors in a well-built unit where the craftsmanship is as stunning as the engineering is innovative. This is truly a desirable compressor.



FEATURES-

127dB dynamic range • Program dependent "Auto", or fully variable attack and release
Hard knee/OverEasy switchable.

ALESIS

3630 RMS/Peak 2Ch. Comp/Limiter/Gate

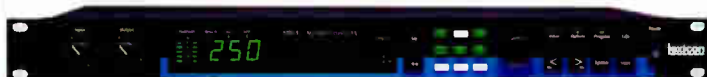


The 3630 is a dual-channel compressor that offers Ratio, Threshold, Attack and Decay controls to handle the toughest signals. It also offers a choice between RMS and Peak compression styles, plus Hard and Soft Knee dynamic curves for every application from subtle gain control to in-your-face punch. Ideal for use in applications from studio recording and mixing to live sound reinforcement and broadcast.

EFFECTS PROCESSING

Lexicon

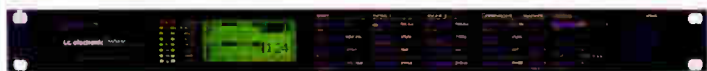
MPX-1 Multi-Effects Processor



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

t.c. electronic
ULTIMATE SOUND MACHINES

Wizard M2000 Studio Effects Processor



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

FEATURES-

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

SONY

DPS-V77 2 Ch. Master Effects Processor



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

FEATURES-

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

EQUALIZERS

Focusrite

Green 2 Focus EQ



The Green 2 Focus EQ is suitable for a variety of applications combining a Focusrite equaliser section with a multi-source input section. Use it as a high-quality front end for recording applications or patch it into the send/return loop to upgrade a single channel of console eq, either way, it sounds great.

FEATURES-

- XLR & 1/4" inputs are similar to the Dual Mic Pre but have been adapted to cope with a wider range of levels.
- VU metering via a 10-LED bargraph
- EQ section derived from the Red and Blue range processors for superb audio quality.

APHEX

Model 109 Parametric EQ with "TUBESSENCE"



The Aphex 109 is an extremely versatile and high performance parametric vacuum tube EQ with unique features, flexibility and sound. Great for "warming up" digital signals.

FEATURES-

- True tube circuitry in the output stage.
- General purpose 2 band or mono 4 band EQ configuration offers flexibility from general sweetening to critical problem solving.
- Operates in the EQ flat mode yet still passes signal through the Tubessence vacuum tube stage
- 1.5 octave to 2 octave bandwidth adjustment. • Switchable -10dBV/+4dBu operating level

FOR ORDERS CALL: **800-947-5508** OR FAX (24 HOURS): **800-947-9003**
212-444-6698 **212-444-5001**

MOST ORDERS SHIPPED WITHIN 24 HOURS
OVERNIGHT SERVICE AVAILABLE

On the Web: <http://www.bhphotovideo.com>

MUSIC SOFTWARE

Steinberg CUBASE VST

Virtual Studio Technology

Steinberg's Virtual Studio Technology (VST) turns your PowerPC or Windows based computer into a music production powerhouse featuring digital audio, real-time effects, automation, MIDI and scoring in one single program. Expandable with software Plug-Ins and an audio bus system for use with the latest generation of multi I/O audio cards. Cubase VST delivers.

- FEATURES-**
- Up to 32 channels of digital audio
 - Complete mixer with up to 128 EQs
 - 2 full-featured effects racks
 - All Realtime. Every action can be automated
 - **CUBASE SCORE** adds professional score printing and layout functions
 - **CUBASE AUDIO XT** adds support of Digidesign DAE compatible interfaces such as the ProTools System.



emagic LOGIC AUDIO 3.0

For Mac or Windows

Logic Audio integrates Digital Audio Recording & Editing, MIDI Sequencing, and Professional Scoring into a leading-edge music composition and production system. The new Version 3.0 features extended real-time editing and manipulation options along with numerous detailed solutions for use in professional studio environments.

- FEATURES-**
- Custom window setups can be assigned to keys for instant recall, up to 90 screensets per song
 - Interactive Editors such as Event, Hyper, Score, Matrix, Arrange and Environment are all linked
 - Realtime DSP effects
 - Highest resolution available, 960ppq
 - Environment window provides knobs, faders, buttons and other virtual objects that can be defined to send out any type of MIDI data
 - New bus system. Punch on the fly, & Cycle Mode
 - Support of Adobe Premiere and Digidesign Audiosoft plug-in formats



Mark of the Unicorn Digital Performer 2.11

MIDI Sequencer for Mac

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

- FEATURES-**
- MIDI Machine Control. Quicktime Video playback
 - Sample rate conversion
 - Spectral effects, pitch correction
 - Real-time editing and effects processing
 - Full featured Notation section
 - Virtual automated mixing

HARD DISK RECORDING



A Division of Avid Technology, Inc.

With Pro Tools Project you get 8 tracks of digital audio & 64 virtual tracks! The Pro Tools Project system includes an audio card as well as award winning Pro Tools software. You choose either an 888 or an 882 I/O to complete the package. Random access, non-destructive digital editing keeps your precious recorded material in its original form as you process and play with it, allowing you to take chances on tweaking a performance without risk. Project also features MIDI recording and playback as well as Quickpunch™ punch-on-the-fly & a direct upgrade path that lets you move to a full Pro Tools system when you're ready

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

888 & 882 I/O Audio Interfaces

The 888 and 882 I/Os each provide 8 channels of high quality A/D, D/A I/O for connection to Pro Tools Project and Session 8 PC systems. Choose the 882 and get an affordable audio interface featuring 1/4" balanced/unbalanced ins and outs in a single rack space. For more high-end applications, the 888 provides features such as XLR balanced analog ins and outs, 8 channels of AES/EBU I/O for direct digital transfers of tracks, high resolution LED metering & individual input/output level trims.

Audiomedia III

Digital Audio Card

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

ProTools Project™

Digital Audio for Macintosh



If you're already familiar with the Waves TDM bundle, you'd better take another look! This great package is now even better with the addition of 5 new processors, at the SAME PRICE! TDM owners can now maximize their power with plug-ins including the famous TrueVerb virtual-space reverb, the Q-10 EQ, C1 Compressor/Gate, S-1 Stereo Imager, PAZ-Psychocoacoustic Analyzer, L1-Ultramaximizer as well as MultiRack, WaveConvert and TrackPac Pro applications.

TDM BUNDLE



DIGITAL MULTI-TRACK RECORDERS

TASCAM DA-38

Digital Audio Recorder

The DA-38 was designed for musicians. Using the same Hi-8 format as the highly acclaimed DA-88, the DA-38 is an 8 track modular design that sounds great. It features an extremely fast transport, compatibility with Hi-8 tapes recorded on other machines, rugged construction, ergonomic design and sync compatibility with DA-88s.

- FEATURES-**
- Hi-8mm tape format
 - Next generation 18-bit A/D and 20-bit D/A converters with Delta-Sigma oversampling
 - Digital track copy for simple assembly composite edits

- Built-in Digital patchbay
- Track advance and track delay
- Easy to use interface



ALESIS ADAT XT20

Digital Audio Recorder

The New ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

- FEATURES-**
- 10-point autolocate system
 - Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
 - Remote control
 - Servo-balanced 56-pin ELCD connector

- Built-in electronic patchbay
- Copy/paste digital edits between machines or even within a single unit. Track Copy feature makes a digital clone of any track (or group of tracks) and copies it to any other track (or group) on the same recorder.



MIDI HARDWARE



Mark of the Unicorn MIDI Time Piece™ AV

8x8 Mac/PC MIDI Interface

The MTP AV takes the world renowned MTP II and adds synchronization that you really need like video genlock, ADAT sync, word clock sync, and even Digidesign superclock!

- FEATURES-**
- Same unit works on both Mac & PC platforms.
 - 8x8 MIDI merge matrix, 128 MIDI channels.
 - Fully programmable from the front panel.
 - 128 scene, battery-backed memory.
 - Fast 1x mode for high-speed MIDI data transfer.

Digital Time Piece™

Digital Interface



Think of it as the digital synchronization hub for your recording studio. The Digital Timepiece provides stable, centralized sync for most analog, digital audio, and video equipment. Lock together ADATs, DA-88's, ProTools, word clock, S/PDIF, video, SMPTE, and MMC computers and devices flawlessly. It ships with "Clockworks" software which gives you access to its many advanced features and remote control of some equipment settings such as record arm.

Studio 64XTC

Mac/PC MIDI Interface



The Studio 64XTC takes the assorted, individual pieces of your studio-your computer, MIDI devices, digital and analog multitracks and even pro video decks, and puts them all in sync.

- FEATURES-**
- 4 In / 4 Out, 64 channel MIDI/SMPTE interface/patchbay with powerful multitrack & video sync features
 - ADAT sync with MIDI machine control
 - Simultaneous wordclock and Superclock output, 44.1kHz or 48kHz for perfect sync with ADAT, DA-88 and ProTools
 - Video and Blackburst in (NTSC and PAL)
 - Cross-platform Mac and Windows compatibility

MIDI Translators

MIDI Interfaces

The MIDI Translator II™ and MIDI Translator Pro™ are the next generation portable interfaces. The MIDI Translator Pro™ provides twice the processing power of the MIDI Translator II and both let you switch between MIDI or peripherals with a flip of the THRU-switch - **NO CABLE SWAPPING!**

- TRANSLATOR II FEATURES-**
- 1 IN and 3 MIDI DUTS • 16 MIDI channels
 - Small size fits anywhere - no power supply required!

- TRANSLATOR PRO FEATURES-**
- 2 MIDI INs x 6 MIDI DUTS. Supports 32 MIDI channels
 - 2 MIDI OUTs accessible on front panel
 - Self powered - no power supply required



TO INQUIRE ABOUT YOUR ORDER:
800 221-5743 • 212 239-7765
OR FAX 24 HOURS:
800 947-2215 • 212 239-7549

New Address:
420 Ninth Ave. (Bet. 33rd & 34th St.)
New York, N.Y. 10001

KEYBOARDS & SOUND MODULES

Roland
XP60 & XP80 Music Workstations



The XP-80 delivers everything you've ever wanted in a music workstation. An unprecedented collection of carefully integrated features provide instant response, maximum realtime control and incredible user expandability. The XP-80 features a pro-quality 76-note, weighted action keyboard while the NEW XP-60 features the same sound engine in a 61-note keyboard.

- XP80 FEATURES--**
- 64-voice polyphony and 16-part multitimbral capability
 - 16 Mbytes of internal waveform memory; 100Mbytes when fully expanded (16-bit linear format)
 - 16-track MPC-pro sequencer with direct from disk playback. Sequencer holds approx. 60,000 notes
 - New sequencer functions like "non-stop" loop recording and refined Groove Quantize template
 - Enhanced realism performance capability with advanced Arpeggiator including MIDI sync and guitar strum mode and Realtime Phrase Sequence (RPS) for on-the-fly triggering of patterns
 - 40 insert effects in addition to reverb and chorus
 - 2 pairs of independent stereo outputs; click output jack with volume knob
 - Large backlit LCD display

MC-505 groovebox



The MC-505 groovebox builds upon the success of the MC-303. It is a self-contained, retro-styled dance music sequencer and sound module with newly upgraded sounds and powerful, futuristic features. Among these new features are the revolutionary i-Beam controller and a MegaMix function for intuitive realtime mixing of beats and patterns, making the MC 505 a DJ, hip-hop, techno or dance music artist's dream come true. It's Vanderlust in a box.

FEATURES--

- 64-voice polyphony, steeper filters, ADSR envelope for editing sounds, powerful effects.
- 714 onboard dance music patterns developed by cutting edge sound designers worldwide.
- 512 built-in sounds, 26 rhythm sets
- Three independent, synchronized effects processors
- Powerful onboard Arpeggiator
- SmartMedia slot accepts external 2MB and 4MB SmartMedia card for unlimited pattern and patch storage and direct pattern playback

ALESIS
QS6, QS7 & QS8 Pro Keyboards



Alesis Q's synthesizers all provide true 64-voice polyphony, and a huge sound library that is constructed of 16-bit linear samples. With their powerful computer and digital audio interface capability, built-in 4-bus Multi-effects and expressive performance features, there is sure to be a QS synth perfect for you.

- FEATURES--**
- 16-bit internal, 16MB expansion memory (32MB total possible)
 - SoundBridge Sample software for importing almost any sample from your Mac or PC
 - QS6 - 61 key synth, QS7 - 76 key synth, QS8 - 88 weighted keys
 - *Available on QS7 and QS8 only
 - 16MB internal, 16MB expansion memory (32MB total possible)
 - 64 voice polyphonic
 - 512 preset, 128 user internal program memory
 - 400 preset, 100 user mix memory
 - RS422, RS232 port formats • ADAT interface
 - 4 outputs (2 main, 2 aux)

KORG SGproX



The SGproX features newly-sampled stereo pianos re-ordered with attention to every detail. Carefully crafted velocity switching provides tonal changes and dynamics that come alive under your fingers and the 88-note weighted keyboard has been designed as both a stage piano and master controller.

FEATURES--

- 88-note, weighted action keyboard
- 64-voice polyphony, 24MB ROM
- 64 user-retrievable programs
- 12-types of stereo digital multi-effects
- Master Controller functions, Backlit LCD display

KURZWEIL
K2500 Series Music Workstations

The K2500 series from Kurzweil utilizes the acclaimed V.A.S.T. technology for top-quality professional sound. Available in Rack mount, 76-key, and 88 weighted key keyboard configurations, these keyboards combine ROM based samples, on-board effects, V.A.S.T. synthesis technology and full sampling capabilities on some units.

- FEATURES--**
- True 48-voice polyphony
 - Fluorescent 64 x 240 backlit display
 - Up to 128MB sample memory
 - Full MIDI controller capabilities
 - 32-track sequencer
 - Sampling option available
 - Dual SCSI ports
 - DMi Digital Multitrack interface option for data format and sample rate conversion (Interfaces with ADATs or DA-88s)

MicroPiano™ Piano Module




The MicroPiano is a half-rack sound module featuring Grand Piano and other sampled sounds, plus built-in digital effects. Altogether there are 32 available presets, chosen from Kurzweil's highly acclaimed sample library, making the MicroPiano the ideal sound module for any player who demands great sound quality at an unprecedented price.

SAMPLING

E-MU
E-mu Systems, Inc.

E-6400 Emulator Sampling Rack



The e-6400 offers the power of E-mu Systems' renowned Emulator Operating System (EOS) and superb audio quality in a package perfect for the budget-minded professional. The e-6400 comes with stereo sampling, 4MB of RAM and is fully upgradeable to E-mu's top of the line Emulator sampling synthesizers, the E4X and E4XTurbo.

FEATURES--

- 64 voice polyphony (expandable to 128)
- 4MB sound RAM
- 2 CD-ROM's included (400MB of sounds)
- 8 balanced analog outputs
- Onboard graphic waveform editing
- Load while play
- Stereo phase lock time compression.


AKAI

MPC2000 MIDI Production Center

Whether you're producing rap or hip-hop, sequencing a rack of MIDI modules, or performing live, the MPC2000 gives you powerful tools to make your music shine. It's the NEW MPC!

- FEATURES--**
- Large 248 x 60 LCD Graphic display
 - 64-track, 100,000 note sequencer with linear drum machine style programming.
 - 16-bit, 32-voice stereo sampler
 - Standard SCSI interface
 - Soft keys, Data/Digit wheels, cursor control and more.
 - Keypad for directly entering sample points.
 - Note variation slider gives you realtime control of any sound's tuning, attack, decay, or filter frequency.
 - Floppy Disk Drive
 - Powerful expansion options turn your MPC2000 into an MPC2000 STUDIO, the ultimate MPC!

S-Series Samplers



Starting with 64X oversampling, Akai's S-Series Samplers use 28-bit internal processing to preserve every nuance of your sound and the outputs are 18- and 20-bit to ensure reproduction of your sounds entire dynamic range. These three new samplers add powerful capabilities, ease-of-use, expandability and affordability to set the standard for professional samplers.

Ad Index & Advertiser

| PAGE | PRODUCT INFO NUMBER | ADVERTISER |
|---------|---------------------|---|
| 158 | 109 | Aardvark |
| 100 | 065 | Acoustic |
| 80 | 048 | Acoustical Solutions |
| 188 | 129 | Acoustic Sciences Corporation (ASC) |
| 178 | 123 | Acoustics First |
| 102 | 067 | Acoustic Systems |
| 41 | 022 | Akai |
| 99 | 061 | AKG (Solidtube) |
| 103 | 069 | AKG (WMS300) |
| IFC | 001 | Alesis (ADAT Type II) |
| 59 | 024 | Alesis (Wedge) |
| 194 | 136 | AlterMedia |
| 91 | 059 | Amek |
| 206 | 145 | American Sound & Video |
| 11 | 006 | AMS Neve (Capricorn) |
| 62 | 035 | AMS Neve (V-Rack/1081 Amplifier) |
| 90 | 058 | Anthony DeMaria Labs |
| 28 | - | Anthro |
| 52 | 026 | Apogee Electronics (AD-3000) |
| 203 | 152 | Apogee Electronics (UV22) |
| 40 | 021 | Applied Research & Technology (ART) |
| 92 | 060 | Athan |
| 159 | 110 | Audio Centron |
| 89 | 057 | Audio-Technica |
| 228-231 | 161 | B & H Photo-Video |
| 177 | 122 | BASF |
| 76 | 045 | Benchmark Media Systems |
| 64 | 037 | beyerdynamic |
| 167 | 115 | Brystor |
| 77 | 053 | BSS |
| 198 | 138 | BST |
| 109 | 072 | Burlington A/V Recording Media |
| 147 | 101 | Burlington A/V Recording Media #2 |
| 137 | 094 | CAD |
| 108 | 071 | Cakewalk Music Software |
| 84 | 052 | Calrec Audio |
| 131 | 170 | CalSwitch |
| 102 | 068 | Canorus |
| 178 | 124 | Caruso Music |
| 205 | 143 | Carver Professional |
| 211 | 149 | Carvin |
| 236 | 169 | CMS Mastering |
| 129 | 090 | Conservatory of Recording Arts & Sciences |
| 151 | 104 | D&R USA |
| 141 | 096 | The DAT Store |
| 101 | 066 | dbx Professional Products |
| 131 | 092 | Delaware Valley Digital Media |
| 107 | 070 | Denon Electronics |
| 71 | 040 | Digidesign |
| 204 | 142 | Disc Makers |
| 38 | 019 | Dolby |
| 142 | 098 | DPA Microphones (Brüel & Kjaer/T.G.I.) |
| 2 | 002 | Drawmer/Transamerica Audio Group |
| 80 | 049 | Dreamhire |
| 97 | 063 | Dynaudio Acoustics |
| 191 | 132 | EAR Professional Audio/Video |
| 22-23 | 010 | Electro-Voice (EV) |
| 29 | 014 | Emagic |
| 113 | 077 | Ensoniq |

| PAGE | PRODUCT INFO NUMBER | ADVERTISER |
|---------|---------------------|----------------------------------|
| 237 | 167 | Equi-Tech |
| 55 | 029 | Euphonix |
| 148 | 102 | Europadisk |
| 73 | 038 | Event Electronics |
| 53 | 027 | Eventide |
| 235 | 164 | Five Towns College |
| 129 | 091 | Flatworks |
| 86 | 054 | Focusrite |
| 87 | 055 | Fostex |
| 123 | 084 | Frontier Design Group |
| 153 | 105 | Fu'll Compass |
| 94 | 062 | Fu'll Sail |
| 168/159 | 171 | Gefen Systems |
| 220 | 156 | Gepco |
| 110 | 073 | Glyph Technologies |
| 112 | 075 | Grandma's Music & Sound |
| 83 | 051 | Groove Tubes Audio |
| 158 | 108 | Guitar Center's Rhythm City |
| 164 | 112 | The John Hardy Company |
| 185 | 127 | Hermes Music |
| 111 | 074 | HHB Communications (CDR800) |
| 143 | 099 | HHB Communications (Portadat) |
| 201 | 140 | The Hollywood Edge |
| 26 | 012 | Hot House Professional Audio |
| 200 | 139 | Institute of Audio Research |
| BC | - | JBL Professional |
| 58 | 032 | Joemeek/PMI |
| 125 | 086 | Kurzweil Music Systems |
| 79 | 047 | LA Audio/SCV London |
| 235 | 164 | L&M Music |
| 112 | 076 | Lawson Microphones |
| 27 | 013 | Lexicon |
| 18-19 | 008 | Mackie (SR24*4 /32*4) |
| IBC | 168 | Mackie (D8*B) |
| 114 | 078 | Manley Laboratories |
| 166 | 114 | Marktek Video Supply |
| 88 | 056 | MartinSound |
| 78 | 116 | Mei Ah Electrical |
| 220 | 155 | MediaForce |
| 122 | 083 | MediaFDRM |
| 93 | 064 | Meyer Sound |
| 126 | 087 | Micro Technology Unlimited (MTU) |
| 145 | 100 | Minnetonka Software |
| 225 | - | Mix en Español - mixmag.com |
| 44-45 | - | - |
| 168 | 126 | Musician's Friend |
| 214 | 150 | Music Producers Guild (MPGA) |
| 13 | 007 | Neumann/USA |
| 157 | 107 | Northeastern Digital |
| 21 | 009 | Otari (Digital Recorders) |
| 115 | 079 | Otari (RADAR II) |
| 85 | - | Panasonic (DA7 Mixer) |
| 95 | - | Panasonic (SV3800) |
| 63 | 036 | Peavey (RQ Series) |
| 121 | 082 | Peavey (Q Factor) |
| 219 | 154 | Personal Studio Buyer's Guide |
| 36 | 017 | Pilciner Schoustal/Acoustic-X |
| 218 | 153 | ProSound & Stage Lighting |
| 210 | 148 | QCA |

| PAGE | PRODUCT INFO NUMBER | ADVERTISER |
|-------|---------------------|-------------------------------------|
| 179 | 125 | QSC Audio Products |
| 189 | 130 | QSC Audio Products #2 |
| 9 | 005 | Quantegy |
| 174 | 119 | RADIAL |
| 190 | 131 | Recording Industry Sourcebook |
| 224 | 159 | The Recording Workshop |
| 193 | 135 | Renkus-Heinz |
| 210 | 147 | Rich Music |
| 141 | 097 | Rocket Lab |
| 56 | 030 | Rolls |
| 74 | 043 | Sabine |
| 154 | - | Sam Ash Professional |
| 138 | 141 | School of Audio Engineering (SAE) |
| 128 | 089 | SEK'D |
| 192 | 133 | Selenium |
| 49 | 033 | Sennheiser (Evolution) |
| 149 | 103 | Sennheiser (MKH) |
| 57 | 031 | Shure |
| 155 | 106 | Simon Systems Engineering |
| 1 | - | Solid State Logic (SSL) |
| 162 | - | Solid State Logic (SSL) #2 |
| 120 | 081 | Sonorus |
| 14-15 | - | Sony |
| 37 | 018 | Soundcraft |
| 170 | 117 | Sound Ideas |
| 119 | 080 | Soundscape Digital |
| 192 | 134 | Spir Music |
| 6-7 | 004 | Spirit |
| 81 | 050 | Steinberg North America |
| 51 | 025 | Studer Professional Audio Equipment |
| 237 | 166 | Studio Consultants |
| 17 | - | StudioPro98 |
| 30 | 015 | Sweetwater Sound |
| 171 | 118 | Switchcraft |
| 70 | 039 | TAD/Technical Audio Devices |
| 3 | 003 | Tannoy |
| 32-33 | 016 | Tascam (MMR-8) |
| 67 | 042 | Tascam (Wave Frame) |
| 48 | 023 | Taytrix |
| 39 | 020 | TC Electronic (Finalizer Plus) |
| 72 | 041 | TC Electronic (Tube-Tech) |
| 61 | 034 | That |
| 194 | 137 | Thoroughbred Music |
| 54 | 028 | TL Audio/Sascom Marketing |
| 224 | 160 | Troisi Design |
| 215 | 151 | Taxi |
| 67 | 042 | Wave Frames |
| 165 | 113 | Westlake Audio |
| 206 | 144 | West L.A. Music |
| 135 | 093 | Whirlwind |
| 234 | 162 | Whisper Room |
| 127 | 088 | X Wire |
| 25 | 011 | Yamaha (02R) |
| 75 | 044 | Yamaha (Pro Audio) |
| 175 | 120 | Yamaha (PM Series) |
| 187 | 128 | Yamaha (GA Series Consoles) |
| 64/65 | 172 | Yamaha |
| 124 | 085 | Yorkville |
| 207 | 146 | Z Systems |

—FROM PAGE 20, NOW I KNOW MY LCDs

work to warrant a good video projection system for our studios, while others of us simply feel that we need a nice, big, theater-quality image to go along with our nice, big, theater-quality surround sound systems at home. But we don't need and often can't use these monsters. So what's up for the rest of us? What alternate technologies are out there, and what is coming?

For at least the last year-and-a-half, I have been diligently attempting to write the definitive column on a real contender—the LCD projector. Well, this isn't it—and this is your official notice that it will never happen. LCD projector technology is such a moving target that the beginning of each sentence I write is obsolete by the time I get to its end.

THE CLIFF'S NOTES OF LCD PROJECTOR HISTORY

In the beginning they were dim. Real dim. To use one, you had to first wait until the darkest hour of night, then close all your windows and nail blankets over them (to assure no starlight could enter), and wait in the dark with your eyes closed for an hour while they acclimated. Then you would make the picture as small as possible for the brightest image (inverse square law, you know). And last, but certainly not least, you had to smoke all the ganja you had so that the weak, pasty colors would look brighter and more intense.

Now, those of you with good scientific backgrounds have probably already figured out the great weakness in this system—it's obvious. About half an hour or so into the movie, the ganja would be full on and the munchies would strike. You would then be forced to get up and feel your way into the kitchen for a turkey and a chocolate cake. You would open the refrigerator, and the little light would blind you. So 15 minutes to get the food, 20 minutes of sitting there in front of the screen waiting to be able to see it again, and then another 30 minutes cleaning the mess you made attempting to eat turkey and chocolate cake by feel in the dark while you waited. Over one hour blown. The movie's toast. THC and LCDs. Another case of what seems like a good idea turning out to be bad.

So on with the technical history. LCD projectors use three transmissive

LCD panels (the looking glasses); one each R, G and B. Colors are separated with dichroic prisms and mirrors, and then re-assembled for the final image to be projected from a single lens. This means there can be no misconvergence unless it's broken, and the image may be zoomed at will.

There are, however, problems with this technology as well. Early LCD panels had lousy contrast ratios (20:50:1), and as pointed out above, early light sources sucked. This one-two punch is what caused the ganja-factor.

**Many of us do enough
film or TV work to
warrant a good video
projection system for
our studios, while others
simply feel that
we need a nice, big,
theater-quality image
to go with our nice, big,
theater-quality
surround sound systems.**

But there's more. These panels tried to display a video image using around 20 pixels, as it was very hard to get acceptable production yields as the number of pixels in a panel was increased. Panels with higher pixel counts (higher resolution) also had more electrode traces. This in turn meant even dimmer displays, and ghosting due to higher drive resistances. Manufacturers knew that they needed more pixels (at *least* NTSC's 640x480), but it took *years* to get there!

These early LCD systems had very visible pixels and colors that looked like hand-tinted photos from the old wild West. You can tell a machine of this era as its panels measured about 3.5 inches diagonally. I have reviewed this technology in past columns if you are curious (green).

Later, both LCD panel resolution and light source technology improved (real 640x480 appeared, and light output went from 100 ANSI lumens to 250), and things got better—and stayed there

Coming in Mix
June 1998

FACILITY DESIGN

• FEATURES

"New York's Finest" Studio Supplement
Optimizing the Small Studio Reference Monitors
Class of '98

• LIVE SOUND

Summer Tours
"The Lion King" on Broadway
NSCA Show Report
All Access: Joe Satriani

• EQUIPMENT FIELD TESTS

Digidesign Pro Tools 24
Aphex Aural Exciter Plug-In
E-mu Systems EOS 3.0
Antares Autotune Plug-In

• PRODUCER'S DESK

Hal Wilner
Paul Wickliffe

• PLUS!

DVD Update...Tour Profile on Tom Jones...Minimizing Distortion in the Studio...Gathering Personal Sound Effects, Part IV...New York Regional Focus.

ATTENTION ADVERTISERS:

Deadline: for ad placement is the seventh of the month, two months prior to publication. Call (510) 653-3307 for a 1998 Mix Editorial Calendar, space reservations and complete advertising information.

MIX[®]

VISIT MIX ONLINE AT WWW.MIXMAG.COM!

WhisperRoom INC.
Sound Isolation Enclosures



Recording • Practicing • Broadcasting
etc.
Various Sizes

Tel: 423-585-5827 • Fax: 423-585-5831
Website: www.whisperroom.com
116 S. Sugar Hollow Rd., Morristown, TN 37813 USA

CIRCLE #162 ON PRODUCT INFO CARD

JULY 1998

• Live Sound Issue

- ▲ Computer Control
- ▲ Acoustic Recording
- ▲ Small-Format Consoles
- ▲ Summer Blockbuster
- ▲ Nashville Regional Focus

Ad Close:

May 7

Materials Due:

May 14

for years. Then, only recently, new higher-contrast amorphous polysilicon LCD panels emerged. They have contrast ratios in the area of 100:1, much less ghosting and better color uniformity, and are amazingly small—in the area of ¼-inch! This makes it much easier to build an accurate projector without hot spots. And so they did.

This technology represents the current state-of-the-art, and it was this that I had intended to review. But dramatic changes in marketing approaches from the big players have blurred comparisons and confused performance issues beyond anything imaginable.

I COULDA BEEN A CONTENDER

When it comes down to quality and features for under \$10k (don't panic—some of these systems are *way* under \$10k), Sharp and Sony have interesting offerings that seemed superior to

**LCD projector
technology is such
a moving target
that the beginning
of each sentence I write
is obsolete by the time
I get to its end.**

most. So for me it all came down to a shoot-out between Sony and Sharp for the last few months around here—with complicated and confusing results. A sort of micro-synopsis follows:

This year, Sharp has moved their pro systems away from video projection toward data/computer projection. They make some stunning machines—small, light and bright—but this year's new models are actually weaker than last year's when it comes to video features. They are, however, the clear winners when you want to project anything from 640x480 to 1024x768 data. This is a big shock to me, as last year's machines (even then touted as a data projector capable of showing video) produced impressive, smooth, warm, uniform, pixel-free, naturally tinted video.

Sony has a real 16:9 dedicated high-res video projector that will happily fill

your wall with a real movie—but it is very soft and not the brightest kid on the block (even though both these systems have the same brightness number).

Sony also has data projectors, but I chose their video unit as this is what I was really searching for. Sharp has many other models, with more features and even higher res, but the model I played with was their recommendation. I finally ended up with four pages of complicated comparisons—and a complicated final recommendation.

BUT...

As I was sorting all this out, two newer technologies have appeared. A few years ago TI decided that the right way to slam an image onto a wall was to develop a chip with thousands of little micro-mirrors on its surface. They physically spin on little wire hinges when addressed! Does it work? Yes. Is it totally insane? Well, yes—but it does work, and since the mirrors almost touch one another, pixel boundaries all but disappear.

But current projectors use multiple chips in order to get crazed brightness levels, and they are very, very expensive. And because they are physically moving parts, they make me a bit nervous, though I admit that so far they seem pretty reliable.

AND...

Recently another technology has emerged—*reflective LCD*. This is a very simple and promising concept. Instead of shoving the light *through* the LCD panel, which places severe limits on both brightness and contrast ratio, the light is bounced off the panels. If properly implemented, contrast ratios can more than double theoretically, and brightness can be, well—essentially unlimited. This technology holds great promise for the future of precise, bright LCD projectors. I will definitely grab the first one I can to check it out.

SO...

If you want an LCD projector for under \$10k right now, look at Sony for video and Sharp for data. But don't just look *for* them, look *at* them—only you can decide if the look and character are right for your application. If you can wait, maybe you should. The new reflective technology looks very promising. ■

SSC now sees pixels even when his eyes are closed. Tracers in the '60s, pixels in the '90s. Watcha gonna do?

—FROM PAGE 28, BACK TO THE WEB

jokes and horror stories contributed by readers, and we've brought these over to mixmag.com. We're assembling online what we hope will be the most comprehensive database on the Internet of industry jokes—not only about the audio business (Q: How many record producers does it take to change a light bulb? A: I don't know, what do you think?) but music, television, and computers, too—as well as a large archive of humorous articles and parodies, such as the priceless Rane PI 14 *Pseudoacoustic Infector*, which can add “varying degrees of this or that” to any audio signal, assuming you can figure out how to turn it on.

Everyone in this business has stories about the session/client/singer/producer/venue from Hell, and we're collecting these. No names, please (except yours), but if you have a favorite story about the worst gig you've ever done, we want to know about it. Reading this section is guaranteed to make you feel better about whatever kind of horrible session you've just finished.

And there will be other resources: We're collecting and publishing Web links to manufacturers, industry organizations, schools and other sites of interest to the people who read *Mix*, as well as to the Spanish edition of *Mix*, our sister publication *Electronic Musician*, and to the many and varied magazines in our Intertec corporate family. Plus we're working on ways to make the *Mix Master Directory* and the *Recording Industry Sourcebook* available online, with search engines for these huge databases so that you can zero in on facilities, manufacturers, services, freelancers or whatever you're looking for in a flash.

The Web site, like the dead-tree version of *Mix*, is supported by advertising, with a small amount of real estate devoted to ads, which rotate periodically so you don't always see the same ones. A print ad can provide a reader service number that you blacken on a postcard and then wait for a written response from the advertiser, or an 800 number that you call and then wade through a labyrinthine voice-messaging system. On Mix Online, clicking on an ad takes you straight to the advertiser's Web site (assuming they have one). This means you can check out their message quickly and at your convenience, and when you're ready to come back to us, just click on your Back button.

We do ask for something in return for making all of this information available to you: We want to know who you are. Not so we can sell your name to junk mailers and telephone hucksters, but so we can tell who's visiting us on the site, and what part of the industry they represent. Let's be honest: The more we know about you, and what you do and what you need, the more we can tell our advertisers about our readership. This makes us more valuable to them, which in turn gives us more resources (i.e., money) to make the site more valuable to you.

So to use some of our resources, or to participate in our discussion groups, we're asking you to sign up as a member of Mix Online: fill out a simple form right on the site, and you'll get a password that will let you dive right into the archives, the forums and everything else. We can plant a “cookie” on your computer that will automatically remember your password so you don't have to; if you're philosophically opposed to cookies (even though this one has no other purpose at all), you can tell us not to plant one and you'll have to type in your password every time you visit. No salesman will call, no credit card number will be recorded, and there's no age requirement!

And we ask for something else: your feedback. You can e-mail me or the other editors (the addresses are on the site), or fill out the questionnaire you'll find there. Tell us what you like, and don't like, about Mix Online. What's terrific, what's boring, what's obnoxious, what's missing. How we can help you get access to and use the information you need as an audio professional. As with any publication, it's the readers who will make Mix Online successful, and because the feedback loop on a Web site is so fast, we can respond to your needs quickly and effectively.

For those of you who have become Signal2Noise fans, I'm going to keep that site going, as the loose, informal, free-for-all it's become. It's gotten to be too much fun to just let it go away. But the serious information, and the serious communication that our industry needs, can be found on www.mixmag.com. I urge you to come see us, bookmark us and come back again as we grow. I'm pretty excited, and you should be too. ■

At presstime, we've secured a new domain name, mixonline.com. For the time being, both domain names are active.



OUR INVENTORY IS
HUGE
OUR PRICES ARE
LOW
YOUR SATISFACTION IS
GUARANTEED

L&M MUSIC
www.lmmusic.com
1-800-876-8638
6228 Airpark Drive, Chattanooga, TN 37421

CIRCLE #163 ON PRODUCT INFO CARD



Get a Sound Education

Prepare for your career in music at Five Towns College. The College that specializes in the music industry.

- 2-year and 4-year College Degrees
- Audio Recording Technology
- Video Production
- Jazz/Commercial Music
- Music Business
- 48-Track Digital Recording Studio
- NYC Internships

Five Towns College
Make Music Your Life!

305. N. Service Rd.
Dix Hills, NY 11746
(516) 424-7000 ext 110.

CIRCLE #164 ON PRODUCT INFO CARD

our records speak for themselves

"CMS has been my home for many years. Robert creates a depth and clarity to my work that is unmatched."

Don Murray

Grammy award winning engineer
(Lee Ritenour, Dave Grusin, Fourplay, EWF)



cms mastering
Old Town Pasadena 626.405.8002

CIRCLE #169 ON PRODUCT INFO CARD

NO DOUBT
BUSH
JOHN HIATT
JOHNNY WINTER
COREY STEVENS
RICHARD ELLIOT
SHAQ
EARTH WIND
& FIRE
LEE RITENOUR
CHARLIE
MUSSELWHITE

—FROM PAGE 58, GOING WIRELESS

imity to each other, sums and differences at different frequencies can occur, producing intermodulation distortion, or simply "intermods." Introducing a fourth system creates the need for still more calculations because of another complex interaction known as a triple beat. A triple beat

—FROM PAGE 58, TELEPRODUCTION

Porporino, a freelance engineer who works extensively in the highly RF-saturated New York metro area, notes that he has sent his systems back to manufacturers for customization of their transmission frequencies. "That service usually only applies to very expensive systems, though," he adds.

One thing becomes clear when talking about wireless with veterans of the technology: There are a lot of freelancers out there, even among major television networks. Larry Kaltenbach has worked for over a decade on magazine shows, including "Inside Edition," "Hard Copy" and "Lifestyles of the Rich and Famous," as well as the "numbers" shows: "20/20," "60 Minutes" and "48 Hours." He was also working for a major network on site in Oklahoma City after the 1995 bombing of the Federal building.

"The reality of wireless is that frequency coordination is often a myth," says Kaltenbach. "The time pressures are too great. Municipally coordination agencies either don't exist or don't make themselves easily available, there are budgetary constraints that limit equipment choices, and producers are rushed to get the work done. That's particularly the case in ENG [electronic news gathering] and magazine shows, but it applies and affects wireless operations in other applications, including serial television location work, Broadway shows and live concert performances."

Since video crews are also often freelance, Kaltenbach strongly suggests making every attempt to coordinate with them as far ahead as possible. This is easier when working consistently in a single region or city. Kaltenbach notes that Lectrosionics wireless systems and Tram capsules have become a de facto standard in New York City. "But there's a trade-off even in that respect," he says. Lectrosionics don't allow you to

occurs when the frequencies of three transmitters combine to land on the frequency of the fourth system.

Adding systems or any RF emission in the environment (TV stations, two-way radios, etc.) results in an exponential increase in the number of calculations. The only practical way of determining if multiple systems will

change frequencies, but they're incredibly rugged and reliable."

When traveling to another city, the reality is, anything goes, says Kaltenbach. "In Oklahoma City, there were dozens of crews there from news and, later, magazine shows, and no one was discussing which frequency they were using," he says. "There just isn't time."

Broadway shows are not that much different from ENG, despite their fixed locations. "We're up to about 48 channels of Sennheiser SK50/1046 wireless on [the Paul Simon musical] *Capeman*, so sometimes it looks like a news event," laughs Dominick Sack, director of operations at Sound Associates in New York. Sound Associates has also done theater sound for *Beauty & The Beast* and other Broadway hits. Sack says he limits his wireless systems to those from Sennheiser and Sony. He says he prefers the Sennheisers on large multichannel shows, because of the company's early implementation of narrow-band filtering, which diminishes crosstalk between channels. "The number of wireless channels you can use in a single space is limited by frequency response, bandwidth and the RF requirements of the system," he explains. "Before narrow-band filtering, we were pretty limited as to the number of channels we could put into a show, and that affected a number of aspects of the entire production. The way wireless has changed has in turn changed how Broadway thinks."

Sack also notes that wireless mics don't respond to equalization techniques quite the same as wired ones. "Hard-wired mics are usually cardioid, while lavalier mics have to be omni," he explains. "The off-axis response is not the same, so you have to EQ in a slightly different way, filtering because the pickup area of the omni mic is wider, and it's also harder to get sufficient gain before feedback." ■

GET LISTED!

call 800-344-LIST
to enlist

IN THE 1999

TENTH ANNIVERSARY
RECORDING INDUSTRY
SOURCEBOOK

AND THE
MIX Master
Directory

DEADLINE:
July 1, 1998

operate "intermod free" is to use a computer program that takes all these interactions into consideration.

In the past five years, frequency-synthesized (frequency-agile) systems have become very popular. These are wireless systems that may be tuned to a number of frequencies within a specific bandwidth. Frequency-agile systems are not able to tune across the entire band but are only tunable over a relatively narrow range, typically 20 to 30 MHz. The need for frequency coordination remains even after the tunable bandwidth has been selected. Nevertheless, synthesized systems definitely have their place, especially for those who travel. Multiple systems will still require some form of frequency coordination to select the frequency that should be used for a given city. At least one manufacturer has designed a microprocessor-controlled receiver that can search throughout the bandwidth of the receiver, detecting RF emissions within the bandwidth and alerting the user to interference before using it.

It's clear that using multiple systems, especially in major urban areas that have high concentrations of RF, requires thorough coordination and frequency analysis. When doing frequency coordination, there are many judgment calls that must be made, and the more knowledgeable the coordinator is about the systems being used and the technical aspects, the more successful the outcome will be. As mentioned before, all of the above calculations must take into consideration any RF emission in the environment that is of sufficient signal strength to get into the receiver. Higher-quality systems are designed with filters and circuits that have tighter tolerance that allow them to operate in more hostile RF environments. A wise choice would be high-quality systems acquired from a supplier that has a track record doing frequency coordination. Advanced technology has greatly improved wireless microphones over the years, and now we must take the time to choose the right systems and select the best frequencies on which to operate. ■

Bill Sien is vice president of Systems Wireless Ltd., a firm in Herndon, Va., that specializes in selling, renting, servicing and computer-coordinating multiple wireless systems. Sien has 20 years of experience in providing professional wireless facilities for broadcasters, theme parks, theaters and sporting events.

The Long Haul



studio consultants, inc.

321 West 44th Street
New York, NY 10036
(212) 586-7376

You'll find Calrec audio consoles in this country's newest, biggest, and best live TV production mobiles. All Calrec models offer:

- Outstanding sound quality
- Very low noise
- Very high headroom
- Rigid but lightweight construction
- Low current, low heat circuitry
- Compact yet ergonomic design
- Straightforward layout
- Bulletproof reliability

The new **Q² Series** has the full Calrec pedigree, plus dual bank faders for multitrack monitoring and additional inputs. Tackle your most demanding jobs with up to 120 mono or stereo inputs across the width of a standard vehicle!

On the road or in the studio, Calrec consoles are built for the long haul.

Aardvark, API, Apogee Electronics, Audix, B&B Systems, Brauner, Bryston, Calrec, Drawmer, Gefen Systems, Genelec, Lexicon, MediaFORM, Middle Atlantic, Mytek, PrismSound, PMC, Sonic Science, Sonic Solutions, SoundField, Sound Ideas, Star Case, Westlake, White Instruments, Z-Systems and other exceptional audio products.

Equipment, support, and design services for professional audio facilities and broadcasters in the New York area—since 1971.

CIRCLE #166 ON PRODUCT INFO CARD

Equi=Tech™

...Balanced Power Systems



WALL CABINET SYSTEMS

- Complete Turn-key Systems for Hard-wired A/C Power Distribution
- 4 Sizes Available: 50, 75, 100 and 125 Amps
- Lifetime Warranty on Power Transformer
- Unlimited Technical Support



Balanced Power Technology
by Equi=Tech Corporation

U.S. Patent No. 5,640,314 - other Pat. Pend.

Equi=Tech Corporation • P.O. Box 249 • Selma, OR 97538
Tel: 541/597-4448 • FAX: 541/597-4099 • <http://www.equitech.com>

CIRCLE #167 ON PRODUCT INFO CARD

MARKETPLACE




• 1,000 CDs for \$1,350 •

This complete package includes:
 3 colors on disc, 4 panel color folder
 & tray card (client supplied film)
 jewel box and poly wrap.
 Compare & Save

DISCOUNT PRICING
 MAJOR LABEL QUALITY
 GUARANTEED SATISFACTION
 SUPERIOR CUSTOMER SERVICE

205-851-8101
www.moontown.com

Moon Town Disc clients include Rolling Stones keyboardist Chuck Leavell, legendary Allman Brothers producer Johnny Sandlin, and Ted Nugent vocalist/guitarist Derek St. Holmes

CIRCLE AD NUMBER 250 ON PRODUCT INFO CARD



7-EAR MONITORING

MICRO MONITORS

CALL FOR YOUR
 NEAREST DEALER TOLL!

Puretone Ltd. 10 Hensley Business Park, Trident Close,
 Medway City Estate, Rochester, Kent, ME2 4ER, England.
 TEL: +44 (0) 634 719427 FAX: +44 (0) 634 719450

CIRCLE AD NUMBER 252 ON PRODUCT INFO CARD

DRIVERS:

- ▶ AIRBORNE
- ▶ ATC
- ▶ AUDAX
- ▶ DYNAUDIO
- ▶ ETON
- ▶ LPG
- ▶ MOREL
- ▶ PEERLESS
- ▶ SCAN-SPEAK
- ▶ SEAS
- ▶ VIFA
- ▶ VOLT

**CUSTOM
 COMPUTER AIDED
 CROSSOVER AND
 CABINET DESIGN**

HOW TO BOOKS



**The SM75-150
 3" soft dome
 mid-range by ATC.**

ATC drivers are renowned for their reliability and performance. The SM75-150 combines high sensitivity with extremely low distortion and a usable frequency response from 300Hz to 4000Hz.
 Contact Solen for more information.

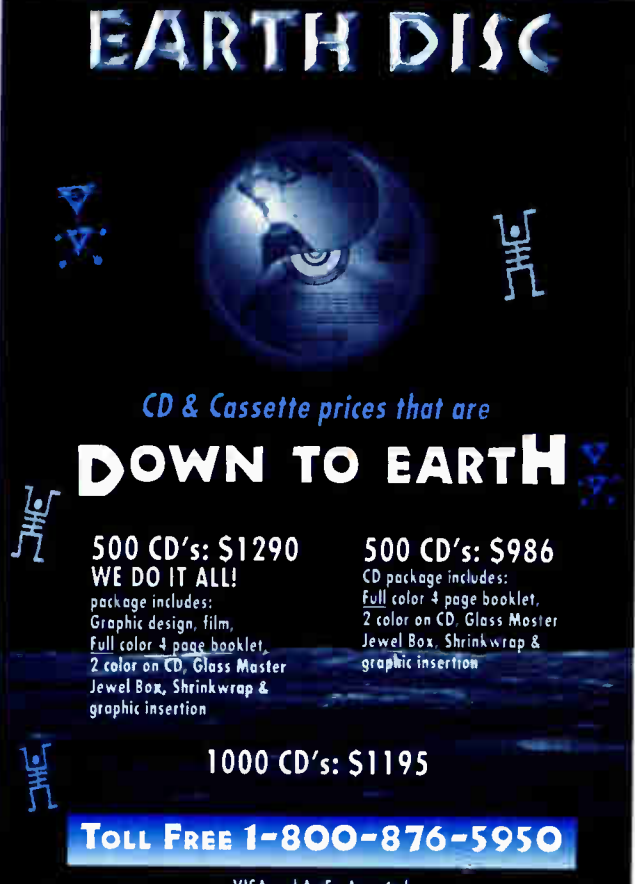
**Call, write, email or fax for
 the Solen '97 Catalog.**

An \$8.00 purchase price will be charged to non-professionals and discounted off the first order over \$50.00. Businesses and professionals may request one copy free of charge.



SOLENE INC.
 4470 Avenue Thibault
 St-Hubert, QC, Canada J3Y 7T9
 Tel: 514.656.2759
 Fax: 514.443.4949
 Email: solen@quebec.net
 Web: <http://www.quebec.net/solen/>

CIRCLE AD NUMBER 251 ON PRODUCT INFO CARD



EARTH DISC

CD & Cassette prices that are

DOWN TO EARTH

500 CD's: \$1290
WE DO IT ALL!
 package includes:
 Graphic design, film,
 Full color 4 page booklet,
 2 color on CD, Glass Master
 Jewel Box, Shrinkwrap &
 graphic insertion

500 CD's: \$986
 CD package includes:
 Full color 4 page booklet,
 2 color on CD, Glass Master
 Jewel Box, Shrinkwrap &
 graphic insertion

1000 CD's: \$1195

TOLL FREE 1-800-876-5950

VISA and AmEx Accepted

CIRCLE AD NUMBER 253 ON PRODUCT INFO CARD

LIVEMIX
SURROUND
AUTOMIX
POSTPRO
STUDIO
BROADCAST
INTERCHANGE

Did I hear you say you
could use a new tool?



The Visualizer

Professional editor/mix management software for the 02R/03D

SEK'D America, P.O. Box 5497, Santa Rosa, CA 95402, T.Free: 1-800-330-7753, Tel.: 707-578-2023, Fax.: 707-578-2025, E-mail: info@sekd.com, www.sekd.com

CIRCLE AD NUMBER 254 ON PRODUCT INFO CARD



FUNKY JUNK: CLASSIC SPECIALS IN STOCK include:

TRIDENT B Range. 28x16 DISCRETE Throughout, Fully Serviced by Boffin Island, \$20,000 ex shipping. B Range 18-16/24 DISCRETE Throughout, Additional 8-Channel AMEK Sidecar, Fully Serviced by Boffin Island, \$16,000 ex shipping.

NEVE 5106 48x8x2, 48 Dynamics; 4-band sweep EQ; 48 input meters; PPM metering on outputs, BANTAM (TT) Patchbay; Producer Desk Refurbished and Serviced by Boffin Island, \$50,000 ex shipping.

NEVE 5104; 24x4, 24 Dynamics, 4-band EQ etc., GPO/316 Patch, Producer Desk, Beautiful Small Console Serviced by Boffin Island, \$13,000 ex shipping.

NEVE 5308, Pre-Rupert NEVE, NEVE 24 main inputs (33114A mic pre/EQ), 13 Line only (with routing/aux's), Stereo and Quadrophonic Panning, BANTAM/TT patchbay and Producer Desk, AUDIOMATE moving faders, Superb, \$50,000 ex shipping.

NEVE Very Rare Opportunity, 53 Series 60 input/32 monitors, 8 auxiliaries on inputs and monitors, 33114 and 33115 mic pre/EQ, 32 VU meters. Pre-Rupert; unique large console, \$100,000 ex shipping.

MANY MORE IN STOCK: ASK FOR THE LATEST LIST INCLUDING CONSOLES, MICS AND OUTBOARD. UNIQUE OPPORTUNITY: (3) Mint NEUMANN U67s, Consecutive Serial Numbers, Cased, Used Twice in 30 Years For Classical Recording, \$20,000. Will Not Split.

funky junk, Ltd. 505-507 Liverpool Rd, London N7 8NS
Telephone: 011 (44) 171-609-5479
Fax: 011 (44) 171-609-5483
<http://www.funky-junk.co.uk>
sales@funky-junk.co.uk

Directors: Mark Thompson, Helen Rider, Stephen Lane, Clive Richards

CIRCLE AD NUMBER 255 ON PRODUCT INFO CARD

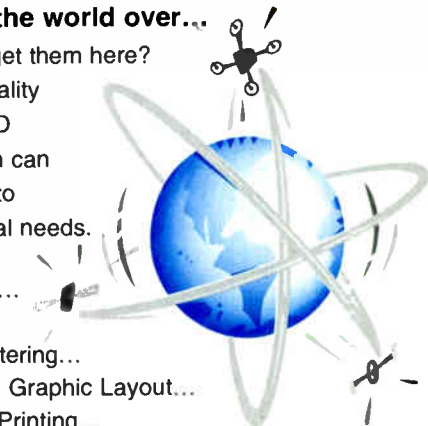
Looking For Affordable Cassettes and CDs?

Why search the world over...

when you can get them here?

We offer top quality cassette and CD packages which can be customized to fit your individual needs.

- Audio Cassette...
 - CD Audio...
 - CD Rom... Mastering...
 - Digital Editing... Graphic Layout...
 - Film Output... Printing...
- you'll find it all here!!!



Call Today for your
FREE catalog...



SAS Industries, Inc.
1-800-955-7271

New York Sales Office: 1-800-727-7181
DELIVERY AND SATISFACTION GUARANTEED
Manufacturing Facility Centrally Located In St. Louis, MO

CIRCLE AD NUMBER 257 ON PRODUCT INFO CARD

SOUND TECHNOLOGY
Instrumentation and Automation

Transform Your PC Into A Powerful Spectral Analysis System

Call To Order 1-800-401-3472
Fax: 408-378-6847
info@soundtechnology.com

<http://www.soundtechnology.com>
Free Softest Demo

The Best In Test offers a totally new dimension in Audio Testing

CIRCLE AD NUMBER 256 ON PRODUCT INFO CARD

10 CDs • \$100
20 CDs • \$180

FAST TURNAROUND • MASTER QUALITY • DIGITAL TRANSFER
ALL PACKAGES INCLUDE GLASS READY MASTER

Master 10 Songs up to 40min.

▼ **Get 10 CDs for \$50**

ENHANCE YOUR MIX
24-BIT MASTERING • BROADCAST QUALITY • MAJOR LABEL/MOVIE CREDITS

Random Access Media

FOR MORE INFO (415) 389-1959
TO ORDER CALL TOLL FREE 1-800-684-8071

CIRCLE AD NUMBER 258 ON PRODUCT INFO CARD

CAPITAL DISC
MANUFACTURING



CD & Cassette prices to fit your budget

500 CD's for \$950 1000 CD's for \$1575
500 Cassettes for \$505 1000 Cassettes for \$806

CD packages include:
Glass master - 2 color on CD - Jewel Box - Shrink Wrap - 4 page color booklet

Also Available
Digital Mastering - Self promotional packages - Plus much more

MAJOR LABEL QUALITY

CALL TOLL FREE
1-800-240-5820

CIRCLE AD NUMBER 259 ON PRODUCT INFO CARD

BONUS 5 CDR FREE Shimad, Ricoh 2x6 ReWriteable bundle... **\$499**

BONUS 5 CDR FREE Jaz + 4x2x6 CD-RW exter. bundle... **\$989**

BONUS 5 CDR FREE AFFEX CD Color Printer, 1,440 dpi... **Call**

BONUS 5 CDR FREE Shimad, Panasonic 4x8 CD-R bundle **\$475**

BONUS 5 CDR FREE Shimad, Yamaha 4x2x6 ReWriteable bundle... **\$495**

CD-R BLANKS
as low as **99¢**
also available TDK & Verbatim

MediaFORM CD2CD Duplicator... **\$2,599**
Call for other MediaFORM products

CD-RW Media... **\$21**
Jaz cart. as low as... **\$79**
SyJet cart... **\$85**
Zip cart... **\$12**

LabelMaker with 100 FREE labels \$49

Shimad
1-888-4-SHIMAD
toll free 888-474-4623 PH. 650-493-1234
http://www.shimad.com FAX: 650-493-1333

CIRCLE AD NUMBER 262 ON PRODUCT INFO CARD

STOP!
CHECK OUT OUR SUPER LOW PRICES

CD's 1000 BULK \$620

MS

- CDR REPLICATION
- PRE-PRESS SERVICES
- PRINT SERVICES
- AUDIO CASSETTES
- GRAPHIC DESIGN
- ASSEMBLY
- CUSTOM PACKAGING
- COMPLETE FULFILLMENT

MEDIA SERVICES
WWW.MEDIAOMAHA.COM

1.888.891.9091

CIRCLE AD NUMBER 260 ON PRODUCT INFO CARD

storage solutions for now and formats of the future

call **800-9-DATRAX**

cassettes • cd's • dats • hi 8 • hi 8 pro • minidisks
carrying cases • wall mount units (solid oak or black plastic)
and for the not too faint of heart
a customizable four drawer locking unit

BRYCO PRODUCTS • 3101 FALMOUTH AVENUE • SUITE 201 • PLAYA DEL REY • CALIFORNIA • 90295
PHONE 310.305.0317 bryco@bryco.com FAX 310.305.8187

CIRCLE AD NUMBER 263 ON PRODUCT INFO CARD

Don't Get Stuck In a duplication wasteland

STOP

Small orders never thirst for attention in our plant.

Cassette packages as low as \$156.00!

300 Full Color Cassettes Complete **Only \$684.00!**

Customers appear **FREE** on our web site!

Call Today For Free Catalog & Samples
1.800.458.6405
CDs, Cassettes & VHS - orders from 100 - 100,000

www.klarity.com
KLARITY MULTIMEDIA, INC.

CIRCLE AD NUMBER 264 ON PRODUCT INFO CARD

West Coast Mastering

Digital Editing & Digital Analog Processing
\$65./hour. .

Versatile Engineer whose credits include:
Meredith Brooks
EMI
Saturday Night Live

Steven Spielberg
Paramount Pictures
and countless others

EVERY PROJECT GETS THE SAME PERSONAL ATTENTION, WHETHER SMALL OR LARGE, INDEPENDENT MUSICIAN OR MAJOR LABEL.

1 - 8 0 0 - 3 0 4 - 4 1 8 6

CIRCLE AD NUMBER 261 ON PRODUCT INFO CARD

bpm studiatechnik

Project Studio Dream

Made in Berlin

"The Quality You Desire at a Price You Can Afford!"

Large Diaphragm Tube & Condenser Models Starting **\$549.95**
Complete w/ Shockmount, Roadcase, Cable & Windscreen

305.5311.BPM
bpmusa@southfla.net



CIRCLE AD NUMBER 265 ON PRODUCT INFO CARD

**CD and Cassette Prices
That Are Out Of This World!**

CD Packages include:
PMCD & Glass Master
2 Color On CD Printing
Full Color 2Page Booklet
And Much More...



**COMPACT
disc
DIGITAL AUDIO**

| | | | |
|-----------------------|------------|-----------------------|--------------|
| Call Toll Free | 500 | CD's | Cassettes |
| | | 1-800-928-3310 | 1,000 |
| | | \$1637 | \$752 |

American Clients: No Tax * No Duty * No Problem!

CIRCLE AD NUMBER 266 ON PRODUCT INFO CARD

**VT-2 Dual Channel Vacuum Tube
Microphone Preamplifier**



Everything you want to know is available at

www.dwfearn.com

D.W. FEARN 610-793-2526
P.O. Box 57 • Pocopson, PA 19366

CIRCLE AD NUMBER 270 ON PRODUCT INFO CARD

CLEARSONIC PANELS



Effective & Portable
Volume Control
& Separation!

For a *free* brochure call
1 800-888-6360
<http://clearsonic.com>

CIRCLE AD NUMBER 267 ON PRODUCT INFO CARD

**NOW THAT YOU'RE
MAKING YOUR OWN CDs...
HOW DO YOU LABEL
THE DAMN THINGS?**



WHITE,
CLEAR,
COLORED &
METALLIC
LABELS

JEWEL CASE
INSERTS TOO!

• DESIGN • PRINT • APPLY • PACKAGE
PRODUCE PROFESSIONAL-LOOKING CD LABELS
& JEWEL CASE INSERTS FOR **\$79.95** PRO-PAK

NEATO LLC
USA: 250 Dodge Ave • East Haven, CT 06512
203-466-5170 • Fax 203-466-5178 • 800-984-9800
Europe: +44 (0)990 561571 • Fax +44 (0)181 932 0480
Mastercard • AMEX • VISA www.neato.com

CIRCLE AD NUMBER 271 ON PRODUCT INFO CARD

**MANUFACTURERS OF
CDs and CASSETTES**

CD REPLICATION -
CASSETTE DUPLICATION -
DIGITAL MASTERING -
GRAPHIC DESIGN -
PRINTING - PACKAGES -
ONE OFF CDs -
DEAL DIRECT AND SAVE!

Ask about our
FREE WEB PAGE
offer

800-289-9155

OUTSIDE U.S. 516-244-0800
[HTTP://WWW.PB.NET/~CCMUSIC](http://www.pb.net/~ccmusic)



Professional Service
FREE CATALOG
You'll Hear and Feel
the Difference

CIRCLE AD NUMBER 268 ON PRODUCT INFO CARD

SuperDigital™

The Recording Store



**Low CD & Cassette
Package Prices**

digalog
Superior Duplication
Technology!

Fast, Friendly Service & Reliability
Quality In-House U.S. Manufacturing
Digital Mastering • Graphic Design
No Sales Tax • Large & Small Orders Welcome

Call Toll Free: 1-888-79 AUDIO (1-888-792-0679)
www.superdigital.com • Visa, Amex, Discover

CIRCLE AD NUMBER 269 ON PRODUCT INFO CARD

**The Midwest's Premiere
Recording School.**



New for
Fall 1997!

Associate Degree in Music Production

1-800-594-9500 www.musictech.com

CIRCLE AD NUMBER 272 ON PRODUCT INFO CARD

ANCHOR YOUR SPEAKERS WITH SOUND ANCHOR STANDS

Your system will perform to its potential when you get your monitors off of the meter bridge, properly positioned and supported.

ADJUSTABLE MONITOR STAND

• STABLE • RIGID • DAMPED •

SOUND ANCHORS INC.
(407) 724-1237




CIRCLE AD NUMBER 273 ON PRODUCT INFO CARD

Fleetwood MultiMedia
Stop Here For Your Best Deal

1000 CDs \$1099
PACKAGE INCLUDES:
Jewel Box, Shrink Wrap
2 Color CD Imprint
Client Supp'd Covers & Tray Cards
FREE Mastering
7-10 Day Turnaround

Full CD & Tape Packages From 300 up
Our Services Include:
CD Replication
Cassette Duplication
Graphic Design & Film Printing & Packaging
Custom Mastering
CD One-Offs
Specials Every Month
Call for a quote that fits your budget

1000 CDs bulk \$799 with 2 Color Imprint
500 Chrome Tapes \$715 Includes Everything!

800-353-1830 (617) 289-6800 www.fleetwood.com




CIRCLE AD NUMBER 277 ON PRODUCT INFO CARD

AS IT TASCAM? We HAVE your TASCAM!

1-888-776-3712

Call for our NEW CATALOG

SONY PROFESSIONAL MEDIA

HAVE INC.
309 Power Avenue
Hudson, NY 12534



CIRCLE AD NUMBER 274 ON PRODUCT INFO CARD

Your Best Choice For Audio Duplication!

DELUXE CD PACKAGES STARTING AT \$995.00

- CD/CDRs
- Cassettes
- Mastering
- Design
- Printing

Major-Label Quality!
Why Settle For Less?

FREE WEBSITE!
FREE BARCODE!
FREE CLEAR TRAYS!
FREE 3RD DISC COLOR!
With Deluxe CD PKG.*

1 (800) 553-8906

(206) 285-2642 • FAX (206) 285-2394
duplication@martinaudio.com

PLANTS IN: SEATTLE • SAN FRANCISCO • MIAMI • MINNEAPOLIS

CALL TODAY FOR A FREE CONSULTATION & ESTIMATE

MARTIN AUDIO DUPLICATION
Our 20th Year

FREE CATALOG

From customer supplied DAT/CDR and print-ready film Subject to + or - 10% overrun/underrun adjustment. *At retail. 50% deposit required. Ask for full details at purchase




CIRCLE AD NUMBER 278 ON PRODUCT INFO CARD

300 CDs \$1295

COMPLETE PACKAGE
DESIGN, FILM AND FULL COLOR PRINTING

www.protosound.com
protosound@aol.com

800-900-7995
802-453-3334
FAX 802-453-3343

PROTOSOUND INC.
Celebrating Our 10th Anniversary!



CIRCLE AD NUMBER 275 ON PRODUCT INFO CARD

MEDIA SUPPLY **800-944-4237**
Quality Products, Fast Service and Great Prices!

EASY-D.A.T.

Media Supply has the MediaFORM Easi-DAT CD-4600, the ultimate way to convert digital pro audio to CD-R. Digital audio can be imported from D.A.T., Mini-Disc, digital audio workstation, or pro audio sound card.

Call for details! \$1.46

SONY Blank CD-R

www.mediasupply.com

Phone: 610-458-9100
Fax: 610-458-9464




CIRCLE AD NUMBER 276 ON PRODUCT INFO CARD

GET IT FAST

Don't trust your audiophile duplication needs to anyone else!
Celebrating 20 Years of Honest Success!!

Progressive Music
Internet: prgmus@aol.com

2116 Southview Ave.
Tampa, FL 33606
(813) 251-8093
FAX: (813) 251-6050
Toll Free: (800) 421-TAPE

Full color Inserts, Audiophile Chrome Tape& CD's from your CD's & Film

ALL COMPLETE!

| | |
|---------------------|-----------|
| 500 CD'S | \$980.00 |
| 500 CASS | \$610.00 |
| 1000 CD'S | \$1375.00 |
| 1000 CASS | \$905.00 |
| 500 CD'S + 500 CASS | \$1590.00 |
| 500 Bulk CD's | \$625.00 |
| 1000 Bulk CD's | \$799.00 |

"Fastest Turn-Around in the Known Universe!"



CIRCLE AD NUMBER 279 ON PRODUCT INFO CARD

20 BIT ADATS ARE HERE!

Alesis ADAT-XT20 \$2399

BLOW-OUT SPECIALS ON PREVIOUS MODELS:

ADAT-XT NEW
ADAT-XT USED 100-300 hrs.
ADAT USED 500-1200 hrs.

650.742.9166

So. San Francisco, California



CIRCLE AD NUMBER 280 ON PRODUCT INFO CARD

WE EXPORT NEW AND USED EQUIPMENT FROM JAPAN TO ANYWHERE. CHECK THE LOWEST PRICES ON EARTH AT

www.analogjapan.com

FOLLOWING ARE NEW IN THE BOX, 0 HOURS USE, MANUALS, CABLES, DISKS, SET FOR 117 V ON DEMAND

| | | | | | |
|---------------|---------------------------------|-------------------|-------------|---------------------------|----------------------------------|
| YAMAHA | A K A I | VS 840 | CALL | 1.07 | 1250 |
| 02 R REV 2 | MPC 3000 LATEST SOFTWARE | V TD 10 / PD 10D | \$ 0 | VS 880 HDSP | 1350 |
| CD 8 TD II | 3.11, SAMPLE, SCBL, 2 MB & 2100 | TD 7 | \$ 0 | \$700, OPT | 1100 |
| CD AT | MPC 2000 / 18 M. | MC 505 | \$ 0 | YAMAHA SPX 90 | 200 |
| CD 8AE | MPC 2000 / 32 M. | MC 10 | \$ 0 | VL 1 | 1700 |
| CD 8AES | CD3000 XL / 8 MB, REV 1.5 | TR RACK | \$ 0 | PROXIM 01 | 1250 |
| CD BY | CD 3000 XL / 24 M. | DR | \$ 0 | A 3000 | 1350 |
| CD 8AD | S 3000 XL / 18 MB | TRINITY PLUS | CALL | MD 8 | 1150 |
| CD 8Y | S 3000 XL / 32 MB | PCM R 900 | CALL | U 110 | 200 |
| CD 8CS KIT | DR 18 | PCM R 500 | CALL | SONY MUR 201 | CALL |
| MB 02 | DPS 12 | DPS R 700 | CALL | SONY DPS R 7 | CALL |
| ME 4M | JV 1080 | DPS V 55 | CALL | API 550 A | 800 |
| W 02SP | JV 2080 | FOGTEX DM 8 VL | CALL | API 684 MINI, RIO PSU | 400 |
| OS D | JF 3000 | MARANTZ CD800 | CALL | ROLAND SYSTEM 100 M D SET | 1500 |
| SK 88 PHD | CDR 88 | PIONEER RPD 800 | CALL | 140-180 1P | CALL |
| CALL | VS 880, S40 MB, 18 | TASCAM DA 20 MK 2 | CALL | ROLAND SYSTEM 100 M D SET | 1127 / 121 / 130 / 140 / 150-181 |
| CALL | EFFECT BOARD, VER 2.04 | CALL | | MANUAL CORDS ABSOLUTELY | 1500 |
| CALL | VS 880 VXP | | | MANUAL PSU | 1000 |
| CALL | \$760 / 18 MB / OPT 760 | | | ROLAND VS 880, R10ND, REV | 1500 |
| CALL | CDR 88 | | | ABSOLUTELY MINT. | 1500 |
| | | | | ANALOG MPC 3000, 2MB | 1500 |
| | | | | ROLAND VS 880, R10ND, REV | 1500 |
| | | | | MANUAL PSU | 1000 |

FOLLOWING ARE USED BUT

analogjapan@analogjapan.com TEL FAX JAPAN 011 81 3 3440 3374 or 011 81 80 311 7414

CIRCLE AD NUMBER 283 ON PRODUCT INFO CARD

THE STUDIO MANAGEMENT SOFTWARE SOLUTION CREATED BY BOB CLEARMOUNTAIN



SessionTools from Apogee Electronics is the new networkable studio management software solution. Created by award-winning mixer/producer Bob Clearmountain, with Ryan Freeland and now in everyday use in Bob's own studio, Apogee's SessionTools is ideal for single or multi-room facilities. Eleven sophisticated layouts handle clients work orders, invoices, track sheets and recall data. Powerful database software operates on a single computer or across a network, on PCs

running Windows 3.x, 95 or NT and Macintosh. SessionTools includes comprehensive label layouts for most current recording media including CD, DAT and cassette inlays, tape library management and much more at a price you can afford.



ELECTRONICS
www.apogeedigital.com

Visit your Apogee dealer today for a demo or call 310-915-1000 for more info.

CIRCLE AD NUMBER 281 ON PRODUCT INFO CARD

CD and Cassette Manufacturing

WMG is a full service audio & video duplicator specializing in custom manufacturing and special packaging. Besides working with the largest players in the entertainment and education industries, our operation boasts over 10 years experience working with people like you. Our goal is to provide quality product & service that is rivaled by no one in the business. We also offer full-package deals at the lowest possible price.

- Cassette Duplication
- CDR Reference Creation
- Pre-Press & Printing
- CD Replication
- Vinyl Record Pressing
- Custom Packaging
- Digital Mastering; Editing, Assembly
- Video Duplication
- Graphic Design

1037 West 30th St. Indianapolis, IN 46219
 317-549-8484 fax: 317-549-8480
 VISIT OUR WEBSITE: www.wmg-inc.com

we provide...
top quality
 product at the lowest price!!

IN BUSINESS OVER 10 YEARS

CIRCLE AD NUMBER 284 ON PRODUCT INFO CARD

LOOK NO FURTHER!! You've Found The Best

CD LABS™
 The Source of Music

1000 CD's \$1595 500 CD's \$1195
 includes 4 color folder, 2 color CD imprint, jewel box shrink wrap and mastering from your DAT
BULK PACK CD'S 1000-\$899...500-\$699
 Also CD clones from your CDR as low as \$7.99 each

12517 CHANDLER BLVD., SUITE 107 NO. HOLLYWOOD, CA. 91607
 (818) 505-9581, (800) 4CD LABS
 Check our web site for other great packages
 www.cd labs.com

CIRCLE AD NUMBER 285 ON PRODUCT INFO CARD

DIGITAL DOMAIN™ Hear the Magic
CD Mastering & Replication
 in Orlando, FL (800) 344-4361
 (407) 831-0233

Master with us...and make an impact!

Unsurpassed mastering quality by Bob Katz. Custom hardware and software, 128x Oversampling 20-Bit A to D, Unique Digital Processors, Sonic Solutions Editing, Tube and Solid State Analog Recorders.
 CD Mastering is an art. Levels, dynamics, fades, equalization, spacing... everything is important to you and to us.

CD Replication...
 1000 CDs at \$1.30 w/jewel, shrink, insertion.

CD Booklet Printing and Graphic Design...
 1000 4-Panel Booklets \$0.37/ea. Full-Color Outside & Tray, B&W Inside.
 Internet CD mastering website - http://www.digido.com

CIRCLE AD NUMBER 282 ON PRODUCT INFO CARD

D.J. VINYL PROMO

100 12" VINYL \$749.00
 (in WHITE JACKET w/ HOLE) \$1.20 each for additional LP's

1000 7" VINYL 45's (WITH WHITE SLEEVE) \$719.00 REORDER - \$379.00
500 7" VINYL 45's (WITH WHITE SLEEVE) \$599.00 REORDER - \$269.00
1000 12" VINYL (in WHITE JACKET w/ HOLE) \$1,699.00 REORDER - \$1149.00
500 12" VINYL (in WHITE JACKET w/ HOLE) \$1,199.00 REORDER \$649.00

ALL PACKAGES INCLUDE: MASTERING / FULL PROCESSING / TESTS / 2-COLOR LABELS / SHRINKWRAP (12" only) / QUICK TURN AROUND

IN-HOUSE CD, VINYL & CASSETTE REPLICATING & PACKAGING - ASK FOR OUR FREE BROCHURE!

Rainbo Records and Cassettes
 1738 Berkeley Street, Santa Monica, CA 90404 • (310) 829-3476 • Fax (310) 828-8765 • www.rainborec.com

CIRCLE AD NUMBER 286 ON PRODUCT INFO CARD

CLASSIFIEDS

MIX Classified Ads are the easiest and most economical means to reach a buyer for your product or service. The classified pages of MIX supply our readers with a valuable shopping marketplace. We suggest you buy wisely; mail-order consumers have rights, and sellers must comply with the Federal Trade Commission, as well as various state laws. MIX shall not be liable for the contents of advertisements. For complete information on prices and deadlines, call (800) 544-5530.

Acoustic Products

AcousticsFirst™
Toll Free: **888-765-2900**

Full product line for sound control and noise elimination.
Web: <http://www.acousticsfirst.com>

SILENT FAX OR INFO (413) 584-7144
58 Nonotuck St., Northampton, MA 01060
ORDER (800) 583-7174
silent@crocker.com • <http://www.crocker.com/~silent/>

Acousticon Fabric Panels • Sound Barrier Isolation Hangers • A.S.C. Tube Traps Silence Walkcovering • WhisperWedge Melaflex • S.D.G. Systems • Hush-Foam R.P.G. Diffusers • Sonex • NoiseMaster

ETF energy time frequency

ETF is a software application that runs on your computer using Windows 95/NT, any 16 bit sound card, and an omni-directional microphone.

- **ETF Room Acoustic Analysis** measuring - Early and Late Reflections - Room Resonance - Frequency Response - Distortion - Reverberation Time Analysis
- **Device Designer** - Design of Helmholtz Resonators and QRD Diffusers
- **A primer and tutorial on Room Acoustics**
- **Using Time Delay Spectrometry techniques**
- **Used by Professional Studios Worldwide**

The **ETF** System lists for \$199.95US Call: 1-800-301-1423
Visit www.etfacoustic.com e-mail: sales@etfacoustic.com

ACOUSTIC FOAM

Diffusers ★ Bass Traps ★ Sound Barrier & More!

Admit it: your room isn't perfect. Nobody's is...even world-class rooms need a little touch up here and there. That's where we come in. For 2 decades Auralex Acoustics has been helping the best in the business on both coasts & all points in between sound their best. So, if you've got better sound on your mind—and who doesn't—trust Auralex. We offer great no-hassle advice & design assistance plus tons of proven solutions to help you control your sound in any situation. Building a new room? Download our booklet Acoustics 101 free on our website!



USERS: James Taylor, Clint Black, Andrew Gold, Christopher Cross, Doane Perry (Jethro Tull), Dennis DeYoung, James Young, Todd Sucherman (Styx), George Terry (Eric Clapton), Mike Wanchick (John Mellencamp), Ross Vannelli, Skid Row, Mark Lindsay (Paul Revere & The Raiders), Nona Hendryx, John Baxter (Re-Flex), Walt Disney Co., Harpo Studios, LucasArts, JBL, Shure, Oryland, Pelonis Acoustics, Sear Sound, AT&T, NASA, Sony, CBS Sports, NBC Sports, ABC TV & Radio, ESPN, MSNBC, Bose, Discovery Channel, Berklee College of Music, Music Bakery, Steven J. Klein, Former Sr. Eng. @ Criteria Studios (Bee Gees, E. Clapton, Kenny G, Average White Band, etc.) & Studio Designer (Don Was, Babyface, Larrabee, etc.), Ensoniq, Ovalcomm, Wayman Trisdale, WhisperRoom, the Lincoln Center, Hitachi, Toshiba, 20th Century Fox, Universal Studios, NPR, Warner Bros., Polygram, Fruit of the Loom Country Comfort Tour, Manley Audio Labs, Lucent Technologies, Time Warner Cable, 3BTV, Electroplex, Azden, Macromedia, Adaptec, Martin-Logan, Crawford Post, ShowCo, Mormon Church TV, Pioneer, Cobra Golf, Carvin, MTX, Silver Dollar City (Branson), the voices of McDonald's, Miller Brewing & Sports on Fox and more...

These people can afford any acoustic products on the planet... they choose ours. Why? Because no other company can match our unbeatable combination of free design assistance, great products & overall value. Call Auralex today or ask for our products by name at major retail & mail-order dealers nationwide.

Auralex Acoustics Inc. ★ 8851 N. Hague Road ★ Indpls IN 46256-1284
Website: www.auralex.com ★ Email: auralex@auralex.com
Info (317) 842-2600 ★ (800) 95-WEDGE ★ Fax (317) 842-2760

ACOUSTICS by db

...all the others are just brokers.

1194 Walnut St, Suite 205
Newton, MA 02461
617-969-0585 • Fax 617-964-1590
email ob1db@earthlink.net

Building a project studio?
Designs from existing plans start at \$1,000 per room.

- Total studio concepts designed by creative people.
 - Control rooms, studios and turnkey packages.
 - Wiring system design, custom cabling & full installations.
 - Consultation & advice on equipment or system choices.
 - Room tuning, noise problems.
 - Existing plans, custom traps.
 - Equipment packages with used & vintage consoles, 24 tracks, mics & processing available.
- SSL 4064G+ ULT: \$250k • 4064EG: \$165k
6056EG \$145k • Euphonix CS2000/56: \$95k
Neve VMP48FF/40: \$125k • Trident 808: \$29k
Neve VIII/48Necam96: \$95k • API 3224: \$40k
Studer A827: \$36k • A820 w/SF/rem/loc: \$40k
A800 MKIII: \$32k • Sony PCM3348: \$85k
Otari MTR90MKII: \$16k • MX80: \$11k
Neumann M49C: \$5.2k • Neumann U67: \$3.8k
AKG C24: \$6.5k • C12 clone: \$3.6k
C414EBSilver: \$1.2k • Dolby XP/SR24: \$13k
EMT 250: \$12k • Quantec QRS: \$5k
Teletronix LA2: \$3.9k • Neve 1064: \$1.9k
Urei 1176LN bktface: \$2.7k • 1178: \$2.5k
Lex PCM42MEO: \$1.8k • AMS RMX16: \$3.8k

New products from Quedstedt-Daking - T.I. Audio Optifile - Sontec-PrizmAD/DA & Mastering eqs

Building Studios and Keeping 'em Alive for 27 years!

STUDIO DESIGN
ARCHITECTURAL ACOUSTICS

- CONTROL & PERFORMANCE ROOMS AND FACILITIES
- PRO AUDIO PLANNING AND SALES GROUP
- TECHNICAL SYSTEMS AND NOISE CONTROL
- TURNKEY SERVICES FROM CONCEPT THRU INSTALL

ROSATI ACOUSTICS

"FUNCTION OVER FORM"
LEADING EDGE DESIGN, CONSULTING AND
ENGINEERING FOR 19 YEARS

(617) 423-5546 • (800) 423-5505
123 SOUTH ST • BOSTON, MA 02111
ACCURATE www.rosatiacoustics.com FLEXIBLE

Mix Classifieds (800) 544-5530

Computer Products

Shimad

Full line of CD-Duplicators,
CD-Recorders, CD-Printers
and CD-R Media
1-888-474-4623

SEE OUR AD IN MARKETPLACE pg. 240

Business Opportunities

Busy S.F. 24+-track studio for sale. \$100,000. Established 20+ years. Serious inquiries only.
(415) 584-3874.

Employment Offered

ENGINEER WANTED for Grammy-nominated studio in pristine area of No. CA. Reply to: BuckDancer, Box 1460, Redway, CA 95560 or email: leib@mflp.com

SOUND EFFECTS WANTED

Company looking for original SFX in the following categories:
extreme weather, animals, sports, European, cartoon & other. Leave message @
(415) 472-3023

AUDIO ENGINEER for Phoenix, AZ, studio. Must be proficient in Pro Tools & have a "yes we can" attitude in this commercial (not music) studio. Salary \$10 per hour to start. Send resume to: PO Box 32492, Phoenix, AZ 85064-2492.

FAX your EMPLOYMENT AD and reach the qualified music professionals who read MIX
(510) 653-8171

SOUTHERN CALIFORNIA PRO AUDIO SALES LEADER seeking a professional sales person to sell recording, broadcast & sound equipment. Experience in pro audio preferred. Base + comm. & benefits. We are an EOE. Send resume to 7265 Santa Monica Blvd., Los Angeles, CA 90046, or Fax (213) 851-0182 Attn: Sales Manager.

Immediate position available for TECHNICIAN at O'Henry Sound Studios, Burbank, California (Record/Film scoring environment). Minimum 5 years experience. Competitive salary/great benefits. Fax Richard Landers at (818) 842-5763.

Recording Engineer Broadcasting

Multimedia/Digital/Video/Film Radio/TV/Sports/News/DJ/Talk Show

No experience required!

On-the-job-training

in local major Recording Studios & Radio/TV Stations

Part-time, nights, weekends - Call recorded info line for FREE video

1-800/295-4433 <http://www.sna.com/musicbiz>



Is music your passion?
Do you like to have fun at work?

If so, apply now for a position at Digidesign.

Digidesign is the leading manufacturer of digital audio workstations for the professional music, recording, film and video markets. Digidesign's software and hardware products are used for the recording, editing, mixing and mastering of sound. These products integrate with industry-standard personal computer and mass storage devices to create cost-effective, random access digital audio workstations.

Check out our web page to see our current openings in:

| | | |
|----------------|------------------|-------------|
| Administration | Customer Service | Engineering |
| Marketing | Operations | Sales |

Our total compensation package includes comprehensive benefits, 401K, and a profit sharing plan. Please send us your resume, indicating position of interest to:

e-mail: jobs@digidesign.com
fax: (650) 842-7999
or mail: Digidesign, 3401-A Hillview Avenue,
Palo Alto, CA 94304-1348
Attn: Staffing

Please indicate somewhere on your resume or cover sheet that you are responding to a Mix ad.

Visit our web site at:
<http://www.digidesign.com>

digidesign

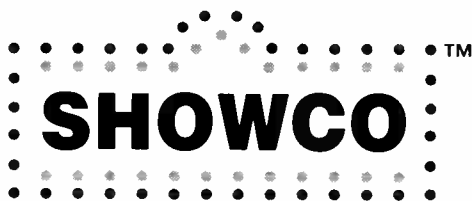
EOE

A Division of **Avid**

What Are You Looking For?

Buy it — Rent it — Sell it

THROUGH MIX CLASSIFIEDS
(800) 544-5530 FAX (510) 653-8171
e-mail • mixclass@cardinal.com



ELECTRONIC TECHNICIAN

Showco Inc. is seeking an electronics technician with a minimum of 5 years experience and an associate's degree in electronics (work experience will be considered in lieu of a degree). The qualified candidate will have experience in electronic maintenance and repair of all major brands of electronic rack gear, consoles and amplifiers. Good work ethic and attitude is a must for this team environment. Please forward your resume and salary requirement to:

Showco Inc., Attn: Human Resources Dept. Ref #050198, 201 Regal Row, Dallas, Texas 75247 or FAX to (214) 630-5867. **Vari-Lite Inc. is an Equal Employment Opportunity Employer.** www.vlint.com

Employment Wanted

Jingle Producer w/local & national credits. Looking for interesting projects all or part. I create custom music and fresh ad copy that sells! Call Pasquale @ Mister E Music anytime. **(800) 278-516**. Email: pasquale@mistererecords.com

Subscription Questions?



Call **(800) 843-4086**

Equipment Financing

EQUIPMENT FINANCING

- ♦ FAST, EASY APPROVALS
- ♦ We Specialize in Audio-Visual Equipment
- ♦ No Financials Necessary
- ♦ True Lease or Finance Lease Option
- ♦ New or Used Equipment

LOANS BY PHONE

Call Jeff Wetter
(800)699-FLEX

24hr. Fax (972)578-0944



FLEXLEASE, Inc.
COMMERCIAL EQUIPMENT FINANCING

Funding Provided By
WINR
Business Credit

L F C I Equipment Leasing

DIRECT LENDERS

SPECIALIZING IN AUDIO - VIDEO EQUIPMENT

- ⇒ No Down Payment
- ⇒ Application Only For Up To \$50,000
- ⇒ New & Used Equipment

CALL: (800) 626 - L F C I

VISIT OUR WEB SITE: <http://www.lfci.net>
APPLICATIONS, QUALIFICATIONS, THE LEASE PROCESS

ALSO APPLY FOR OUR \$10,000 CREDIT CARD / LEASE

MIX Classified Dept. e-mail address: mixclass@cardinal.com

Equipment Financing



AMERICOM
LEASING, INC.
800.477.5327
fax 713.365.0885

GREAT RATES ON INSURANCE!

\$45,000 of Studio Gear for \$500
\$100,000 of Gear for \$900
\$250,000 of Gear for \$1,875

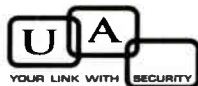
GREAT COVERAGE!

Includes Theft, Breakage & Loss
Covered Wherever Located*
Coverage for Rented Gear Also
\$1,000 Deductible

GREAT SERVICE!

Immediate Coverage Available
Easy Enrollment
Local Claims Offices

(800) 800-5880



UNITED AGENCIES INC. Insurance

Pasadena, California
CA. License # 0252636

www.UnitedAgencies.Com

Equipment for Sale

BALANCED AC POWER SYSTEM

Balanced AC power is as good as they say it is but doesn't cost as much as they say it does. \$499 buys 1,500 watts packaged the way you'd use a B.P.S. Call (573) 334-6740 or www.spectrumx.com for info

ADAT UPGRADES— MIC MODS

Component-level upgrades for mixing consoles, tape machines, mics & all outboard gear. Also, high-speed high-quality mic preamps.

AUDIO UPGRADES

6410 Matilija Ave.
Van Nuys, CA 91401
(818) 780-1222
Fax (818) 346-2308

<http://home.earthlink.net/~jwilliams/>

Equipment Appraisal Facility Liquidation

**Hamilton Brosious
Associates
(800) 423-5499**

PATCHBAYS

\$700 ADC TT recond. \$149-\$229
new isn't always better, it's just more
used and vintage gear since 1975
audio village (760) 320-0728

NEUTRIK TT CABLES \$10.99 ... 24"

3-Yr Warranty! also 12/18/36
REAN 96 pt TT BAYS
\$229-\$269 / Better Than SW
HHB CDR800: best \$
HHB ADAT45: \$6.99
GREEN DOT (615) 366-5964

MILAM AUDIO

"THE SOURCE"

SINCE 1967

SPECIALIZING IN
ALL TYPES OF RECORDING
EQUIPMENT, SUPPLIES,
DESIGN, INSTALLATION,
AND CONSULTATION

CONSOLES ■ D.A.T. ■ MICS
MULTI-TRACKS
MONITORS ■ AMPS

CALL US TODAY

MILAM AUDIO

1470 Valle Vista Blvd.
Pekin, IL 61554

Orders (800) 334-8187
Info (309) 346-3161
Fax (309) 346-6431

www.dpc.net/~milamaud
e-mail: milamaud@dpc.net

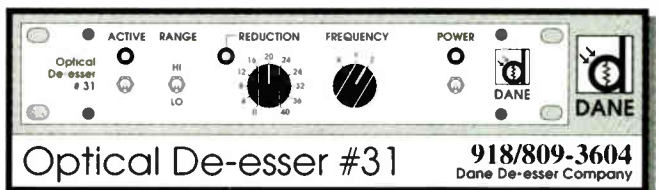
OCEAN AUDIO INC.

SELLS AND BUYS USED EQUIPMENT SINCE 1982
LOTS OF RARE, OLD & NEWISH, STRANGE AND SOME VERY FUNKY PIECES
LIST YOUR UNDER-USED EQUIPMENT FREE ON OUR DATABASE
THE LARGEST USED EQUIPMENT LISTINGS IN THE WORLD
Phone (310) 458-2743 (303) 449-8322
Fax (303) 449-8558
Email: hadler@netOne.com
Now internet Listings
<http://www.visionwork.com/oceanaudio>

**OKTAVA
BEST RUSSIAN MICS**
•MK-012 condenser.....\$200
•VM-100 tube, condenser...\$600

**VINTAGE
BEST GERMAN & AUSTRIAN MICS**

from RUSSIA
TEL/FAX: 011-7-095-299-1161



NEW, USED & VINTAGE CONSOLES • RECORDERS MICROPHONES • OUTBOARD

- Complete Studio Installs
- Great Package Pricing
- We Purchase Your NEVE or SSL Console
Anywhere Worldwide
- Specializing in Neumann Microphone Capsules
- We Buy and Trade Equipment. Fax Us Your List
- Full Service & Repair Department

AKG • API • COLES • NEUMANN • NEVE • SONY
SSL • STUDER • TELEFUNKEN • TRIDENT

FINANCING AVAILABLE    3% CASH DISCOUNT

PHONE 818.992.0999 • FAX 818.340.4331
WWW.CLASSICELECTRONICS.COM

Sound thinking

Digital Audio: It's What We Do!

digidesign ALESIS

...and more

41-386-2682

www.soundthinking.com

Klay Anderson Audio Inc.

PRO AUDIO SALES AND SERVICES

"Good Sound is the Absence of Bad Sound"

1.800.FOR.KLAY

7054 SO. 2300 EAST • SALT LAKE CITY, UT 84121
VOICE 801.94.AUDIO • FAX 801.942.3136
HOMEPAGE: <http://www.klay.com>

Every major brand of everything. Millions of dollars of musical gear in stock. ALTO MUSIC. Guitars, recording, keyboards, amplifiers, drums, pro sound, new & used. One of the largest selections in the country. We ship everywhere!

(914) 692-6922 • 680 Rt. 211 East Middletown, NY 10940
Ask for Uncle Freddy—He loves ya!

bpmusa@southfla.net
German Handmade Large Diaphragm Mics

bom

Starting @ \$549.95

studiotek
305.8311.8PM

SEE OUR AD IN MARKETPLACE pg. 240

64-input D&R Orion In-Line mixing console, only 6 months old, never used, mint, \$17k OBO; Trident Series 70, 28x16, EC, with TT patchbay, oak frame, \$12k; Tascam ATR-60 1/2" 8-track, mint, \$2k OBO. Days; (847) 222-1768, David.

VINTAGE USED

CONSOLES: 1994 SSL G+ w/Ult. 100 in, *1993 SSL G+ w/Ult. 80 in *1986 SSL 6056 E/G, loaded 36in Soundcraft 3200 56in w/Uptown* Neotek Elite 56in w/auto*AMEK Big 28in*Neve 8128 56in w/FF*Neve 8108 48x32*1992 Otari Series 54, 36in, \$19.5k*AMEK Einstein 32in w/auto***RECORDERS:** Studer A80/800/827*Otari MTR100/MTR90II/MX80*Sony JH24, \$14k*Sony 3324S, call***MICROPHONES:** Neumann U87/U67/U47/M49, Elam 251, AKG C12, 414, call for prices*REVERBS/ DELAYS/COMPRESSORS/GATES/MONITORS/etc. call"

WE BUY AND SELL VINTAGE NEVE & API MODULES, PULTECS, TELETRONIX, TUBE MICS. NEW EQUIPMENT IN STOCK. MAJOR CREDIT CARDS ACCEPTED.



180A CENTRAL STREET SAUGUS, MASS 01906

Ph: (781) 231-0095 Fax: (781) 231-0295

THE MIC SHOP

TUBE MICROPHONES
BOUGHT/SOLD/SERVICED
Mic Power Supplies & Cables
Bill Bradley (615) 595-1717
Fax: (615) 595-1718
Visa/MasterCard
<http://www.micshop.com>

OMNIRAX

STUDIO FURNITURE
MixStation /OEA



Custom Design and Modifications Available

800.332.3393
FAX 415.332.2607
Outside U.S. 415.332.3302
www.OMNIRAX.COM P.O. Box 1782, Sausalito, CA 94965

Available for All Macintosh & Bus mics. & Eurodesk

Stephens 821-B 24-track machine. New heads by Applied Magnetics, new nitrogen relays, new caps. Excellent condition, all maintenance by original manufacturer. \$12k or best offer. Call Jim at (213) 851-9457.

SPECIALIZED FURNISHINGS

FOR YOUR YAMAHA O2R, O3D



IN STOCK, READY TO SHIP

Call for a FREE catalog **800-427-5698**
OUTSIDE U.S. 573-346-8549, FAX 513-348-2769
A/C I - 5687 Precision Ct. - Osage Beach, MO 65065
www.argosyconsole.com info@argosyconsole.com

35mm MAGNET C DUBBERS: Magna-Tech ReproJucer Recorders w/Interlock: MD-235, MD-636, MR-436 for sale. Call Michael Temmer, (212) 206-1475. Fax: (212) 929-9082.

Amek Einstein Super E 80 inputs Supertrue PB, \$35k; 9098 mic/ EQ, \$1.6k; Neve 5324 24x8x2 with 33114 modules PB, \$30k; Neve 5315 12x4x2 with 33115 modules PB, \$15k; Neve 5104 24x4x2 PB, \$30k; Neve Kelso 10x2, \$12k; Neve 83065 comp/limiter, \$3.2k; AMS Audiofile 2in, 8 out, SMPTE sync, \$2k; MCI JH24, 16 2" 16tr, \$7k; Neumann M 269c, \$4k; UM 57, \$1.5k.

Tel: (847) 249-3467

MARQUETTE AUDIO LABS

RECORDING EQUIPMENT

CUSTOM RACKING OF VINTAGE GEAR
V-72, V-76, NEVE, AUDIX, CALREC ECT...
MICS, PREAMPS, COMP/LMTRS + MORE

Phone (510) 581-3817 Fax (510) 581-3917

SSL Scenaria FOR SALE

In like-new condition. Includes ScreenSound V5, SoundNet, many drives and ASC Virtual Recorder for pix. Very attractive price! Call (612) 943-0045 for details.

VINTAGE

MISTY HILL AUDIO

NEUMANN
NEVE &
STUDER

Call for list.
512.338.6777

www.kdi.com/~stardog

FREE CATALOG

Classic Music Furniture

If you love music, our new catalog of fine hardwood music furniture will delight you. Music stands, sheet music cabinets, players' seating, instrument stands, and more.

Alden Lee For FREE catalog call 1-800-324-5200
Dept. MIX005 1215 Chrysler Dr, Menlo Park, CA 94025

Neumann/Telefunken
The German Source:
Akzent Audio
actual listing on
www.thatworks.com/akzent/
phone us: (212) 330-9124
Germany: 011/49/721/373/622
Fax: 011/49/721/373/611
e-mail akzentaudio@t-online.de

How BIG is Yours?

HARD DRIVES Digital Audio Specialists!
CD RECORDERS
MEMORY CHIPS
SOUND CARDS
BIG DISC (954) 749-0555
MIDI SOFTWARE
<http://www.bigdisc.com>

Bayview Pro Audio

Tumwater, WA USA
Toll-Free: (888) 718 0300
Int'l. 1 360-753 3862

Software

| | |
|-------------------------------|-------|
| Sound Forge 4.0d | CALL |
| Sound Forge CD Architect | \$249 |
| Sound Forge Noise Reduction | \$229 |
| Steinberg WaveLab 1.6 | \$299 |
| Samplitude Studio 4.0 Upgrade | \$299 |
| Waves Native Power Pack | \$350 |
| Steinberg Cubase VST-PC | \$299 |

Sound Cards

| | |
|-------------------------------|-------------|
| Digidesign "bundle" MAC | under \$850 |
| Zefiro Acoustics ZA2 | \$419 |
| SEK'D PRODIF 24 | \$279 |
| Sonorous Studi/o w/cables | \$799 |
| AdB Multi WAV 24 | \$399 |
| SEK'D Analog ARC 88 10x10 I/O | \$699 |
| EVENT GINA | \$425 |

Monitors & Mics

| | |
|------------------------------|-------|
| RODE NT2 Omni & Cardoid | \$599 |
| EVENT 20/20 bas Pwr. Blamped | \$799 |

Web Site: <http://www.olywa.net/duper>
We Accept Major Credit Cards

DAN ALEXANDER AUDIO

BUYS, SELLS AND REPAIRS RECORDING EQUIPMENT.

(415) 546-0200
FAX (415) 546-9411
da.audio@internetMCI.com

DENON REMOTE CONTROL

AVAILABLE NOW!

Wired Remote Control for:
DN-T 620

CD PLAYERS
DN-C680 DN-650F DN-951FA DN-961FA

AUDIO CASSETTE RECORDERS
DN-720-R DN-790-R DN-770R

MINI DISC PLAYER-RECORDERS
DN-1050R DN-1100R DN-980F DN-981 DN-981F DN-990R DN-995R

MINI DISC "HOT START" REMOTE
DN-1050R DN-1100R DN-981F

Twecomm Inc.
1631 King James Drive
Pittsburgh, PA 15237-1573
Phone (412) 369-8770
www.twecomm.com

funkyjunk

For Classic consoles plus the largest stock of new & used pro audio gear in Europe!

T: 011-(44)-171-609-5479
F: 011-(44)-171-609-5483

SEE OUR AD IN MARKETPLACE pg. 240



WE BUY, SELL AND TRADE VINTAGE EQUIPMENT.

"this is not a problem"

(508) 543-0069 TEL
(508) 543-9670 FAX

Equipment for Sale

STUDER A80 MkII 24-Track
 AKG C414EB, 451E, RE20, Senn. 441, 421, (2) dbx 165, Lexicon PCM60 Scamp rack 8 mods, mic stands, Yamaha REV7, Roland SDE 3000, Sony F1, 701, DeltaLab DL4. Peter (905) 836-8767 email: akerboom@neptune.on.ca

VT-2 Vacuum Tube Mic Preamp
www.dwfearn.com



D.W. FEARN

SEE OUR AD IN MARKETPLACE pg. 241

GENIUS AUDIO EXCHANGE
 Avalon, Focusrite, Joemeek, Neve, SSL, Studer, GregHanks, Tube mics, Home/Pro Studio Design. Buy/sell Pro Specialists. Visit our NYC Showroom or Call (212) 620-0200
www.geniusaudio.com



Coles 4038
RCA 44s & 77s

(800) 798-9127

Call Wes Dooley

Professional Audio Design Inc.

SSL
 API
 GML
 AKG
 RØDE
 Otari
 Avalon
 Neotek
 Manley
 Lexicon
 Daking
 Focusrite
 Brüel & Kjær
 Tube Tech
 Soundscape
 Soundcraft
 T.C. Electronics
 Dynaudio Acoustics

(781) 982-2600 fax(781) 982-2610
 357 Liberty St. Rockland, MA 02370

New, Used and Vintage Equipment
 • Sales • Service • Design • Installation

EQUIPMENT SPECIALS
 SSL 4096+/Ult • SSL 40S6E/G • SSL 6048E/G • SSL 6060E/G • Neve VR60FF • Neve VR48FF • Neve V-III 60FF • Neve V-I 48FF • Neve 8088-48I/O FF • Sony MXP3036 • Amek Einstien 80 Input • Trident 80C 32x24 Auto • Trident 80B 32x24 • Trident 24 36x24 • API 32x24 • API 3124 micpre's • API 550B • API 512B • Neve modules and racks • Neumann U47, U67, M49, Km54, Km56, U87, Km84 • Studer A800MKIII • Studer A827 • Studer A80MKIV • Urei 1176, 1178, LA3A, LA4's • Telefunken V72, V76 systems • Tube-Tech LCA-2B, Manley Vari-Mu • Pultec EQP1A3, EQP1A • Dynaudio Acoustics M4's, BM15, BM6A • AKG C12, C24, C414 • Lexicon 480L, PCM42, PCM70, 224XL • T.C. Electronic M2000, Finalizer • Many other items in-stock and available.
 Call for complete list.



SSL
 authorized
 preowned
 console
 sales
 &
 service

www.ProAudioDesign.com

...Call for complete list of new products

Odyssey

pro sound
 new, used & vintage recording equipment

BUY • SELL • TRADE

Vintage, Tube, Classic,
 Consoles, Tape Machines,
 Mics and Outboard!

Neve, API, Fairchild, Pultec,
 Urei, Neumann, Studer,
 Manley, Quested & more...

Customer Satisfaction & Quality Guaranteed!

Phone (978) 744-2001

Fax (978) 744-7224

MC VISA AMEX

www.odysseyprosound.com

SOUTHERN CALIFORNIA PRO AUDIO

NEW, USED AND VINTAGE
 THE LAST CALL YOU'LL HAVE
 TO MAKE!

Phone: (818) 222-4522

Fax: (818) 222-2248

Otari MTR 90 II 24, set for 16 Head, low hours, \$15,500; Sound Workshop Series 30 console \$1,000; Prophet 10w/Anvil case, \$1,800; Jupiter 8 w/MIDI DC8, \$1,200; Adams Smith Zeta 3 V3.7, \$1,000. (619) 486-4734.

NEVE™ 1272
MIC PREAMPS
 2 CH- RACKMOUNT
BEST PRICES!
813-643-8114

The AMPEX Source

- ATR100 sales & restoration services
- 1/2" two-track mastering conversion featuring Flux Magnetics heads
- HDV-2 modular tube electronics and transformerless I/O for ATR100
- Transports upgraded for better-than-new performance and reliability
- MM1200 service and upgrades

Call Michael Spitz at 650-574-1165
 Fax 650-574-2064

ATR SERVICE COMPANY
 AMPEX SPECIALISTS

(800) 264-6614

Looking for new and used recording, keyboard or outboard equipment? We've got tons of super clean **used**, as well as new products from **Tascam, Alesis, Kurzweil, Roland, Mackie, Genelec, Lexicon, Fostex, Yamaha, Korg** and hundreds more. **Discount Pricing and Worldwide Delivery!** 69 years in business. Trade-ins welcome. Visit our new **22,500-sq.-ft.** location. Call, fax or email us today. carusomusi@aol.com OR sales@caruso.net. Visit us at www.caruso.net. Start saving money today! Call **Caruso Music**, 94 State St., New London, CT 06320 USA. Outside of US: (860) 442-9600 or (800) 264-6614.

SINGERS! REMOVE VOCALS
Unlimited Backgrounds™
 From Standard Tapes, Records, & CDs with the **Thompson Vocal Eliminator™**
 Call for Free Demo Tape.
 Internet: <http://www.sound.com>
 LT Sound, Dept. MX-1
 7988 LT Parkway
 Lithonia, GA 30058
 24 Hour Demo Info
 Line (770) 482-2495 - Ext 8
 Best Vocal Eliminator™, Key Changer, Voice Enhancer!

UPGRADE YOUR VOCALS

with **Variable Acoustic Compression™**
 You choose 1 or 2 screens & distance between screens

User List: Westlake Audio, Sony Music, MCA Music, Masterfonics, Paisley Park, CBS, ABC, Fox Broadcast...

- 6 or 3.5 inch diameter screens \$32*
 - with gooseneck & mic clamp \$54*
 - washable, replaceable screens • plus
 - money back guarantee shipping PO Box 1014, New Paltz, NY 12561
- call, fax or write for FREE brochure (800) 252-1503 or (914) 255-3367

NO PLESS
 VOICE SCREENS



You're Not Going To Pay A Lot For Used Equipment!

Call us! We list over 350 consoles, 100s of speakers, amps, P.A.s. We can help sell your used equipment, too!

- AMEK M2000 28x16x24 recapped \$13K
 - Yamaha PM 4COD \$48K
 - SSL 4040 E/G TR call
 - Harrison 4032A 40x32x40 \$10K
- Call now for details & FREE catalog
The Friendly folks at H.T.I.C.S.
 (610) 865-9151
 Fax: (610) 758-9999
 Email: HTICS@aol.com

SPECIAL Limited Time Offer LONGLIFE AUDIO CLEANER

Cleans heads, guides and rollers.
 \$85 per case of
 (12) 16-oz. bottles.
 (800) 221-4465 MC/Visa



The RACKIT™ System

Modular, stackable oak units hold all recording formats
 New: Racks with mounting rails!

Free mail-order brochure (please mention Mix)

Per Madsen Design
 (415) 822-4883 • PO Box 882464
 San Francisco, CA 94188

Digital Recording

Factory Direct Discount Dealer

- * Alesis • Yamaha • Sony • Tascam • Roland • Akai • Event Electronics • Digital Audio • Fostex • Korg • Pro Audio Plus
- (800) 336-0199
 Division of Rolls Music Center

O2R & O3D FOR RENT

Automate your mix
Hi-Tech Audio
(650) 742-9166

SEE OUR AD IN MARKETPLACE pg. 243

Otari MTR90 Series II 2" 24-track tape machine with remote. Excellent working and cosmetic condition, \$20,000. Please call (312) 337-0008.

NEVER USED TASCAM

ATR-60 2 track, fully-loaded, stand, remote, dbx, monitor, full editing, beautiful machine in mint condition. \$6,900 or best offer. Windspell Music Co., Bend, Oregon (541) 382-1809.

Quality Audio Tracking Mixing and Mastering Tools

AKG•AmeK/Langley•API•Apogee•ATI•Audio-Technica•Avalon Design•B&K
Behringer•Beyer/spl•Brainstorm•Bryston•dbx Blue•Digidesign Pro Tools
DAL V8•Dolby-Pro•Drawmer•Dynaudio•Equi-Tech•Event•Earthworks
Eventide•Focusrite•Genelec•GML•Grace Designs•Hafler•KRK•Manley
Lexicon•Mackie•Microtech Gefell•Mytek•NTI•Neumann•Otari•RØDE
Sony Pro•Soundtracs•Soundelux•Soundfield•Summit Audio•TC Electronic
Timeline•TL-Audio•Tube-Tech•Tube-Trap•Vac-Rac 4000 • Yamaha Digital
Waves and many more

9982 Monroe Drive, Suite 407, Dallas, TX 75220
(214) 358-0050 • Fax (214) 358-0947

Sales • Service • Installation • Consultation • Leasing

**STUDIOTECH
SUPPLY**

www.studiotechsupply.com

VINTAGE NEVE™ 1272 PREAMPS with D.I.



\$989 Single w/p.s. \$1659 Two channel w/p.s.

VINTAGE NEVE™ 3405 PREAMPS with D.I. (PRE FROM NEVE 1081 EQ)
\$749 Single w/p.s. \$1249 Two channel w/p.s.

VINTAGE APT™ PREAMPS with D.I. (MADE FROM API 312 CARDS)
\$1349 Two channel w/p.s. \$499 Plug-in module

POWERED RACKS FOR VINTAGE APT™ PREAMPS AND EQ'S
\$499 6-Module portable \$539 6-Module rack mt \$799 11-Module rack mt

**Brent Averill
ENTERPRISES**

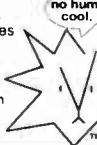
14300 Hortense Street • Sherman Oaks, CA 91423
818 784•2046 FAX 818 784•0750
www.brentaverill.com

TAC MATCHLESS
26X24
PATCH BAY/HARNESS
\$5,800 O.B.O.
(406) 652-5943

We've got your n'hummer.™

Kills the hum in audio lines.
No transformers, noise gates
or comb filters. It works;
guaranteed! \$249.95 + s/h
for a 2-channel unit.

www.stro-lion-technologies.com
800.567.0881



SOUND ANCHOR SPECIALTY AUDIO STANDS (407) 724-1237

DESIGNED FOR ULTIMATE
PERFORMANCE BEHIND
CONSOLE AND FREE SPACE
APPLICATIONS.
STANDARD & CUSTOM Models
SEE OUR AD IN MARKETPLACE

SEE OUR AD IN MARKETPLACE pg. 242

THE CASE SPECIALISTS FREE CATALOGUE



(800) 346-4638
(516) 563-8326, NY
(516) 563-1390, Fax
Custom or stock sizes.
Our prices can't be beat!

Discount Distributors

2 Neve Melbourne 12x2 mixers;
Neve quad box with 33115 EQ;
Studer A80 MkII 16-tr. (very low
hours) & 1/4"; LA2a; 1176 (pre-
blackface); GML 8900 MkIII limit;
Neumann U67; AMS ST250 stereo
"soundfield" mic. (604) 351-7103.
andrewgordon@yahoo.com

DATRAX
Originator in DAT tape storage systems

800
+9
BRICO
DATRAX PRODUCTIONS

SEE OUR AD IN MARKETPLACE pg. 240

**NEW, USED, DEMO
EQUIPMENT
BEST SELECTION OF
DIGITAL/ANALOG
RECORDERS, CONSOLES,
DAWS, OUTBOARD GEAR**

Otari C1 4032, Yamaha 02R,
API 1200 rack system, Dynaudio
Monitors, Alesis ADAT, Tascam
DA-88, Sony PCM800, Otari
Radar 24tk, Pro Tools III, All
Digidesign Plug-Ins, Mackie 8-Bus,
Apogee AD1000, Lexicon
PCM80/90, TC Elec. M5000,
CD Recorders, API, GML, ADL,
Summit, Focusrite, Demeter,
Lucas, TL Audio, Neumann,
AKG, Microtech, RODE, B&K,
Genelec, Dynaudio.

Studio and System Design,
Financing, Factory Service/
Installation, Experienced and
Knowledgeable Sales Staff.

EAR PROFESSIONAL AUDIO
(602) 267-0600
<http://www.ear.net>

UNITED STATES AUDIO

CONSOLES: SSL 9000 J 72 in*Neve 8078, 40 in/24/32*Otari
Concept-1, Moving Fader*DDA DCM 224V, 46 in/Uptown*
Quad Eight 40/24/32*Harrison 4032*Tridents: 80, 56 in/65/70*
Ameks: Big 44 in/Einstein 80 in*Soundcraft 6000, 36in*
RECORDERS: Sony JH24/APR 24/5002-2tk*Otari MX80/
MTR 90, I, II, III, 100***OUTBOARD:** Neve 1066, 73, 84, 81,
2254*Teletronix LA 2A*Fairchild*UREI 1176, 78, LA 3A*ADL
and more!

STUDIO LIQUIDATION*WE BUY GEAR!
PH (818) 887-6600 Fax (818) 887-4700

Masterpiece A/V, Inc.

Call Aaron & Jamey

For a Wide Selection of New Professional
Audio/Video Gear Media & Accessories

Toll-free (888) 776-2835

fax (860) 354-9057

<http://www.masterpieceav.com>

www.UsedSSL.com

ALAN SMART COMPRESSORS



C-1, C-2, & Multi-channel versions

Now available in the U.S. exclusively from:
Sunset Sound, Hollywood (213) 469-1186

• Sales (888) 463-7012 •



VINTAGE KING AUDIO



VINTAGE KING AUDIO
BUY, SELL AND TRADE NEW/USED GEAR
LARGEST TUBE MIC SELECTION

IN STOCK: AKG C12/C24. ALTEC 639b. COLES. NEUMANN
U47/U48/M49/U64/U67/UM57/SM2/SM69/KM53/56/256/84/86/
CMV563. 221b. AC701-\$100/VF14. NEVE 1066/1073/1081/
1084/1089/31102/33609a/32264a/2254/1271/1272/3415. Neve
frames. V72/76. ORBAN 622. PULTEC EQH2/EQP1a/EQP1a3/
EQP1RS, MEQ-5, A-RANGE/HELIOS Stones-Zeppelin modules.
AUDIX 35102/am6-17. CALREC pq15/1061/1161. ADR Complex.
ALAN SMART. dbx 160. FAIRMAN. FOCUSRITE ISA 110/130/
rack. LA3/1176/565. AMS RMS/DMX. EVENTIDE 2016. PCM70.
DOLBY SR. AMEK API 1604, CALREC 32x8-pq15. EAB/IRT 6x1/
8x2 tube mixers. Helios 32x24. NEVE 8068/BCM10/V2/Melbourne
SSL 4048/6048. TRIDENT 80 STUDER A800/A820/A827. MCI
JH24.

313-965-0645 ph
www.vintageking.com

313-964-3338 fax
VKaudio@ix.netcom.com

IN-EAR MONITORS

Puretone Limited, 10 Henley Business Park, Trident Close,
Medway City Estate, Rochester, Kent, ME2 4FR, England.
FAX: +44 (0)1634 719450 TEL: +44 (0)1634 719427
WEB: <http://www.puretone.ltd.uk/puretone/>
E-MAIL: iem@puretone.ltd.uk

SEE OUR AD IN MARKETPLACE pg. 238

**Hard Disk
Recording**

Sales 800.801.0153
770.599.0681
F 770.599.6469

www.missionrec.com

Recording and Audio

SUPERDIGITAL
+ The Recording Store
Loves
MANLEY
World's Best Tube Gear



1-888-79-AUDIO 1-503-228-2222
www.superdigital.com
Super Prices • Friendly Service

SEE OUR AD IN MARKETPLACE pg. 241

Mix Classifieds Phone (800) 544-5530 Fax (510) 653-8171 e-mail mixclass@cardinal.com

Equipment Wanted

EQUIPMENT WANTED
BUY OR TRADE
YOUR USED MULTITRACK
RECORDERS
AND CONSOLES
**EAR PROFESSIONAL
AUDIO/VIDEO**
(602) 267-0600

USED ADATS WANTED.

Easy exchange toward a newer or different format. Everything available. Save **THOUSANDS** when you deal with our 69-year-old company. **UPGRADE TODAY.** Call, fax or email for details. Worldwide delivery. **CARUSO MUSIC**, New London CT: sales@caruso.net
(800) 264-6614
Outside of the US (860) 442-9600
http://www.caruso.net

Instruction

PRO TOOLS® 4
INTERACTIVE TRAINING
CD-ROM
**COOL SCHOOL
INTERACTUS**
VOL.142
800-729-6919
e-mail: coolbreezesys@aol.com
http://www.coolbreezesys.com

STUDY SOUND ENGINEERING IN MILANO



TECHNOLOGY COLLEGE
SAE AUDIO COLLEGE
Tel. + 39-2- 8912 0540
www.saecollege.edu.au

BE A RECORDING ENGINEER

★ **TRAIN AT HOME** ★
Easy Home-Study practical training in Multi-track Recording. Join our successful working graduates or build your own studio. Career Guidance. Diploma. Accredited.
FREE INFORMATION:
Audio Institute of America
2258-A Union St. Suite AL, San Francisco, CA 94133

STUDY SOUND ENGINEERING IN PARIS



TECHNOLOGY COLLEGE
SAE AUDIO COLLEGE
Tel. + 33-1- 4811 9696
www.saecollege.edu.au

STUDY SOUND ENGINEERING IN LONDON

- * With the largest audio college. Established 1976!
- * Individual practical time on Neve VR and SSL consoles
- * Full B.A (Mus.Prod) degree from a leading University - exclusive.
- * 9 months full time - 600 hours (AAS)
- * 25 Colleges - 7000 students
- * International Job-placement



TECHNOLOGY COLLEGE
SAE AUDIO COLLEGE
Tel. + 44-171-6092653
www.saecollege.edu.au

STUDY SOUND ENGINEERING IN SYDNEY



TECHNOLOGY COLLEGE
SAE AUDIO COLLEGE
Tel. + 61-2-9211 3711
www.saecollege.edu.au

MUSIC RECORDING INDUSTRY CERTIFICATE PROGRAM

San Francisco State University College of Extended Learning. Classes taught by Bay Area pros. Expand skills and earn certificate. Engineering, management, song-writing & more!
Call (415) 904-7700.

STUDY SOUND ENGINEERING IN VIENNA



TECHNOLOGY COLLEGE
SAE AUDIO COLLEGE
Tel. + 43-1- 330 4133
www.saecollege.edu.au

STUDY SOUND ENGINEERING IN ZURICH



TECHNOLOGY COLLEGE
SAE AUDIO COLLEGE
Tel. + 41-1- 445 2040
www.saecollege.edu.au

Subscription Questions?
call 800-843-4086

The Midwest's Premiere Recording School.



SEE OUR AD IN MARKETPLACE pg. 241

Internet Services

www.musicians-gear.com
European-based dealer
Lots of Products
Professional Handling
Check It out!

Join 20,000 audio pros Buy-Sell Gear

Search for pro contacts
on the Web @
www.proaudio.net

Music Products/ Software

AKAI MPC60 USERS UPGRADE TO MPC3000 SOFTWARE!

LONG SAMPLING TO 26 SEC •
STEREO SAMPLING • MIDI FILES •
VOICE RESTART • LOAD MPC3000
SOUNDS • SOUND COMPRESSION
DOUBLES MEMORY CAPACITY •
HIHAT SLIDER DOUBLES AS TUNING •
4 PAD BANKS • 8 DRUM SETS • 4 FREE
SOUND DISKS AND MORE • \$195 OR
\$445 WITH SCSI HARD DISK PORT



PH 415 474-0903 www.RLinnDesign.com
FAX 415 474-1118 Sales@RLinnDesign.com

Maintenance Services & Repairs

Pro Digital Inc.

- ★ Fast, expert repairs on all DAT and MDM brands and models
- ★ The **FIRST**, the **BEST**...over 7000 digital recorders serviced!

DAT ADAT DA-88 DAT Recorder Service Specialists

- ★ Warranty service on most brands!
- ★ FedEx return shipping at UPS prices!
- ★ Compare our rates & turnaround time!

(610) 353-2400

(610) 359-0937 FAX
prodigiinc@aol.com

HEAD RELAP/REPLACEMENT
multitrack analog specialists

iem
Palatine, IL
(800) 227-4323

OH NO!



Now
973!

After 19 years (and thousands of these stickers), they changed our area code! So don't forget to dial 973 first when you need...

- Analog Head Relapping
- Replacement Heads
- Precision Alignments
- 1/2" 2-Track Conversions
- Custom Heads and Assemblies

973-579-5773 fax 973-579-6021
e-mail jrf@jrfmagnetics.com
www: jrfmagnetics.com

Midwest Digital Services Inc.
DAT and DA-88 Repair
(Chicagoland Area)
Professional DAT Service since 1985
Authorized by
Panasonic, Sony & Tascam
(888) 809-3309
Phone: (708) 448-7539
Fax: (708) 448-7678

DATs FIXED FAST!

Expert solutions for all
DAT recorder problems

- All makes and models
 - Experienced, factory-trained techs
 - Fast turnaround
 - Repairs, overhauls, parts
- "The DAT doctor is in!"



973-579-4849 FAX 973-579-7571

FRN your Mix Classified

510 • 653-8171

VINTAGE GEAR REPAIR
Tubes, Transistors, (yes even ICs),
Mic pre's, limiters, amps,
consoles, tape machines.
We repair & restore it all!
Field service too!
retrospec/TROUBLE REPORT
Ph: (914) 688-7329

Recording Services

Looking For Quality?

We Offer It ... affordably

Digital Mastering

We use Sonic Solutions, TC Electronic, Lexicon etc. to give you the BEST sound possible

CD Recording

as low as \$15 ea.

CD Duplication

1000 CDs = \$1150 in Jewel Box

CD Enhanced

Authoring and Mastering

Call NOW
for FREE Brochure
(800) 524-5706 x-115

SOUND CONCEPTS
943 Manhattan Beach Blvd.
Suite C
Manhattan Beach, CA 90266

Mix Classifieds are your best
advertising buy in the industry.

Phone (800) 544-5530.

EuropaDisk

Why deal with brokers when you can
work direct with our factory and save?
Major credit cards accepted.

- Retail-Ready CD Packages
- Bulk CD Replication (as few as 100 pieces)
- Cassette Duplication
- 7" / 45 & 12" Vinyl Records
- Graphics Design & Printing

BEST PRICE. BEST SERVICE. PERIOD.

EUROPADISK, LTD.

http://www.europadisk.com

SC Mastering Studios

Sixty minutes of your audio
Digitally Mastered & put on
10 CDs for \$449.95.
(404) 634-3430, lv. msg.
http://www.mindspring.com/~
SaucyChaucer

CUSTOM COMPACT DISCS

Affordable single copy CDs
starting at \$15.

\$5.00 OFF WITH THIS AD

46 PRODUCTIONS
42W557 Hawk Circle
St. Charles, IL 60175
TEL (800) 850-5423
FAX (800) 203-1725

Contact us on the Internet at info@46p.com
Visit our Web page at http://www.46p.com

Hear the Magic

Master with us...and make an impact!
CD MASTERING...
CD MANUFACTURING...
CD BOOKLET PRINTING...
...SEE US in MARKETPLACE
Orlando, FL (800) 344-4361
http://www.digido.com

SEE OUR AD IN MARKETPLACE pg. 243

COMPACT DISCS • CASSETTES

LOWEST PRICES

ACCURATE AUDIO LABS, INC.

(800) 801-SONG (7664)

Sound Restoration/ CEDAR Processing

78, LP, Acetate, Open Reel
Transfers/Reasonable Rates
Allen Lowe Archive And Sound Service
60 Hillside Ave. South Portland, Me 04106
Phone: 207-741-2846 fax: 207-741-2847

Records Tapes CD Services

ada
artist development associates

CD Singles Special \$559

- 500 CD's, 2 Colors on CD
 - 500 Window Envelopes
 - Layout, Design & Films included
 - Glass Mastering included
- no tricks, no gimmicks, just bring us your CD!

Digital Dime Bag \$1,499

- 1000 CD's, Jewel Boxes & Over-wrap
 - 2 Color on CD printing
 - 1000 4/1 4 PP folders & 4/0 tray cards
 - Film output
 - Glass Mastering included
- Full color, retail ready, quick turns

UNBEATABLE DUPLICATION PRICES (888) rubber-8

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MIX CLASSIFIEDS WORK!

Phone: (800) 544-5530

DRT Mastering

If your CD needs the fat NY/LA sound
(or better) that major labels demand, you
owe it to yourself to call us before you
manufacture. Simple as that! Free broch.
800-884-2576 www.drtmastering.com

PROTOSOUND
Compact Disc &
Audio Cassette Mfg.
(800) 900-7995
(802) 453-3334
Fax: (802) 453-3343

SEE OUR AD IN MARKETPLACE pg. 242

Rock Solid MASTERING

Sonic Solutions
Manly • Focusrite • Apogee

\$199. Try us for \$30.
(30 minute proof m)

Toll Free 888-373-4455 Free brochure

CD REPLICATION

- Cassette Duplication
- Mastering & Digital Editing
- Graphic Design & Printing
- CDR Blanks

ESP

We Anticipate Your Every Need

1-800-527-9225

(716) 691-7631 • Fax (716) 691-7732

THE NAMES YOU KNOW AND TRUST...

HIGH BIAS BULK-BLANK AUDIO TAPES UNBOXED-UNLABELED

| LENGTH | TDK PRO-SA COBALT | maxell XL II | BASF CHROME PLUS | BASF CHROME SUPER |
|--------|-------------------------|-----------------|------------------------|-------------------------|
| C-10 | 24 € | 25 € | 25 € | 28 € |
| C-15 | 26 € | 27 € | 30 € | 31 € |
| C-20 | 28 € | 30 € | 31 € | 35 € |
| C-30 | 33 € | 36 € | 35 € | 45 € |
| C-46 | 40 € | 45 € | 42 € | 58 € |
| C-62 | 47 € | 50 € | 50 € | 68 € |
| C-80 | 56 € | 68 € | 65 € | 85 € |
| C-92 | 62 € | 75 € | 72 € | 87 € |
| C-100 | 70 € | 83 € | 75 € | 95 € |

FULL LINE OF RECORDING
AND DUPLICATING SUPPLIES



DIRECT ON CASSETTE PRINTING
CUSTOM LABELS AND J-CARDS

ALL LENGTHS AVAILABLE - 1 MINUTE TO 126 MINUTES

...FROM THE COMPANY YOU KNOW AND TRUST

764 5th Avenue,
Brooklyn, New York 11232
In NYC Tel: (718) 369-8273
24 Hour Fax: (718) 369-8275

NRS
National Recording Supplies Inc.

145 Lauro Pinerio Ave.,
Ceiba, Puerto Rico 00735
In Puerto Rico Tel:
(809) 885-2316



CALL TOLL FREE 1-800-538-2336

SHORT RUN DUPLICATION SPECIALISTS

| | Packaged | Flaw | Bulk |
|------------------------------------|-------------------|-------|-------|
| • Short run CDR duplication • | | | |
| • Disc duplication • | 10 Discs \$99 | \$74 | \$72 |
| • Cassette duplication • | 20 Discs \$178 | \$145 | \$140 |
| • Printing, packaging and design • | 50 Discs \$399 | \$329 | \$319 |
| | 100 Discs \$599 | \$519 | \$509 |
| | 1000 Discs \$1375 | \$999 | \$749 |

1-888-999-1760 Conversion Media Inc. www.conversionmedia.com

Records Tapes CD Services

CD & CASSETTE MANUFACTURING

Serving the country with over 25 years of experience.
The Southwest's premiere full-service manufacturing facility!

**PRINTING • GRAPHIC DESIGN • BLANK CASSETTES
DIGITAL MASTERING & EDITING • ONE-OFF CD-RS**
RETAIL READY PACKAGES! CALL FOR FREE CATALOG!



CRYSTAL CLEAR SOUND
1-800-880-0073

mc/visa accepted

www.crystalclearsound.com

**Our CD & Cass's are
BETTER & CHEAPER!**
(800) 421-8273
Progressive Music

SEE OUR AD IN MARKETPLACE pg. 242

**CD-Recordable
\$1.46**
MEDIA SUPPLY
800-944-4237

SEE OUR AD IN MARKETPLACE pg. 242



Bulk CD's
as low as
60¢

CD-Audio & CD-ROM

- Audio & Video Cassette Duplication
- Mastering • 1630 • PMCD • CDR
- Graphic Design & Printing
- Retail-Ready Packages • Fast Turn

CD SONIC

Tel: (617) 424-0670 Fax: (617) 424-0657
Toll Free 1-888-CD SONIC (237-6642)

1000
Raw
CDs for
\$800

- CD Replication Mastering
 - CD/Cassette Duplication Printing
 - one-offs Posters
 - CD/CD-Rom Hybrids Professional Design
- call for a free catalog

1-888-DISC-MFG
1-888-347-2634
www.prophetmedeo.com



PROPHET
Disc Manufacturing

includes 3
color disc label

BASE Multimedia Inc.



Price Includes:
Full Color CD Label,
(customer supplied film)
Jewel Box
Glass Master
Assembly &
Overwrap

www.bmmi.com

1-800-579-7010

300-\$599

300 full length CD's! (74 min. max)

500-\$750

Our most popular package for independent artists!

1000-\$1150

That's only \$1.15 per CD packaged & retail ready!

HEALEY disc

Manufacturing

**Premier Quality CD/CD-ROM,
VHS and Cassette manufacturing**

CD PACKAGE INCLUDES:

Color 4 page /2 panel insert, 2 color on CD printing
pre-master, glass master, jewel box and shrink wrap.

BARCODE INCLUDED.

\$1099 500 CD's
\$1599 1000 CD's

CALL NOW 1-800-835-1362

for your free catalogue > www.healeydisc.com

Professional mastering at affordable rates.
Special STUDIO and INDIE label rates.

"who's making your music"

- complete packaging solutions
- graphic design
- multi-media/
interactive presentations
- illustration
- animation



design for the music industry

**300 CD
singles**

Includes: pre-master, glass master,
2 color CD label printing,
jewel box & manufacturing.

\$695.00

www.taag.com
call for your catalogue

1-800-410-4855

THE WAREHOUSE

Studio Sales & Services

CD & Cassette Packages

1000 color CD's from \$1,899

CD-Rs • DATs • ADATs • R2/R

Custom Graphics

Blank cassettes (BASF, TDK, Maxell)

Behringer Equipment

Warehouse prices

Call

800-GUD-TAPE • 800-483-8273

http://www.Warehouse-Studio.com

Visa • MasterCard • Discover

2071-20th Emerson St., Jacksonville, FL 32207

904-399-0424 Fax: 904-398-9683



(617) 577-0089

MASTERING
DIGITAL EDITING

1630 transfers
cd replication
individual cds
multi-media
digital noise
reduction and
restoration

*call today.

Fleetwood MultiMedia

1000 CDs from \$799

500 Chrome Tapes \$715
Includes Everything

7-10 Day Turnaround

800-353-1830 (617) 289-6800

SEE OUR AD IN MARKETPLACE pg. 242

Over 13 years of Quality
1000 CDs
\$699.95
 1-800-967-TUNES

1-800-TAPE WORLD or 1-800 245-6000
 We'll beat any price! 5.95 SHIPPING • FREE CAT

| SONY | MAXELL | TDK | FUJI |
|--------------|--------------|----------------|----------------|
| XC-122 5.99 | XL-1190 4.59 | CDR-74 4.99 | SVHS-1120 4.49 |
| DAT-124 4.88 | XL-115 3.19 | DAT-122 6.49 | H-121 7.99 |
| 1-191V 4.69 | ST-120 4.99 | SA-90 4.49 | DR-140 6.69 |
| 1-751-G 4.49 | DAT-124 4.57 | SAX-90 1.99 | LVGST125 5.99 |
| MDW-74 5.99 | 1120-GX 2.49 | 1-120-EMG 2.49 | CDRXG-74 4.99 |
| TDKDC6 2.99 | LR-90 7.99 | LR-35-90 8.99 | CDR-D-74 2.49 |

TAPE WORLD 220 SPRING ST. BUTLER, PA 16003 FAX 800-322-4273
 OVER 500 DIFFERENT SAME DAY SHIPPING, M-F 8-5

"OUR 30TH YEAR OF FAST GUARANTEED SERVICE"
FREE CATALOG
 4212 14TH AVENUE - BROOKLYN, NY 11219
ANDOLA
 AUDIO PRODUCTS INC.
 CUSTOM LENGTHS FROM 1-126 MINUTES

| LENGTH | C-10 | C-20 | C-30 | C-40 | C-50 | C-60 | C-70 | C-80 | C-90 |
|-------------------|------|------|------|------|------|------|------|------|------|
| TELEX CHROME PLUS | 27 | 32 | 37 | 41 | 46 | 51 | 57 | 63 | 68 |
| TDK SA | 25 | 30 | 35 | 39 | 44 | 49 | 53 | 58 | 63 |
| MAXELL III | 27 | 32 | 38 | 44 | 47 | 52 | 67 | 70 | 76 |
| BASF CHROME SUPER | 30 | 38 | 47 | 56 | 65 | 69 | 80 | 87 | 89 |

100 PIECE MINIMUM
TELEX
TDK
BASF
AMPEX
MAXELL

CD-RS, HI-8, MINI DISKS, S-VHS
 MASTERING TAPE
 A-DAT, R-DAT, BULK VHS
 PLASTIC REELS, BOXES
 NORESCO, SOFT POLY BOX
 VIDEO BOXES & SLEEVES
 SINGLE & DOUBLE CD BOX
 DCC, MOD, DDS2
 AND MORE

IN HOUSE DIRECT ON CASSETTE PRINTING
 • CUSTOM PRINTED LABELS & J-CARDS •

IN NYC 718-435-7322 • **800-221-6578** • 24 HOUR FAX 718-853-2589
 www.andolaudio.com
 andolaudio@aol.com

IT'S YOUR BABY AND WE DELIVER.

Complex
 CD Mastering & Replication

500CDs \$850
300CDs \$750
INCLUDES: GLASS MASTER, 2 COLOR DISC, LEVEL DOT, PACKAGING

MASTERING - GRAPHIC DESIGN
 CD-ROM DEVELOPMENT
 CD-PLUS - VIDEO/EDITING

800-DIGIDOC
 www.digidocpro.com

CDs

As low as
67¢ each

- * CD-R Replication
- * CD-R One-Offs
- * Mastering
- * Packaging & Printing

PRINCETON DISKETTE
800-426-0247
 www.princetondiskette.com

X TRAX

DIGITAL MASTERING
 INTENSE GRAPHICS
 ONE OFF CD'S
 CD REPLICATION
 CASSETTE DUPLICATION
 VIDEO DUPLICATION

1000 CD'S AS LOW AS \$999

VISA
 MasterCard

Free Full Color Catalog • Toll Free 1.888.88XTRAX
 OUTSIDE THE USA (713) 237-8636

OPSonic & Munster V
 HAVE JOINED FORCES TO CREATE THE

MONSTER X
 digital media

CD'S & CD-ROMS
 GRAPHIC DESIGN
 REAL TIME & HI SPEED CASSETTES
 WEB SITE DESIGN & HOSTING
 FREE WEB SITE WITH CD PACKAGES

1.800.476.8211
 www.monsterx.com

MasterCard VISA

FREE!

GUIDE TO MASTER TAPE PREPARATION

Find out how to prepare your audio master for error-free manufacturing. A must for recording artists and studio engineers.

\$7.95 Value

DISC MAKERS
 1-800-468-9353 • http://www.discmakers.com

Subscription Questions?
 Call
(800) 843-4086

RECORDING & DUPLICATING SUPPLIES

ARCAL TDK BASF SONY AMPEX MAXELL

Cassettes • Reel-to-Reel Tapes
 C-O's • Cassette Albums • Labels
 R-Dat's • CDR's • Video Tapes
 Data Storage Media

ARCAL CORP.
 2732 Bay Rd., Redwood City, CA 94063
TOLL FREE 1-800-272-2591
 FAX (650) 369-7446
 Visit our web site: http://www.arcal.com

YOU WOULDN'T LET JUST ANYONE MAKE YOUR CDs... WOULD YOU?!

Discover the **MMS advantage**. Major label quality at independent prices in record time.

MUSIC MANUFACTURING SERVICES

It's not just our name. It's what we do!
 Manufacturing for the independent music industry since 1986.

1-800-MMS-4CDS
 1-(800)-667-4237

Call us for a free brochure and custom quotation.

CDs • Cassettes • Vinyl • Graphic Design • Mastering • All related packaging

1000 Bulk CDs \$620!

III MEDIA SERVICES

1.888.891.9091

SEE OUR AD IN MARKETPLACE pg. 240

Records Tapes CD Services

500 CDs w/ 2pg color
booklet OR 1000 CDs
w/ JEWEL CASE,
INSERT YOUR
BOOKLET AND
SHRINKWRAP **\$999**
800-401-8273
BALLISTIC COMMUNICATION

100 CD's \$399
200 CD's \$448
300 CD's \$489
500 CD's \$599
1000 CD's \$699
www.eastcopro.com

• COMPACT DISCS
• VIDEOS
• CASSETTES
Direct from Digital
• Complete Graphic Design
• Printing/Packaging
• Blank Tapes & Accessories
• 100% Guaranteed
13 Years Serving The World
EASTCO PRO
Audio/Video Corporation

69¢ CD'S?!
THEM BOYS
IS
CRAZY!



FREE COLOR
CATALOG

1-800-365-8273

**RELIABLE
"ON HOLD"
TAPES*PLAYERS**
*MADE IN USA
CALL OR FAX FOR
SAMPLE TAPE

MANN ENDLESS CASSETTE INDUSTRIES
3700 SACRAMENTO ST., S.F., CA 94118
TEL: (415) 221-2000 FAX (800) 683-7569

Studios

Good Vibrations - RJR Digital
MASTERING
1-800-828-6537
OUR CD PRICES INCLUDE ABSOLUTELY EVERYTHING
1000 CDs - \$2175 (or less!) retail ready.
1 day promo CDs in quantities of 1 to 100.
Call for details, free samples, special quotes.
<http://www.diabloweb.com/goodvibrations>

Indie Label Service
Compact Discs
96¢
Includes design, film and two-color print on disc
CDs & Cassettes in quantities from 100 - 100,000
KK MULTIMEDIA INC 800.458.6405

SEE OUR AD IN MARKETPLACE pg. 240

TAPE COMPLEX

RETAIL READY
1000 CDs \$1349.
With 4-panel 4/1 booklet + tray card
FROM YOUR CD MASTER & FILMS

NEW LOW PRICES
SHORT RUN CDs
WITH ON-CD PRINTING!
10 - \$100 • 25 - \$200
50 - \$350 • 100 - \$500
FROM YOUR DAT, CD OR CASSETTE MASTER
UP TO 30 MIN.

STUDIOS!
BLANK CDRs WITH YOUR
LOGO AS LOW AS \$2.75 EA

1-800-381-2717

10 CDs • \$100
20 CDs • \$180
10 CDs • \$50 - when you have 10 songs or up to
40 min. of Audio Digitally Mastered
Random Access Media
1-800-684-8071

SEE OUR AD IN MARKETPLACE pg. 239

**WE'LL BEAT
ANY PRICE ON CD'S**

- CD'S
- QUICK
- BEST QUALITY
- DIGITAL CASSETTES
- PERSONALIZED SERVICE
- TOTAL COMPLETE PACKAGES
- LOWEST PRICES, CALL US LAST!

(813) 446-8273
Total Tape Services
639 Cleveland St. / Clearwater, FL 34615

Large Studio For Sale
North of Boston
API, EMT, Neumann, AKG,
Studer, MCI, etc.
Call for detailed list.
Jerry (781) 289-6305

2-1/2 HOURS NORTH OF NYC
Rambling 5-bedroom eyebrow
colonial on 20 peaceful acres
tucked down country lane
w/ professional sound studio,
\$350,000.

Crossley-Redmond Realty
Pine Plains, NY (518) 398-7900.

**Busy South Fla. Recording
Studio for sale.** Fantastic
reputation for 15 years. Pack up,
move down, start business right
away in a 24-tk. 2" analog and
24-tk ADAT facility. For info call
(954) 962-1586.



Classified Ad Deadlines

June 15, '98 deadline for
AUGUST '98 issue

July 15, '98 deadline for
SEPTEMBER '98 issue

August 15, '98 deadline for
OCTOBER '98 issue

Call

Robin Boyce-Trubitt
(800) 544-5530



Perfect Duplication Deserves a Perfect Master.

The only difference between a great CD and a run-of-the-mill CD is how good it looks and sounds. Both are made with the same equipment, at the same manufacturing cost.

At Punch Media, our in-house graphic design department creates great looking layouts. We also make sure all the technical specifications are correctly met, to ensure optimal print quality every time.

The digital audio mastering suite at Punch Media is optimized for CD and cassette mastering — good, clean two-track stereo sweetening in an acoustically designed room, with an experienced engineer.

Don't let your project be another run of the mill

**Visit our website for a chance to win FREE graphics
and mastering for your next CD project!!**

Punch Media, the full-service mastering, graphics and duplication company for CDs, Cassettes & CD-Roms.

1-888-39PUNCH (1-888-397-8624)
www.punchmedia.com



500 CD's Complete Full Color package

CD package includes:
color 2 page insert, 2 color CD Label,
all mastering, jewel box,
shrink wrapping, graphic insertion.
* From Client Supplied Film Separations

\$999⁰⁰

Also Available

- CD-Rom
- Cassettes
- Digital Mastering
- Posters

500 CD's we do it all! package

CD package includes:
graphic design, film,
color 2 page insert, 2 color CD label,
all mastering, jewel box, shrink wrapping,
graphic insertion.

\$1299⁰⁰

Call for our **WHOLESALE MANUFACTURING GUIDE**

1.800.582.3472

www.spinnerworldwide.com

Co-op for Sale. New state-of-the-art Digital Recording Studio. Penthouse Loft SoHo, New York City. Live/work. Views N, S, E. 2,300 sq. ft. incl. award-winning 1,000-sq.-ft. studio w/isolated recording rooms. Featured in 3/98 issue of EQ, pg. 78. Designed by John Storyk. Artist certification req. Asking \$1.5 mil+equip. (optional). Maint.: \$1,400 mo. Must sell immed. (212) 546-1588. Serious inquiries only.

STUDIO FOR SALE

Busy 24-trk. recording studio with 3 tracking rooms, ISO booth, accurate control room, lounge, kitchen, repair shop and storage. Central heat & air. Convenient location to NYC (Douglaston, NY), great vibe and landlord/lease. 2,500 sq. ft. Very low operating costs. 40x16x36 Classic API, Studer 827A, Otari, Lexicon, Eventide, Summit, Bryston, Hot House, Neumann, AKG, Hammond B-3, Yamaha G-2 piano, Marshall, Fender, Ampeg, etc... Meticulously maintained. Large client base for continuing income. Not an auction! Turn-key operation. **Ask for Bill or Chris (718) 224-9158.**

MASTERING • MANUFACTURING • PRINTING

DIGI-ROM

CD-AUDIO • CD-ROM
REAL TIME & HIGH SPEED AUDIO CASSETTES
 COMPLETE PACKAGES • CD-ROM STRIKE-OFFS • GRAPHIC DESIGN STUDIO
 CD-ROM PRODUCTION & ARCHIVING • 1 TO 200 DISCS DUPLICATED OVERNIGHT

(800) 815-3444
 (212) 730-2111
www.digirom.com

130 West 42nd Street • New York, NY 10036



Video Equipment, Services & Supplies

VIDEO w/TC FOR LOCKUP.
 Rebuilt 3/4" w/Warr., Betacam. 1" VTRs: SONY, JVC & AMPEX. JVC & SONY Remote Controls. SONY VP-5000, 5600, 5800, 5850, BVU-800, 950, VO-9800, 9850. Four-Month Warranty. (212) 580-9551 or (212) 206-1475. Fax: (212) 929-9082. Michael Temmer.

Miscellaneous

FREE CATALOG
 • Tapes • Cables
 • Supplies



Toll Free: **888-776-3712**

SEE OUR AD IN MARKETPLACE pg. 242

Check Out MIX Online
<http://www.mixmag.com>

DIGITAL FORCE



MASTERING
 REPLICATION
 PRINTING
 PACKAGING
 GRAPHIC DESIGN

TOTAL CD & CD-ROM PRODUCTION

149 MADISON AVENUE NY N 10016
 Call for free sampler & quotes!

www.digitalforce.com
212-252-9300

Check Out the Marketplace Section for
 New Equipment, Duplication Services,
 Maintenance—You Name It!

■ STARTS ON PAGE 238 ■

MIX CLASSIFIEDS WORK FOR YOU

- Text rate:** \$105 per inch; eight (8) lines per inch (approximately 27-32 character spaces per line); one-inch minimum. \$10 per bold line. Each space and punctuation mark counts as a character. \$105 minimum charge for each ad placed.
- Enhancements:** \$10 black border, \$15 for a grey-screened background, \$25 for a reverse, \$25 for Post Office box service. Charges are based on a per-insertion basis.
- Display rate:** \$135 per inch (1" minimum/half-page maximum). Display Classified advertising must be camera-ready, sized to MIX column widths and specs. Frequency discount rates available; call for information.
- Closing:** Fifteenth of the month, six weeks prior to the cover date (ex: April issue closing is February 15). Ads received after closing will be held for the next month unless otherwise stated. Cancellations will not be accepted after the closing date. Copy changes and cancellations must be submitted in writing.
- Other requirements:** Full street address (PO boxes aren't sufficient) and phone numbers must accompany all requests. All words to be bold should be underlined. Copy must be typed or printed legibly in standard upper/lower case. Publishers are not responsible for errors due to poor copy. Arrangement of characters may be altered in typesetting process due to space. The publishers are not liable for the contents of advertisements.
- The small print:** No stated or implied discounts allowed on new equipment sales. Publishers reserve the right to refuse or discontinue any ad deemed inappropriate.
- Send ad and payment to:** **Mix Magazine Classifieds: Attn: Robin Boyce-Trubitt, 6400 Hollis St., #12, Emeryville, CA 94608, tel. (800) 544-5530 or (510) 653-3307; fax (510) 653-8171. e-mail: mixclass@cardinal.com. Payment must be included with copy: check, Visa, MasterCard or American Express accepted. Sorry, no billing or credit available.**

ALESIS ADAT

FINDING THE "HIDDEN" FUNCTIONS

The original Alesis ADAT had only 12 specialized function buttons on its front panel, yet the machine is capable of numerous other "hidden" functions, accessible only by pressing various combinations of existing keys. Designed especially for the original ADAT, many of these also work with other ADAT-compatibles (Fostex, Panasonic and Studer machines), as well as the ADAT XT, XT20, LX20 and M20 models.



Take advantage of advanced functions hidden within the ADAT's simple user interface.

DISPLAY SOFTWARE VERSION

Pressing Set Locate and Fast Forward displays an ADAT's software version. Insiders know this is a tribute to the development team from a company named Fast Forward Designs, who wrote most of ADAT's operational software, so it's appropriate that one of the keys used to determine the software version is Fast Forward.

HOW OLD IS MY ADAT?

Access the ADAT's built-in "odometer": If you are unsure of the number of hours on your ADAT (or if you're looking to buy a used one), press the Set Locate and Stop buttons simultaneously to display the total number of hours the head drum was engaged to tape.

CHANGE CROSSFADE TIMES

The BRC remote controller provides a means of choosing from four crossfade times (10.67, 21.33,

32 and 42.67 ms), yet the original ADAT does not have a dedicated switch for this function. Nonetheless, non-BRC ADAT users can make a choice as well; press the Set Locate and Record buttons simultaneously, and the display will read "FAd1," which means the 10.67 ms setting is selected. Pressing the two buttons a second time brings up "FAd2," meaning 21.33 ms, and so on for the 32 ms and 42.67 ms crossfade times. The unit defaults to the comparatively short 10.67 ms setting, which is best for most applications; however, the longer crossfades are particularly useful on sustained notes and guitar, vocal and reverberant instrumental tracks. This is one of the ADAT's most powerful—yet underused—features.

MASTER EJECT MODE

Press Eject on your master deck to eject the tapes from the master and all slaves simultaneously. If you only need to eject the master tape without ejecting all the slaves, press Set Locate and Eject. This is highly useful if you've got a BIG system with LOTS of transports.

RECORD TAB OVERRIDE

Hate using sticky masking tape to cover a missing record tab when you want to re-use a tape? Override the record tab feature by pressing Set Locate and Record 2 to toggle between the "PrOn" (Protect Tab On) mode and the "PrOf" (Protect Tab Off). Requires Version 4.03 Software and above.

LONGER RECORDING TIMES

As a way of getting around the 40-minute, 44-second record time limitation of ST-120 ("120 minute") tapes, original ADATs could extend their running time to more

than 60 minutes by using 180-minute video tapes. By pressing Set Locate and Format, two things could happen, depending on your software version. On earlier ADATs, pressing these toggles the machine between "Std" and T-160 mode. On later ADATs, pressing these toggles the ADAT between "t60" (t60 format for ST-60 cassettes), "t120" (the default setting for ST-120 cassettes), "t160" (for ST-160 tapes) and "t180" (ST-180 tapes). The ADAT automatically reverts back to the t120 mode whenever a tape of any length is ejected.

THE HIGHER FIDELITY ADAT

To really squeeze the most out of your ADAT, bump the pitch shift up to its maximum +100 cents value when you record. This raises the sampling rate by 6%, adding about 1,400 Hz to the upper frequency response, while reducing your running time by 6%. This is not recommended to anyone planning to transfer tracks in/out of the deck using a workstation or digital console, but when working on a high quality analog console, the difference is audible.

ADAT, HEAL THYSELF

The "User Soft Reset" is the famed ADAT re-initializing procedure. Hold down the Record and Play keys while powering up, to (as Alesis puts it) "initialize memory to a known state without resetting Drum Head time." As for me, I try this procedure first, whenever any of my ADATs gives me odd software displays. About 90% of the time this is all you need to do, and your ADAT will be just fine afterward. ■

George Petersen is the author of the revised second edition of Modular Digital Multitracks: The Power User's Guide, available in fine bookstores everywhere.

BY GEORGE PETERSEN

INTRODUCING THE MACKIE D8-B. DIGITAL MIXING DEFINED.



The most powerful, intuitive, creative digital console ever offered at any price. Twenty-four-bit definition. The superb sound quality and intuitive interface that Mackie's famous for. Expandable with cards and software plug-ins. The Digital 8•Bus. Well worth the wait.



Circle #168 ON PRODUCT INFO CARD

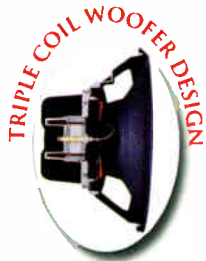
Mackie Designs. All rights reserved. "MACKIE" and the "Running Man" figure are registered trademarks of Mackie Designs Inc.

World Radio History

Woodinville, WA, USA
Phone 800/898-3232
www.mackie.com

THE NEWEST TECHNOLOGY IN MONITORS

FROM THE FIRST NAME IN SOUND



- Dynamic Braking
- Low Power Compression
- Differential Drive®



- Neodymium Motor Structure
- 2" Edgewound Voice Coil
- Butyl Rubber Surround



- Ultra Low Distortion
- Controlled Dispersion
- High Power Capacity
- Maximum Transient Response



- High Rigidity
- Ultra Low Resonance
- Reduced Diffraction and Reflection

New multichannel formats are challenging old monitor concepts. While traditional stereo is still prevalent, 4, 5 or more channels are being monitored in modern production environments, daily. The LSR Family applies new technology to meet these requirements. By going beyond traditional design techniques with Linear Spatial Reference performance, JBL has literally redefined how a system is created. The LSR concept helps to dramatically expand the listening area, creating a larger, more accurate mixing space.

The LSR32 introduced the world to the Linear Spatial Reference philosophy. This 12" 3-way mid field monitor offers maximum performance in both vertical and horizontal configurations.

The LSR28P is an 8" bi-amplified near field monitor, ideal for multichannel mixing in small to medium-size production environments.

The LSR12P is a 12" powered subwoofer that easily integrates into a wide variety of stereo and multichannel formats, and complements both the LSR32 and LSR28P.

LSR12 Subwoofer (Vertical)



LSR28P



LSR32 (Vertical)
Mid field Reference Monitor



LSR32 (Horizontal)
Mid field Reference Monitor

For more information on the LSR Family
www.jblpro.com

© 1998 JBL Professional

LSR
Hear Every Thing



H A Harman International Company

