

MIX[®]

AES PRODUCT SPECTACULAR

- *The New ADAT*
- *Neumann's Tube Mic*
- *Sony Digital Console*
- *And Hundreds More!*

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION



MARK GANDER
 21000 WINFIELD RD
 TOPANGA CA 90290-3636

*****3-DIGIT 902
 MX GANDEM003019507 692 3DC



Tom Petty
King Crimson
Anita Baker



NEW YORK
RECORDING
BROADCAST
AND POST

RESTORING
VINTAGE
GEAR

Mixing
For Radio

Workstations R Us

MARQUIS
DITHER
ME THIS



MidiVerb[®] 4



Clean, Quiet, Rich

Forget what you know about digital multieffects processors, the new Alesis MidiVerb 4 has rewritten the book. While the competition has been chasing the standards set by three generations of MidiVerbs, our engineers were researching ways to integrate the form and function of digital reverb way beyond anybody else's imagination...or capabilities. It makes the MidiVerb 4 the cleanest, quietest, richest sounding and, yes, the smartest machine of its kind.

Here's how...

Advanced Fully Integrated 18 Bit Architecture

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

The Power of Great Sound

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

Fast, Fun, Flexible

But great sound is only the beginning. You get 32 full Stereo configurations, as well as powerful independent Dual Channel Parallel Processing. Plus, a special

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

Auto Level Sensing™

No, this won't tell you if your car's on a hill. But, if you want to start mixing in a flash, or the drummer's starting the count and you just plugged in, our exclusive Auto Level Sensing feature automatically sets the input level for optimum use of MidiVerb 4's wide dynamic range, so you'll never have to trade off patience for excellent sound.

It's a MidiVerb

Of course, because it's a MidiVerb, you can modulate effect parameters in real time via MIDI, select programs, and automate your effects during mixdown with a MIDI sequencer.

MidiVerb 4 is based on a classic theme, but it's new in every way. And as always with MidiVerb, the best part is the price. See your Alesis Dealer.

and Smart

For more information on the MidiVerb 4, call 1-800-5-ALESIS or see your Authorized Alesis Dealer.
® MidiVerb is a registered trademark, Auto Level Sensing is a trademark of Alesis Corporation.

Alesis Corporation 3630 Holdrege Avenue Los Angeles CA 90016 1-800-5-ALESIS ALECORP@Alesis1.usa.com



USE READER SERVICE CARD FOR MORE INFO

World Radio History

Axiom

F I L M D U B B I N G S Y S T E M

Film
dubbing direct
from hard disk



SSL DIGITAL

- FULL-SCALE, KNOB PER FUNCTION DIGITAL DUBBING CONSOLE
- ONE, TWO AND THREE OPERATOR CONFIGURATIONS
- DUBBING DIRECT FROM HARD DISK
- OPEN MEDIA INTERCHANGE
- Fully automated / resettable digital mixing console
- Up to 96 concurrent access hard disk audio tracks per operator
- Dynamic automation of surround panning on all channels at all times
- Simultaneous output of master programme mix and mix stems. Configuration capabilities include a range of surround stems and stereo or mono subgroups
- Flexible routing across four separate 8-track stem mixes, plus 32 multitrack busses
- Accurate film dubber control, plus 4 serial control ports
- Optional Axiom Preparation Station (APS) provides shared access to Axiom's hard disk and I/O resources. Up to 24 tracks may be used to record, edit, pre-lay and mix material, with fully networked interchange between APS and console
- **Open Media Interchange**
Axiom Preparation Station (APS) provides import of most major file formats



Bus/Tape Panel



Joystick Panning Control



Monitor Select Panel

Solid State Logic

International Headquarters: Begbroke, Oxford,
England OX5 1RU · Tel: (01865) 842300
Paris (1) 34 60 46 66 · Milan (2) 612 17 20
Tokyo (3) 54 74 11 44 · New York (212) 315 1111
Los Angeles (213) 463 4444

See us at Booth #408

TANNOY®

Get Real



PBM II

For more than three-quarters of a century, Tannoy has been designing and producing loudspeaker systems and components to meet the demands of the world's most demanding user. A philosophy of constant research and investment in state of the art materials, technology and processes enables Tannoy to ensure that every monitoring system we produce will re-produce absolute fidelity to the source, true dynamic capability, and most importantly, real world accuracy. This is why Tannoy systems are used in more of the world's professional facilities than any other brand.

In the North American marketplace, Tannoy has been the number one monitor of choice for several years according to the Billboard's international recording and equipment statistics. This clearly illustrates why Tannoy enjoys its reputation as the world's leading manufacturer of reference loudspeakers. In fact, **leading the market is what Tannoy is all about.** While other multi-faceted manufacturers, not dedicated solely to the

art of reference monitor loudspeakers, scurry to produce products to compete with Tannoy's original highly acclaimed and award-winning PBM series, **Tannoy moves on.**

The new PBM II series, once again, is setting new standards in the industry. Pioneering new technologies such as **variable thickness, injection molded cones with nitrile rubber surrounds** are but one fine example of our dedication to perfection. The new molded cones are stiffer than conventional cones producing more linear extended low frequency. They are better damped for reduced distortion and exhibit more naturally open and detailed midrange. They are immaculately consistent and durable for years of faithful trouble free use. From the high power polypropylene capacitors to the hardwired minimalist crossover, every component has been carefully selected for the new breed of PBM II series. When leading edge technology is so affordable, **Get Real.** Don't settle for second best.



Presenting

POST:TRIO

Editech's new POST:TRIO digital audio workstation delivers everything you need to build a world-class post production studio in your facility...

...Recording

...Mixing

...Editing

...at a fraction of the price of those expensive British systems.



Scalable architecture: up to 24 disk channels – 48 assignable mixer strips – 72 inputs and outputs

Complete digital mixer with: parametric equalizer; compressor/limiter/expander; aux sends and returns; insert points; talkback & monitoring

Multi-track recording and editing on analog & magneto-optical media

Dynamically automated mixing with moving faders

Non-linear video option

High speed network server option

Native OMF operation

POST:TRIO is designed to grow when your business grows – and it will! ...and since POST:TRIO is fully compatible with the Dyaxis II family, there is always a solution to meet your needs and budget.

To find out more about POST:TRIO or Dyaxis II, please call today.

Studer Editech	415.326.7030
Atlanta	404.257.8829
Los Angeles	318.703.1100
New York	212.626.6734
Toronto	416.510.1347

See us at AES Booth #536



STUDER
PROFESSIONAL AUDIO EQUIPMENT

H A Harman International Company

USE READER SERVICE CARD FOR MORE INFO

© 1994 STUDER EDITECH CORPORATION. All rights reserved.

MIX[®]

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

OCTOBER 1995, VOLUME 19, NUMBER 10

AUDIO

- 20 The Fast Lane:** The Secret Strife of Plants
by Stephen St. Croix
- 26 Insider Audio:** The End of the World as We Know It
by Ken Pohlmann and David Lampton
- 32 Audio & Multimedia:** Creating Your Own Web Page on the Internet
by Paul Potyen
- 44 Restoring Vintage Audio Gear** *by John La Grou*
- 48 Tube Recorder Restoration** *by Walter Sear*
- 70 Mixing and Mastering for Radio** *by Rick Clark*
- 100 Project View:** Down to the Basics *by Dan Daley*
- 110 Producer's Desk:** Gerald Levert and Tony Nicholas—Natural Soul
by Chris Patton
- 200 Mixing It Up With Studio Ghosts** *by Rick Clark*
- 220 International Update:** Dutch Treat—Post in the Low Countries
by Dan Daley; CTS Studios' Eight-Year Facelift
by Barbara Schultz; BBC's New Axiom-Equipped Truck
by Mel Lambert; Oceania Audio, New Zealand
by Mark Frink
- 232 The Secrets of Dither** *by Bob Katz*
- 244 Optimizing the Studio Listening Environment**
by Bob Hodas
- 316 Recording Notes:** Recording at Home With Warren Zevon
by Eric Rudolph; Adam Lasus and 22 Brides; Classic Tracks: The Young Rascals' "Groovin'"; King Biscuit Flowers Again on CD
by Blair Jackson
- 328 Tape & Disc News/Splices** *by Philip De Lancie*



PAGE 104

NEW YORK AUDIO

- 82 New York Recording:** A Healthy, Changing Landscape
by Dan Daley
- 92 New York Broadcast:** Networks Going Strong, Going Digital
by Evan Ambinder
- 164 Only in New York Post:** Sound Editing Tales From Manhattan Streets and Suites

PRODUCTS

- 58 DA-88 Modification Tests** *by Gary Woods*
- 250 Sony's New Digital Music Recording Console** *by Mel Lambert*
- 256 Alesis ADAT XT** *by George Petersen*
- 262 Neumann's New Tube Mic** *by George Petersen*
- 267 Field Test:** Oktava MK 219 and MK 012 Microphones
by Ty Ford
- 274 Field Test:** Digidesign PostView 3.1
by Paul Potyen
- 279 AES New Products Guide**

POST-PRODUCTION

- 104 Lunching With Bonzai:** Hans Zimmer
by Mr. Bonzai
- 116 Digital Sound in the Cinema:** An Update
by Larry Blake
- 132 Post-Script:** Sound for Film—Toward a Digital Neutral Field *by Larry Blake*; Jonathan Helfand—Design, Edit, Mix *by David John Farinella*; Workstations in Everyday Use, Part 1 *by Loren Alldrin*; “When Night Is Falling”—Digital on a Budget *by Tom Kenny*
- 154 Edward Composerhands:** Russian Composer Edward Artyemyev *by Anneliese Varaldiev*

LIVE SOUND

- 168 SoundCheck:** Reviews of Five Noteworthy Live Sound Products—Mackie’s 24.4; QSC Powerlight 1.8; Furman X Series; Tech 21 SansAmp Bass Driver DI; Hughes & Kettner Red Box *by Mark Frink*
- 169 Tour Profiles:**
- Tom Petty *by Jeff Forlenza*
 - Anita Baker *by Dave Lawler*
 - King Crimson *by Tim Moshansky*
- 185 Club Spotlight:** The Blue Note, NYC
by Adam Blackburn
- 214 World Liberty Concert—**Celebration of United Nations’ Anniversary *by Paul Tingen*

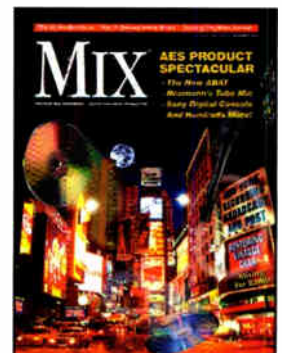


PAGE 82

DEPARTMENTS

- 8 From the Editor**
- 12 Current**
- 16 Industry Notes**
- 332 Coast to Coast**
(Including NY Metro; Session Spotlights on Weapon of Choice and Tonic; Sessions & Studio News)
- 348 Studio Showcase**
- 359 Ad Index**
- 361 Marketplace**
- 365 Classifieds**
- 376 Feedback**

Cover: This unique cityscape began as two scans of New York’s Times Square, which were retouched and distorted to form a common perspective, then augmented with illustration. The CDs and mic were retouched and composited into the overall image, and the signs throughout were modified. The image was created with Adobe Illustrator and Photoshop on a PowerMac 8100 with a 250MB drive, internal 4x CD and 96 MB of RAM. Additional hardware included a PLI 1.3GB drive, ProDirect 1GB drive, PLI Infinity Optical, Iomega Bernoulli 150 Multidisk and PLI Syquest. **Artist:** Bert Monroy.



PAGE 256

by Tom Izumi



Why TDK CD-R Technology is Your Best Choice

T

hough TDK rates the archival life-span of its cyanine-based CD-R discs at 70 years (based on accelerated aging tests), those of you

who read Stephen St. Croix's article on Recordable Compact Discs in the July issue of this magazine ("And Now The Rest of the Story") may have serious doubts about the veracity of that claim. According to Mr. St. Croix, CD-Rs that employ cyanine dye in the recording layer are veritable time bombs, designed to self-destruct in as little as five years, one year or even over the weekend. Nothing could be further from the truth!

Though Mr. St. Croix claims to have proof for these assertions ("...piles of paper showing thermal and light-exposure-damage graphs, projected media-failure times, and write error rates on new, fresh media for all major brands") he will not publish the research. Instead, he asks you to accept his "conclusions and leaves it to you to decide if you want to trust [him]."

What a mistake such trust would be! As a major manufacturer of cyanine-based CD-Rs, TDK absolutely and categorically refutes Mr. St. Croix's erroneous and unfounded assertions. In writing this rebuttal, our engineers would have liked to have reviewed the "data" on which Mr. St. Croix claims to have based his conclusions, but those "piles of paper" remain unavailable to us. So instead we must ask you to consider our data – data that reflects TDK's decade-long research and development efforts in the field of optical recording media.

RAW CYANINE VS. METAL-STABILIZED CYANINE

If Mr. St. Croix had contacted us during his research on CD-R chemistry and longevity, we would have started by showing him the following graph¹ (Fig.1). It shows very clearly that raw cyanine dye is a terrible material to use in the recording layer of a CD-R. That's because raw cyanine is far too sensitive to light. Even a brief exposure to a Xenon test lamp (at a power of 80 klux) is sufficient to break its molecular bonds and render it unusable.

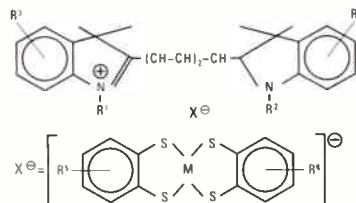
What's needed is a way to stabilize the cyanine dye – tuning it for optimum sensitivity at specific laser wavelengths and powers while minimizing its overall light reactivity. It was TDK's original research in this area that resulted in the creation of a new type of metal-stabilized cyanine material (Fig. 2).

The addition of a metal compound to the "raw" cyanine dye changes the material completely – giving it a tremendous degree of light "fastness" while

preserving its sensitivity to lasers at a range of writing powers. A glance at Figure 1 again shows this difference quite dramatically.

Certain language in the July article, however, leads us to believe that Mr. St. Croix may have based many of his conclusions on data relating to raw unstable cyanine dye – which TDK does not use. He states, "Certain manufactur-

Fig. 2: Molecular Structure of TDK Metal-Stabilized Cyanine Dye

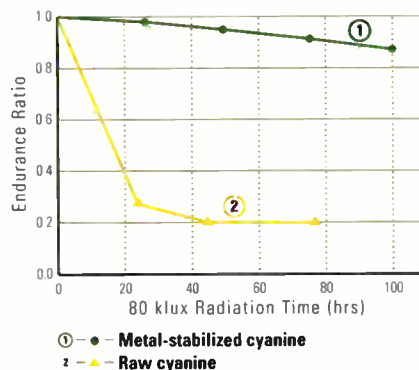


R¹, R², R³, R⁴ = Alkyl R³, R⁴ = Benzene ring M = Metal

ers have admitted to me that this dye family can have a virgin (raw unrecorded) shelf life of as little as one year." [Italics added for emphasis.] The words "dye family" and "raw" leads us to think that he may have inadvertently grafted various bits of information together to arrive at an erroneous conclusion.

In fact, if Mr. St. Croix had requested our data, we would have shown him the accelerated aging test results for TDK CD-R (Fig. 3). The graph looks complex, but it's not. Basically, it shows the expected life span of a TDK CD-R at various storage temperatures. You'll notice that we specify our media for a lifespan of more than 70 years when stored at a temperature of 30° Centigrade – about 86° Fahrenheit. This test procedure and the performance specifications it is based on are outlined in an ANSI document.²

Fig. 1: Light Fastness of Raw Cyanine and Metal-Stabilized Cyanine



Note dramatic improvement in light fastness of metal-stabilized cyanine material.

¹ T. Aoi and K. Namba: "Recording Materials and Characteristics of the Recordable Compact Disc," IEEE Tokyo Section, Denshi Tokyo No. 31 (1992).

² W.R. Nugent: "Estimating the Permanence of Optical Disks by Accelerated Aging and Arrhenius Extrapolation," ANSI X3B11/89-101 (1989).

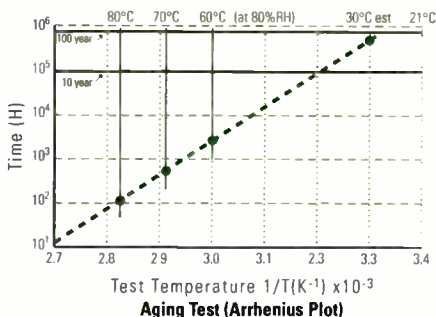
Perhaps Mr. St. Croix is alluding to CD-R longevity at far higher storage temperatures? Indeed, a glance at Figure 3 does disclose that longevity is severely compromised at, say, a temperature of 80° Centigrade – about 176° Fahrenheit. Excessive heat is something that users of all CD-Rs – cyanine or phthalocyanine – should guard against. The importance of maintaining controlled “room temperature” storage for all types of media is something that professional recordists have long recognized, and which we reiterate in the precautions statement that comes with our CD-Rs.

Regarding Mr. St. Croix’s assertion that cyanine CD-Rs will expire if left “dye-side-up on a desk near a window over a sunny weekend,” nothing could be further from the truth. Mr. St. Croix does not say that he tried this simple experiment himself, so he’s either drawing a conclusion based on his expectations of the medium’s light sensitivity (erroneous) or its heat sensitivity.

At TDK’s research and development center we attempted to gauge the impact that direct exposure to sunlight would have on CD-R media – both cyanine and phthalocyanine type discs. A weekend’s worth of longevity is obviously not what we were after, so our test protocol was far more demanding. In fact, Table 1 shows the impact on both cyanine and phthalocyanine discs after their dye sides have been exposed to 2 years worth of sunlight passing through a window in the Netherlands (home base of Philips). This is equivalent to a requirement specified in the Orange Book Part II.

In each performance parameter – jitter, cross-talk, BLER, etc – both the cyanine and phthalocyanine media stay well within Orange Book performance specifications. You may note that in

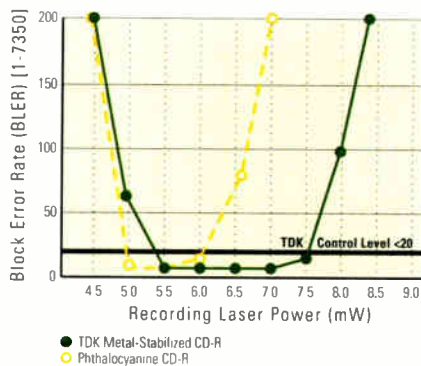
Fig. 3: Accelerated Aging Test – TDK CD-R74 Disc



A TDK CD-R disc stored in typical office environments (30°C, 80% Relative Humidity) will meet Orange Book performance specifications for a minimum of 70 years.

some cases the performance of phthalocyanine media exceeds that of our cyanine-based discs, and these differences – though insignificant in terms of media reliability – do point up a difference between the two dye chemistries. Namely, phthalocyanine is slightly more resistant to light than our stabilized cyanine formulation. In fact, the increased resistance to light does give phthalocyanine discs an edge in archival lifespan; manufacturers of phthalocyanine media can spec their discs at 100 years, we spec a minimum of 70 years.

Fig. 4: CD-R Block Error Rates at Various Laser Powers



The use of metal-stabilized cyanine dye in TDK CD-Rs helps achieve much lower error rates than phthalocyanine dye over a wider range of laser writing power.

SO WHY USE CYANINE?

This is the key question. If Mr. St. Croix had done his homework correctly his article would have examined this critical question first – and not ignored the very important implications its answer has for all users of CD-R media.

So why does TDK use stabilized cyanine dye? The answer is to ensure compatibility with your CD recorder and long-term writability. To understand this, take a look at Figure 4. It shows the block error rates generated over a broad range of laser writing powers with both TDK’s stabilized cyanine dye media and typical phthalocyanine dye media.

You’ll note that TDK media maintains its low error rates over a very broad range of laser power: 6.5 mW ± 1.0 mW. Phthalocyanine, however, is very specific in its power requirement; a CD recorder tuned to 5.5 mW can deviate no more than 0.5 mW to achieve the same low error rates.

Table 1: Results of Light Fastness Test

Test Disc	TDK Metal-Stabilized Cyanine CD-R		Phthalocyanine CD-R		Orange Book II
	Initial	4.0 Mlux*h	Initial	4.0 Mlux*h	
A top (%)	70.0	65.8	68.8	65.9	>65
I 11 mod. (%)	82.9	88.3	72.8	72.3	>60
I 3 mod. (%)	40.5	46.6	40.4	39.5	30 to 70
Asymmetry (%)	-3.8	-11.3	-3.9	-2.8	-20 to +20
Land Jitter (ns)	24.5	26.5	17.0	18.8	<35
Pit Jitter (ns)	21.1	17.6	15.2	16.8	<35
Cross-talk (%)	27.1	40.3	23.4	26.6	<50
NPPR	0.57	0.92	0.54	0.65	0.5 to 1.0
BLER (1/7350)	3.3	9.8	1.3	1.4	<220

Test Condition: Xenon Lamp Strength = 80 klux Test Radius = 27mm Orange Book requirement is equivalent to 4 Mlux*h at 40°C or lower.

With their dye sides exposed to the equivalent of 2 years of sunlight passing through a glass window in the Netherlands, both TDK metal-stabilized cyanine CD-R and typical phthalocyanine-type CD-R remain within Orange Book Part II performance specifications.

If lasers diodes never aged, if all recorder manufacturers guaranteed that every diode that left their factories was 100% locked to a specific power output and if every studio owner could ensure that only one type of CD-R would ever be used in their facility, then phthalocyanine media would have a performance edge after 70+ years of storage. But that’s not the real world.

In the real world, it’s not uncommon to find factory-fresh CD recorders generating higher or lower power outputs than the nominal manufacturer spec at 1x, 2x, 4x, and 6x recording speeds. Moreover, CD recorders cannot be expected to maintain precise power conditions over the entire surface of the disc under a wide range of operating temperatures.

In this context, TDK chose to create a dye material that would perform ideally in the broadest possible range of recorders operating at all recording speeds over the widest possible time period. That’s the kind of decision that a company with more than 35 years of recording media experience is expected to make – a decision that reflects our understanding of the needs of critical professional users.

What we don’t understand, however, is Mr. St. Croix’s decision to publish erroneous conclusions based on secret and therefore unverifiable “research.” In this open letter, we have done our part to clarify the situation with basic facts about TDK CD-R metal-stabilized cyanine technology. On behalf of everyone involved in the professional recording industry, we hope Mr. St. Croix will now do his part. ■

Tom Izumi is Technical Director of TDK Electronics Corp.

FROM THE EDITOR

PIN ONE HOT!

The 99th Convention of the Audio Engineering Society rolls into Manhattan's Jacob Javits Center October 6-9. In keeping with the show's Big Apple spirit, here are the...

TOP 10 REASONS TO VISIT NEW YORK AES

10. Great deals on Pultecs from sidewalk hucksters on 7th Ave.
9. Brush up on scuba miking techniques at Stereo Hydrophone Workshop in Hudson River behind Javits Center
8. Rumors that the Pope will replace Phil Ramone as AES keynote speaker
7. Times Square Jumbotron will display text of AES subcommittee meeting on Electromagnetic Compatibility (EMC) Standards
6. Love those cool AES plastic literature bags
5. Pin One Hot committee meetings moved to Carnegie Deli
4. Hope to catch a glimpse of Paul Shaffer at TEC Awards
3. Need another year's supply of plastic pocket protectors and leaky promo pens
2. O.J. won't be there
1. Two words: Ray's Pizza!

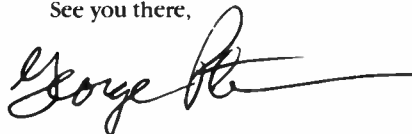
Seriously, AES is *the* premier venue for technology unveilings, and this year's show will not disappoint. Debuts on George's "Must See" list include (alphabetically) Akai DR16 16-track, Alesis XT ADAT, E-mu Darwin 8-track, Fostex DMT-8 Digital Multitracker, Neumann M149, RSP Project X digital console, Sony APX-R3 digital console, Studer D424 24-bit MO recorder and the Yamaha 02R digital console. Analog fans will delight in JRF's retrofit head stack for converting a Studer 24-track analog machine for *2-inch analog 8-track* recording.

Additionally, AES will offer a diverse selection of seminars and events on timely topics such as ISDN, interactive media, low-bit rate audio, 20-bit mastering, project studio maintenance and other essential aspects of audio survival in the '90s. And don't miss George Petersen's workshop, "The Art & Science of Record Mixing" (9:00 a.m., October 9, Room 4), featuring renowned producers and engineers speaking out on their craft.

You may have noticed something different about this month's *Mix*. It's huge. Highlights of the largest pro audio magazine ever published include hundreds of new products for AES, as well as first looks at Alesis' second-generation ADAT, Neumann's new M149 tube mic and Sony's digital music recording console. Also, Bob Katz unlocks the mysteries of dither; we visit the Tom Petty, Anita Baker and King Crimson tours; Larry Blake examines the latest digital film sound format developments; and John La Grou and Walter Sear report on restoring vintage gear. Our special New York coverage investigates The City's booming recording scene; goes backstage at The Blue Note jazz club; and in "Classic Tracks," Blair Jackson takes us to Talentmasters Studio on 42nd Street for The Young Rascals' "Groovin'" sessions from 1967.

We think you'll enjoy this 376-page special AES issue. If you're in town for AES, stop by and say hello at booth 956.

See you there,



George Petersen

STAFF

EDITOR-IN-CHIEF/PUBLISHER Hillel Resner

EDITOR George Petersen
EXECUTIVE EDITOR Blair Jackson
ASSOCIATE EDITOR Tom Kenny
TECHNICAL EDITOR Chris Michie
ASSISTANT EDITOR Adam Beyda
COPY EDITOR Barbara Schultz
EDITORIAL ASSISTANT Sarah Jones
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
EDITOR-AT-LARGE Mr. Bonzai
TEC AWARDS EDITOR Karen Margroff Dunn
BOOKSHELF EDITOR Andy Jewett
CONTRIBUTING EDITORS
Larry Blake Bob Hodas
Ken Pohlmann Paul Potyen
Chris Stone Larry Oppenheimer Rick Clark

ART DIRECTOR Tim Gleason
ASSISTANT ART DIRECTOR Kay Marshall
GRAPHIC DESIGNER Mika Chisaki

ASSOCIATE PUBLISHER Jeffrey Turner
ASSOCIATE ADVERTISING DIRECTOR John Pledger
EASTERN ADVERTISING MANAGER Michele Kanatous
SOUTHERN CALIFORNIA/SOUTHWEST AD MGR.
Terry Lowe
NORTHWEST/MIDWEST AD MANAGER John Moyer
SALES ADMINISTRATOR Joanne Zola
ADVERTISING SALES COORDINATOR Christen Pocock
SALES ASSISTANTS
Tiffany Kendall Karen Dere Paul Kran Mike Grout
CLASSIFIEDS & MARKETPLACE MANAGER Robin Boyce
CLASSIFIEDS SALES ASSISTANT Jennifer Carrick
CLASSIFIEDS ASSISTANT Jef Linson

MARKETING MANAGER Elise Malmberg
ASSISTANT TO THE PUBLISHER/
EVENT COORDINATOR Jane Byer

SHOWCASE & FACILITIES SALES
James Solomon Shawn Langwell
ART DIRECTOR, SPECIAL PROJECTS Michael Zipkin
GRAPHIC DESIGNER, SPECIAL PROJECTS Tami Herrick

DIRECTOR OF OPERATIONS AND MANUFACTURING
Anne Letsch
PRODUCTION DIRECTOR Georgia George
COLLATERAL PRODUCTION DIRECTOR Ellen Richman
ADVERTISING TRAFFIC MANAGER Shawn Yarnell
PRODUCTION ASSISTANTS
Teri Stewart Michele Alaniz
COMPUTER SYSTEMS COORDINATOR
Dan Lederer
CIRCULATION MANAGER Steve Willard
CIRCULATION ASSOCIATE Karen Stackpole
CIRCULATION ASSISTANT Jeanette Campagna

BUSINESS MANAGER Benjamin A. Pittman
ADMINISTRATIVE ASSISTANT Yvette Castaneda
RECEPTIONISTS
Angel Alexander Teresa Poss

MUSIC AND ENTERTAINMENT GROUP

GROUP PUBLISHER Hillel Resner

ALSO PUBLISHERS OF
ELECTRONIC MUSICIAN
MIX BOOKSHELF
MUSIC DIRECTORIES

CARDINAL BUSINESS MEDIA, INC.

PRESIDENT AND CHIEF EXECUTIVE OFFICER
Robert N. Boucher, Jr.
VP & CHIEF FINANCIAL OFFICER Thomas C. Breslin
VP, PUBLISHING SERVICES R. Patricia Herron
VP, HUMAN RESOURCES Dorothy J. Flynn
VP, SPORTS & MUSIC DIVISION Thomas J. Morgan
VP, RETAIL DIVISION Marianne Howatson

NATIONAL EDITORIAL, ADVERTISING and BUSINESS OFFICES, 6400 Hollis St. #12, Emeryville, CA 94608. (510) 653-3307, IMC 736, FAX: (510) 653-5142. e-mail: 74673.3672@compuserve.com EAST COAST ADVERTISING OFFICES, 298 5th Ave., 7th Floor, New York, NY 10001. (212) 563-5301. SOUTHERN CALIFORNIA ADVERTISING OFFICES, 12424 Wilshire Blvd., Ste. 1125, Los Angeles, CA 90025. (310) 207-8222, FAX: (310) 207-4082. DIRECTORIES ADVERTISING (800) 344-LIST. CLASSIFIEDS ADVERTISING (800) 544-5530. MIX BOOKSHELF (800) 233-9604. CIRCULATION INQUIRIES, PO Box 41525, Nashville, TN 37204. (800) 843-4086, (615) 370-5643.

Founded in 1977 by
David Schwartz and Penny Riker Jacob



Circulation independently audited and verified by
Business Publications Audit of Circulation since 1985.

Mix magazine is published at 6400 Hollis St. #12, Emeryville, CA 94608 and is ©1995 by Cardinal Business Media, Inc. Mix (ISSN 0164-9557) is published monthly. Subscriptions are available for \$46.00 per year. Single copy price is \$4.95, back issues \$6.00. Missed issues within the U.S. must be claimed within 45 days of publication date and abroad, within 90 days. Send subscription applications, subscription inquiries 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. Second class postage paid at Oakland, CA, and additional mailing offices. Editeur Responsable (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.



Turn Iron Oxide Into Gold.

**Ampex 499. Unsurpassed dynamic range, lowest distortion.
No wonder more artists go gold on Ampex than on all other tapes combined.**

Until you add the magic, tape is just iron and plastic. Make sure that magic comes across with Ampex 499 Grand Master® Gold tape. It delivers unsurpassed dynamic range and the lowest distortion of any analog mastering tape. Period.

In fact, every element of Ampex 499 Grand Master Gold is engineered to deliver the richest sound possible for audio, video and film.

Our unique continuous-flow manufacturing process ensures the greatest consistency reel-to-reel. Our Total Surface Cleaning system wipes and vacuums every square inch of tape for the highest signal

stability. Each roll is fully tested end-to-end to ensure unparalleled uniformity. Even our flanges are the sturdiest you'll find.

With Ampex you also get the largest distribution network in the business backed with customer service that has long been the industry standard.

Such attention to detail might seem a bit excessive, until you realize that more records go gold on Ampex tape than on all other tapes combined.

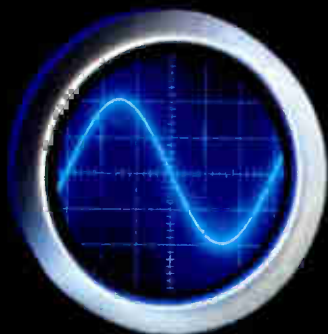
For more information, or the name of your nearest distributor, call 800 227-8443. Ampex 499 Grand Master Gold. The gold standard.

AMPEX

See us at AES Booth #224

Ampex Recording Media Corporation, 401 Broadway, M.S. 22-02, Redwood City, California 94063

USE READER SERVICE CARD FOR MORE INFO.



AUDIO INTEGRITY

You are busy trying to create the perfect mix, so we'll get right to the point. The new Sony DPS-V77 is a single rack powerhouse —

a digital multi-effects signal processor that combines the best of

our DPS Series, for an impressive array of effects including reverb, delay, modulation,

dynamic filtering and more. The V77 also offers balanced and unbalanced analog and digital

I/Os, with high resolution 24-bit A to D, 20-bit D to A converters and Sony's proprietary 32-bit

digital signal processing. Result: great sound in, better sound out.

DUAL EFFECTS ARCHITECTURE

With 50 effects per block, the dual block architecture of the DPS-V77 makes it extremely flexible, since it allows for various serial and parallel configurations. Each block is equipped with a switchable

IT'S A SIGNAL



IT'S A GARBA

pre or post effect EQ. You'll find 198 user presets in addition to 198 factory presets. You'll also discover several new, ear-opening effects, from intelligent pitch shifting to irregular delays, to mono/stereo conversion, and three-dimensional spatial placement. The most important feature, however, may be what this unit *doesn't* come with.

CURRENT

WELCOME TO AES!

The 99th convention of the Audio Engineering Society will be held from October 6-9, 1995, at the Jacob Javits Convention Center in New York City. In keeping with the show's theme "Audio in an Interactive World," the convention will feature hundreds of manufacturers exhibiting the latest in professional audio technology, and more than 100 technical papers, workshops, special events and seminars. For more information, call AES at 212/661-8528.

TASCAM DA-88 WINS EMMY

Tascam was presented with an Emmy Award for Outstanding Achievement in Engineering Development for its DA-88 modular digital multitrack recorder. The Academy of Television Arts and Sciences honored Tascam "for creating a low-cost and reliable system for digital multiple track recording." The award was presented at the Creative Arts Awards gala on September 9 in Pasadena, Calif. Tascam's Roger Maycock accepted the award.

OPCODE ACQUIRES MUSIC QUEST

Opcodes Systems recently announced the acquisition of Music Quest, a manufacturer of IBM-compatible MIDI hardware. Music Quest CEO David Rowe will continue to design products for Opcode. "We're happy to add Music Quest's great products to Opcode's family," says Opcode president Chris Halaby.

All Music Quest operations have been moved to Opcode's headquarters in Palo Alto, Calif. Opcode will service and support Music Quest products, and hardware will be released under both brand names.

Although Opcode has long been involved with the Mac platform, the acquisition is another step toward its expansion into the PC market. It

follows a recent licensing agreement with Microsoft to include Opcode's OMS system-level MIDI software with a future release of Windows 95.

1996 NEC APPROVES BALANCED AC POWER FOR A/V

Balanced AC power is now recognized as a legal wiring system for U.S. audio/video production facilities, thanks in part to the efforts of Equi-Tech (Selma, Ore.), working in conjunction with the National Fire Protection Association (the governing body of the National Electric Code). The adoption of the new "Article 530, Part G" of the 1996 National Electric Code provides for redundant safety measures and wiring methods that are proven safe for equipment and personnel.

Balanced AC power has been shown to be effective in curtailing or eliminating EMI/RFI and grounding currents associated with typical noise problems in sensitive electronics. Priced at \$45, the 1996 NEC will be available this month in building trades bookstores (such as Contractors Books, 800/852-9000) or by writing to the NFPA at 1 Batterymarch Park, Quincy, MA, 02269.

ROLAND AND IOMEGA JOIN FORCES

Roland Corporation U.S. has forged an agreement with Iomega Corp. (a manufacturer of removable computer storage drives) to include Iomega's Zip (and later the Jaz) drives in many of Roland's digital audio and music products. "We are excited about joining forces with Roland U.S. to become a major storage supplier in the digital audio and music markets," says Timothy Hill, Iomega vice president of marketing.

DAVE HARRISON, IN MEMORIAM

Audio pioneer David Harrison passed away on August 17, 1995,

due to complications after cancer surgery. Console designer, musician, engineer and former AES Governor, Harrison was not only the founder of leading mixer manufacturer Harrison Systems, but also brought new approaches to console design, such as the in-line mixer, which he licensed to MCI for its 400 series consoles. Harrison is survived by his wife Sheila and a son. He will be missed.

SYN-AUD-CON FOUNDERS PASS THE TORCH

Carolyn and Don Davis, founders of Greenville, Ind.-based Synergetic Audio Concepts, recently retired after 23 years of conducting worldwide seminars on audio and acoustics. Both have worked in the audio industry for more than 45 years. Syn-Aud-Con continues under the ownership and management of Pat and Brenda Brown. An associate instructor with Syn-Aud-Con since 1992, Pat Brown's background includes 15 years as a sound system designer and installer.

JBL WITHDRAWS FROM OLYMPICS NEGOTIATIONS

JBL Professional has withdrawn from negotiations to provide sound reinforcement equipment and sponsorship to the 1996 Olympics in Atlanta. The decision was made to protect SR dealers and design companies that use JBL products. In the course of negotiations with the Atlanta Committee for the Olympic Games (the independent organization that sells the rights to sponsorship of the games), JBL Pro president Mark Terry said the arrangement ACOG was discussing with JBL could have limited the profitability of participating SR companies—many of which are using JBL equipment—by not al-

—CONTINUED ON PAGE 16

***In 1991
the Alesis ADAT
changed the way
you think
about recording***

XT Think

4 Times Faster

Intelligent Transport

Onboard Digital Editor

Onboard Autolocator

ADAT[®]-XT

How do you improve on the most successful professional multitrack tape recorder of all time? Listen to your customers. Do some heavy thinking, and...

Make the transport four times faster and put it under constant software control. Incorporate advanced onboard digital editing with track copy, auto punch, track delay, tape offset, 10-point autolocator, rehearse mode and more. Use the latest oversampling converters for the ultimate in digital audio quality. Design a beautiful vacuum fluorescent display that

provides all the critical information. Wrap all this well-thought-out technology in an utterly professional six-pound solid die-cast aluminum chassis. Of course, make it 100% compatible with over 60,000 ADATs

already in use world wide. Introducing the new, definitely improved **ADAT[®]-XT 8 Track Digital Audio Recorder**. Consider it a think tank for your creativity. See your Alesis dealer. Don't think twice.



Again



For more information on the new ADAT XT, see your Authorized Alesis Dealer or call 310-841-2272. The Alesis ADAT XT offers the advantages of the world's largest digital multitrack user base as well as an extensive list of compatible products from our sister companies in The ADAT Group.

© Alesis and ADAT are registered trademarks of Alesis Corporation.

Alesis Corporation 3630 Holdrege Avenue Los Angeles CA 90016 310-841-2272 alescorp@Alesis1.usa.com

ALESIS

USE READER SERVICE CARD FOR MORE INFO

World Radio History

INDUSTRY NOTES

Studer relocated its New York offices to 133 W. 25th St., N.Y., NY 10001; phone 212/807-0377, fax 212/807-0378. The new location houses offices and demo facilities for Studer, Lexicon and Studer/Editech. Also, Studer/Editech moved its manufacturing operations to a new facility in San Leandro, CA. Recent promotions include Ridge Nye to vice president of North American sales, Gus Skinas to international sales and product manager, Bill Woods to marketing manager, Graeme White to Studer Germany sales and Peter Wilcox to head of engineering...Recent hires at JBL Professional (Northridge, CA) include Frank Ostrander as staff engineer, high-end systems, Dale Krasnow as manager of audio electronics and Caroline Avgeris as administrative expediter. Also, Scott Opie was promoted to junior engineer... Randall Curlee was appointed vice president of sales and marketing for the professional audio division of Stewart Electronics (Folsom, CA). Before joining Stewart, Curlee was director of marketing for QSC, founded the U.S. division of Zoom Corp. and was national marketing manager for Yamaha...David Hoshbach was named market development manager/pro sound reinforcement at Buchanan, MI-based Electro-Voice...Soundtracs (Surrey, UK) appointed Chris West as international sales manager...Mark IV (European HQ in Ipsach, Switzerland) reorganized its European sales and marketing functions and named Bob Doyle, Ronald Ledermann and Hans Peter Richter as vice presidents of Mark IV Audio Europe...George Newburn, a founding partner of design firm studio bau:ton, started a new architecture/acoustics firm, Studio 440, which can be reached at 213/460-4141...Record producer Chris Huston is now offering facility design services worldwide. For information, phone 503/846-7642...Philips Pro Audio Business Group, headquartered in San Jose, CA, recently named Glendora-based Mackenzie Laboratories as master distributor for its Pro

Audio line of products...QSC Audio (Costa Mesa, CA) now offers customer support on CompuServe, in the MIDI B Vendor forum. For details, call 714/754-6175...Peavey Electronics, (Meridan, MS) promoted Lynn Combest to advertising manager and named Ashley Neely to the position of media coordinator...NAB executive vice president John D. Abel left the association to become president and CEO of a new broadcasting technology company being formed by Chris-Craft/BHC Communications Inc. and Lin Television Corp...Audio-Technica (Stow, OH) appointed Online Marketing as its representative in the Kentucky and Indiana markets. Online is also the new Roland Pro Audio (L.A.) rep for the Ohio, Michigan and Indiana territories...Holmdel, NJ-based CCS Music Products was rechristened MUSICAM USA by parent company VirteX, which acquired CCS in February. VirteX also appointed Sean Bowers to the position of general sales manager for MUSICAM audio products...Pittsburgh-based Synergistic Technologies Inc. recently brought on board Karl Paulsen, former vice president of engineering and general manager at Digital Post and Graphics in Seattle...C&C Electronics of Lincoln, NE, announced the opening of a second office, located in Chicago...Bohemia, NY-based Fiber Options Inc. hired Rod Cormier as test department manager and promoted Fred Scott to vice president of broadcast and video product/sales...Eastman Kodak (Rochester, NY) appointed Joerg D. Agin to the newly-created post of vice president, entertainment imaging markets development...Technomad now has a page on the World Wide Web. The address is: <http://www.technomad.com>...Full Compass Systems moved to a new facility. The address is 800 Terrace Ave., Middleton, WI 53562; phone 608/831-7330, fax 608/831-6330...Aphex Systems of Sun Valley, CA, appointed Priority Communications as its public relations agency. Aadvert International will serve as international liaison. ■

—FROM PAGE 12, CURRENT

lowing them to provide the equipment themselves.

"This kind of agreement could have a negative business impact on some of our most valued customers," says Terry. "We have historically been involved as a sponsor and supplier in major sporting events, including several Super Bowls, the World Cup Soccer Finals and both the Barcelona and Norway Olympics, but could not continue that tradition in Atlanta in the face of this reality."

Robert F. Ancha, president of Chicago-based Ancha Electronics Inc., which will do sound installation at the new Olympic Stadium in Atlanta, said ACOG's dealings would have pitted his company against JBL as the supplier of system components. "It's an unfortunate situation that ACOG has created, and JBL has been very decent about it."

—Dan Daley

WORLDWIDE CONFERENCE UPDATE

The Multimedia Live! Expo will take place in San Francisco on October 11-13. For more information, contact The Finity Group at 415/453-1393.

The Broadcast India '95 Exhibition and Symposium will be held November 2-4 at the World Trade Centre in Bombay. Call (91-22) 215-1396.

The Ninth IBTS (International Audio, Video, Broadcasting and Telecommunications) show will be held from November 23-27 at the Trade Fair in Milan, Italy. For more information, call IBTS at (02) 481 5541.

ITA's 7th annual Magnetic and Optical Media Seminar will occur November 2-3, at the Mark Hopkins Hotel in San Francisco. Call ITA at 212/643-0620.

CORRECTION

In the August "Class of '95" feature, John Storyk was mistakenly credited as a collaborator in the design of Denver facility Rocky Mountain Recorders. Storyk was not involved in this project. ■

RAINDIRK

21 years of silence

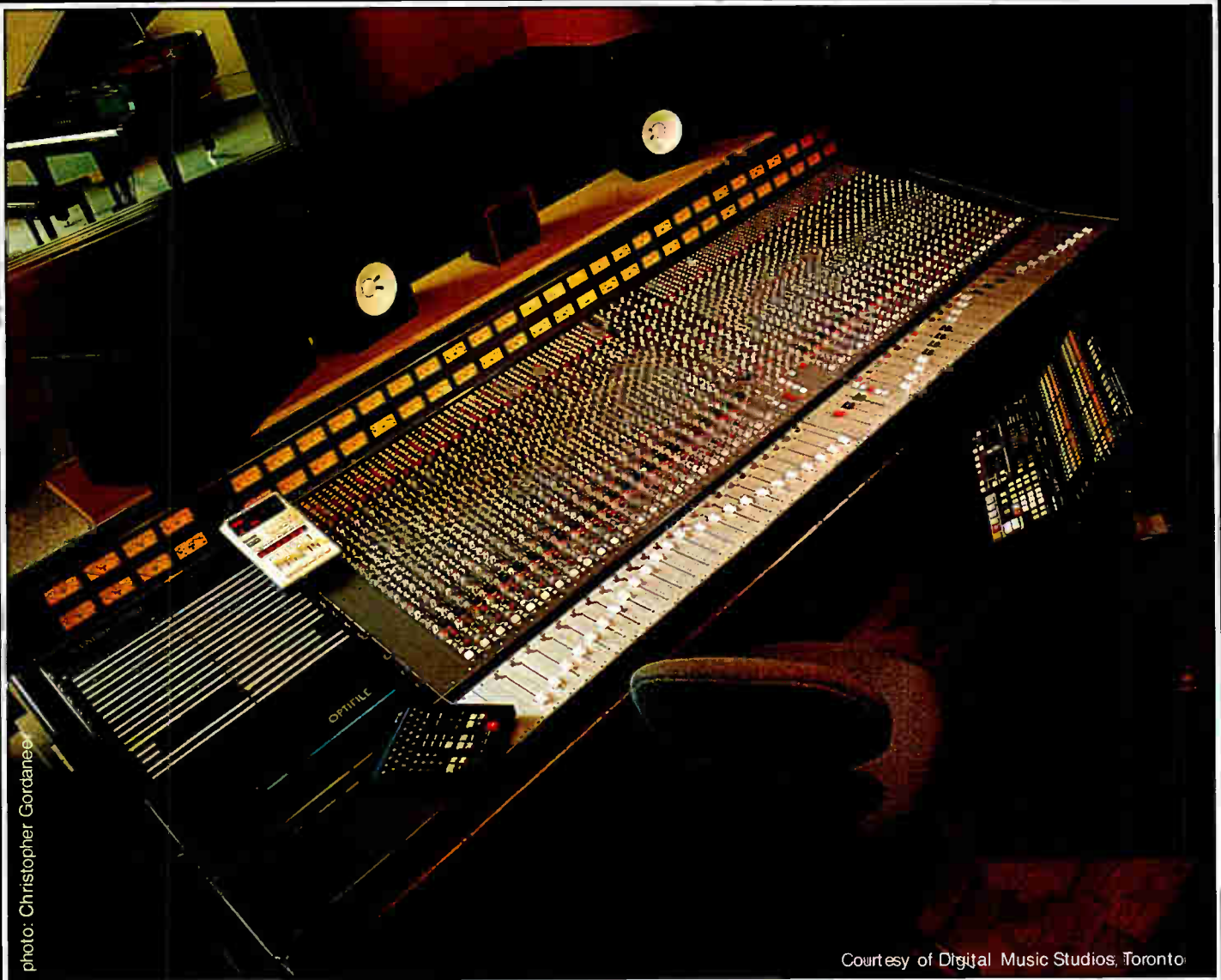


photo: Christopher Gordance

Courtesy of Digital Music Studios, Toronto

For over two decades, while other console designers were selling their companies to large conglomerates, Cyril Jones of Raindirk Audio was quietly developing the *Symphony*, a powerful mixing tool with a classic vintage sound. At Raindirk, the emphasis is on sonic quality rather than gimmicks. Every console is hand-made and delivers an incredibly low noise floor & extended frequency response. Even with a 32 or 48 bus in line structure, 12 aux sends & global signal path switching, a *Symphony* by Raindirk is considerably quieter than most consoles available at close to twice the Raindirk's price. After years of success in Europe, Raindirk is now available in North America. In major American markets such as L.A. and Nashville, studio owners have already discovered the best kept secret in the console business.

To experience the result of 21 years of sonic refinement, call Sascom Marketing Group for a demonstration.

Raindirk. Vintage sound with a future.

SASCOM
MARKETING
GROUP

Phone 1-800-300-4756

AES 95 BOOTH #1118

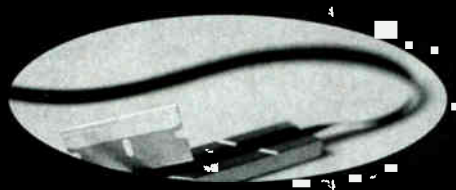
World Radio History

USE READER SERVICE CARD FOR MORE INFO



How in the
world
did people
work
before Pro Tools™?

..... [p a i n f u l l y]



Sure, you could record, edit, process, mix and master your next platinum record without 16 to 48 tracks of record and play. You may not need 64 channels of input and output. Or every sound-perfecting extra from our 100 Development Partners.

But the reason more top music professionals use a Pro Tools III system



than all other digital audio workstations combined, is that it

opens up more creative possibilities.

Pro Tools III provides more options

to manipulate vocals, drums and

other instrumentation, in a random-

access, non-destructive format. And,

thanks to our TDM digital mixing

and DSP Plug-In environment, you

have complete control, all on one desktop, all in one high-quality digital format.

You can even burn a CD the moment you've completed your masterpiece.

"Pro Tools is my Swiss army knife for recording."
Jerry Harrison
LIVE, Crash Test Dummies

In short, Pro Tools III is all about

making music better, not just faster.

Which is exactly how you've wanted

to work, all along.

To learn more, just call us at

1(800)333.2137, x174. We'll send

you a free information kit.

digidesign



San Francisco • Paris • Seattle • Munich
New York • Chicago • Nashville • Los Angeles
London • Melbourne • Eindhoven • Milan

©1995 Digidesign, Inc. Digidesign is an Avid company. Digidesign is a registered trademark and Pro Tools is a trademark of Digidesign, Inc. All features and specifications are subject to change without notice.

See us at AES Booth #726

by Stephen St. Croix

THE SECRET STRIFE OF PLANTS

Two hundred years ago, I worked on a very different project in a very different place, and yesterday something happened that reminded me of something that happened then that happened to be interesting; sort of a happening, actually.

I got my first AC3 videodisc last night and decided to pop some corn, throw some photons and move some air—all in the privacy of my new private theater. I remember thinking as I loaded the disc, set up the Vidikron for wide theater aspect ratio and chose an initial playback level, how happy I was that I had originally laid out my property with acres of paranoid wooded acoustic dispersion zone between my house and the

closest neighbor. This zone was initially designed because of a deeply rooted aversion to even the *concept* of the sound police banging on my door just as the mother ship takes its second pass over the half-destroyed asteroid, or exactly when the band finally finds that groove after ten weeks of searching. This fear is a result of years of oppression by real police when I lived in neighborhoods where I could see my neighbors, and worse yet, they could *bear* me.

Now, I don't want you to get the wrong impression, I mix at rational levels, wear ear valves when I shoot *anything* from .44 magnums to insulin, and carefully clear my ears when I dive past 200 feet. I even wear foam ear plugs



ILLUSTRATION CHARLES STUBBS

MM-8

& ELF

Time-Align®

An honest system
beyond audible response

While DC to LIGHT response is sometimes joked about in audio circles, it is very desirable to extend a system's bandwidth beyond the audible range because it provides a real sonic improvement.

Unlike any other monitor system, our Studio-A system responds flat from above 20 kHz down to 8 Hz and meets the Time-Align® specification from E.M. Long, even in the bass range.

The MM-8 is a precision 8" coaxial studio monitor with a calibrated flat frequency response and a licensed Time-Aligned™ crossover. Precisely manufactured and tested, the MM-8 system offers you an honest listen to your mix.

The D10E-S INFRA-sub™ utilizes patented ELF™ technology. Experts agree the ELF™ technology offers the most superior sounding and honest low frequency reproduction available.

20 years of excellence

Modular Sound Systems, Inc.

P. O. Box 488 Barrington, Illinois 60011

Phone 708 382 4550 Fax 708 382 4551 Internet info@bagend.com

For Canadian distribution call A.C. Simmonds & Sons Limited at 905 839 8041

**BAG
END**



IT'S SO BIG!

A photograph of a Black man, Wayman Tisdale, sitting on a wooden chair and playing a red and white electric bass guitar. He is wearing a white long-sleeved shirt and khaki pants. He has a joyful expression, with his head tilted back and eyes closed. The background is a plain, light-colored wall. The lighting is warm and focused on the subject.

Check out MoJAZZ
recording artist
Wayman Tisdale
and The Fifth Quarters
new release
"Power Forward!"

Wayman uses the 9303
Trans•nova in his
home studio.

Introducing the Biggest Hafler Ever!

Hafler
trans•nova▶

P7000 DIABLO

Diablo

Dynamically Invariant A-B Linear Operation is an extremely important advance in front-end/driver circuitry for directly, exciting, large arrays of power MOSFETs. Traditionally, such circuits have only 6dB of surplus current headroom over their static or quiescent bias current. The new circuitry works on a variable-gain current-steering principle which results in absolutely linear current headroom of 20dB or more at low driver dissipation. This is extremely important for providing the high transient current needed to drive the capacitance of MOSFET gates at high frequencies. The result is both lower distortion and greater inherent stability.

Finally a Big Amp with Hafler's Legendary Sound Quality!

D.I.A.B.L.O. patent application in progress.

Trans•nova patent #4467288

Hafler's big amps can be heard from Coast to Coast!



"The new Hafler Trans•nova D.I.A.B.L.O. sounds great here at Capitol's Tower Mastering. Dependable as always - clear and detailed with wonderful bass response."

Wally Traugot
Tower Mastering
Capitol Records
Hollywood, CA



- Sound Reinforcement
- Power Large Monitor Speakers
- Bass Guitar and other Instruments
- Sound Quality in a Big Amp!

P7000 Specifications

- EIA (1kHz, 0.1% THD)
- 375 Watts/Channel into 8Ω
- 525 Watts/Channel into 4Ω^A
- 1050 Watts Bridged Mono into 8Ω^A

^AContinuous sine wave power limited by current rating of line fuse.



The award winning 9303 and 9505 Trans•nova amplifiers are already a huge success!



"The D.I.A.B.L.O. circuitry makes an already great sounding amplifier even better. The high end is truly vacuum tube like, while the bottom has the punch of solid state.

The first project mixed with the new D.I.A.B.L.O. amplifiers is a Circle Surround DMP Big Band CD which includes classic charts from Basie, Dorsey, Ellington, Herman, Kenton and Miller."

Tom Jung
DMP Records
Stamford, CT



DMP's 5 channel Music Mixing Suite Powered by Hafler 9505 Trans•nova D.I.A.B.L.O. Amplifiers.

See us at AES Booth #1404

HAFLER PROFESSIONAL, A DIVISION OF ROCKFORD CORPORATION • TEMPE, ARIZONA 85281 USA
1-800-366-1619 • INTERNATIONAL FAX 602-967-8132 • IN CANADA, CONTACT CABLE TEK 604-942-1001

**MADE
IN THE
USA**

by Ken C. Pohlmann and David G. Lampton

THE END OF THE WORLD AS WE KNOW IT

Those who live by the sword, die by the sword. Similarly, those who live by technology, die by technology. The critical difference is that technology offers the promise of immortality, or at least the possibility of life after death. Technologists with more than a few years on their resumé understand this well. Every decade or so, every technologist must die and be reborn. Technology's evolution dictates this. The transition from analog audio to digital filled the cemeteries and the delivery rooms.

Today, the dramatic transition from real workplaces to cyberplaces is again redefining the audio industry—and society as a whole. The products

we make, the way we make them, the way people learn about them, buy and use them—all of that is changing. This transformation is nowhere more evident than in the online, interlinked, interactive, multimedia databases that are today achieving frenetic popularity. Case in point: the World Wide Web.

The advent of the World Wide Web marks the beginning of a new era, an era of shared knowledge and distributed computing. Every day, billions of bytes of data are donated to online archives around the world. It is not unreasonable to assume that nearly the whole of human knowledge will one day reside on networked computers. The combined value of



ILLUSTRATION: STEVE DINUNNO

IS THIS THE LAST AUTOMATION SYSTEM YOU'LL EVER BUY?



PROBABLY. AMS Neve is introducing ENCORE™, a powerful new automation system. Encore uses a Pentium Processor, runs under Windows NT and combines the best innovations of AMS Neve's automation packages.

For the engineer, Encore offers true creative freedom. You don't waste time relearning a system because Encore's user selectable modes allow

you to work in set-ups that mimic systems you're already familiar with. Plus, Encore's superior speed, enhanced graphics, and extended storage capacity give you the tools to push your creativity to the edge.



For the V Series owner, Encore can be easily retrofitted to your console and will

increase the value of your analog room. By adding more features and making it possible for engineers to move from room to room effortlessly, Encore's benefits and power will be obvious.

You be the judge. Come to AES and see Encore at AMS Neve's Booth #700.

UK Head Office Tel: (44) 1282 457011 Fax: (44) 1282 39542 **USA** Siemens Audio Inc., New York, NY. Tel: 212-949-2324 Fax: 212-450-7339 Hollywood, CA. Tel: 213-461-6383 Fax: 213-461-1620
CANADA Rupert Neve Inc., Toronto Tel: 416-365-3363 Fax: 416-365-1044

**AMS
NEVE**
A SIEMENS COMPANY

USE READER SERVICE CARD FOR MORE INFO



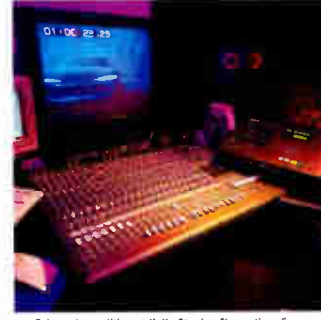
Writer/Producer Shep Pettibone (of NYC's Mastermix Studios) has a long list of credits including Madonna, Elton, Janet, Whitney, and Euro-dance group, Real McCoy, to name a few.



Frank Serafine was one of the first to use an 8-Bus for ADR, Foley and sound editing on a major motion picture. He's got Mackie 8-Bus consoles in every room of his facility.



Kyle Lehning, President of Asylum Records, Nashville, uses a 32-B in his living room to record demos and mix tracks for a variety of the label's top talent.



Prime-time editing at Helix Studios. Three-time Emmy Awarded David Scharf's credits include effects/sound dialog editor on the hit TV show, "Cheers" and "The Untouchables".

EVER WONDER WHY OTHER 8-BUS MANUFACTURERS



Engineer/producer Frank Heller uses his CR-1604 and 32-B on a variety of recording projects for major label acts.



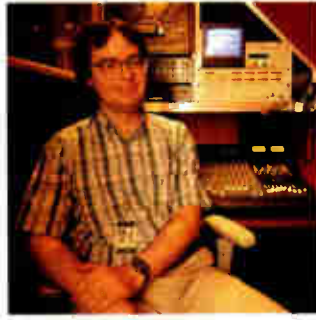
Johnny Caswell, co-owner of Center Staging in Burbank, California—rehearsal center of the stars.



Technician/engineer of Vancouver, B.C.'s Warehouse Studio, Ron "Obvious" Vermeulen custom-configures a 32-B and 24E into Bryan Adams' Jamaica studio (pictured here).



Paul Levy's Advanced Audio is one of Los Angeles' premier tech/rental firms—everything from outboard gear to custom wiring—with clientele including members of the Stones.



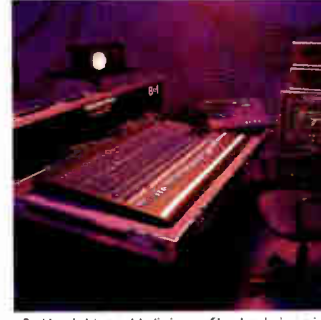
Rooked up at all times into Capital Television Network's Mackie 24-B are 10 VTR's, 4 satellite receivers, 2 off-line editing suites, and 8 mics, says video production editor, Gary Morgan.



Marc Ramaer is, among other things, k.d. lang's right hand man when it comes to sound. He designed her studio around a Mackie 8-Bus system and helps her track and mix her dazzling records.



Matt Rollings is THE first call session keyboardist in Nashville. His credits list more stars than exist in the three closest galaxies.



This is the console that won the 1994 TEC Award for Technical Achievement in Small Format Consoles. It's also the only 8-bus mixer that's expandable into a decidedly UN-small-format console of 128 channels or more by adding 24-E Expanders.



MAYBE IT'S BECAUSE SO



Surround sound and digital post production on the independent Canadian feature film, "When Night Is Falling," 112 DAT and Protools channels mixed directly to AD/DA via an 8-Bus. (L to R): Sound Designer, John Hazen, Writer/Director Patricia Rozema, Sound Effects Editor, Alan Geldart



David Rosenberg's music pushes the creative envelope so much that MTV created a "Top 20 Countdown" visual ID from his music. He's done album gigs for Bob Dylan, Chaka Khan among others, and composed award-winning music for a slew of major network television series and top jingles.

See us at AES Booth #572



Drummer David Abbruzzese gained fame with Pearl Jam and has moved on to doing interesting sessions including work with Eddie Kramer on his latest Hendrix orchestral opus.



Creative Director/producer, Michael Frondelli, of the legendary Capitol Recording Studios, has a 32-B installed in both his home and work studios.



Engineer Ian Parks with main man, Kirk Hammett of Metallica. Ian installed a 56-channel Mackie 8-Bus system in Kirk's home studio.

We once noted in print that a console is only as good as the people who use it.

This ad is our way of recognizing all of you who own and use a Mackie 32-B, 24-B or 16-B 8-Bus console.

Thank you for trusting our promise that an affordable mixer could deliver the sound quality which used to require a \$100,000+ mega-console. As the list of

8-Bus-recorded platinum albums, feature motion picture soundtracks and TV series credits grows, we're getting pretty confident that we really HAVE delivered on that promise.

Many of you may not yet have gained as much recognition as some of the artists pictured at left. But when you own a Mackie 8-Bus console, you have the same powerful creative tool as they rely on every day.

If you don't own an 8-Bus console yet, send for our all-new 48-page brochure and learn why so many professionals own Mackie

Designs mixers. Who knows? You might just wind up in our NEXT 8-Bus users ad.

DON'T FEATURE ANY USERS IN THEIR ADS?



Steve Milo talked his boss Michael Bolton into buying one of the first 24-Bs that Mackie Designs manufactured.



Hilly Moss uses his 8-Bus for production work with acts like Coming of Age, Sisterhood, 112 Extreme and Tasha Scott.



A man of many hats, guitarist/composer/producer Terry Wollman's home studio boasts not only a CR-16B4 but a 32-B.



Queensryche tracked (and partially mixed) their latest Platinum album, Promised Land, in an island cabin retreat/remote studio—Big Log—using a 32-B and a 24-B. Two automated CR-1604s were also used at a separate ADAT station; a second 24-B was used during playback.



Brian Van Kleeck of Sound Wizards Entertainment in Middletown, New York told us that the 32-B is one of the best mixers he's ever used.

MANY PROS OWN MACKIE 8-BUS CONSOLES.



Paul Haslinger's Assembly Room is a cutting edge facility doing music for records and movies in Los Angeles. His latest album, Future Primitive, (Wildcat Records) was recorded, tracked, and mixed on a 32-B and 24-B.



Having developed a reputation as one of Hollywood's top orchestrators, Hummie Mann has scored over 15 feature films including Mel Brooks' "Robin Hood, Men In Tights," and numerous TV projects.



Ricky Peterson is a producer and keyboardist of uncommon gifts. Best known for his work at Paisley Park, check out his Mackie tracks on a series of releases on Bow Sidra's Co Jazz label and on an upcoming album by Donny Osmond.



16220 Wood-Red Road NE • Woodinville • WA • 98072 800/898-3211 206/487-4337
mackie.com • Outside the US, 206/487-4333 • Represented in Canada by S.F. Marketing 800/363-8855
Mention in this ad indicates ownership or usage only and does not represent an official endorsement by the artist or group.

some extent, user-definable—graphic layout. For example, two users can specify different font and point sizes in their Netscape app, and the same home page would look quite different. Text and images are sometimes clickable buttons that link to subsequent pages—either at the same site or at a page located at a remote WWW site on the Internet. The buttons also can be used to download files: QuickTime movies, sound files, animation, graphics, text, pictures. But until very recently, the only data types that functioned in (almost) real time were images and text (see sidebar, "Real Audio on the Web"). When a user downloads an AIFF file, for example, the browser application will identify the file type and open the corresponding local application (such as MacroMedia's SoundEdit) to play it, as specified from the Preferences window of the browser. (You can download various crude media player apps from WWW sites.)

A 1.85MB chunk of data—such as 20 seconds of stereo, 16-bit, 22kHz

audio—would take about 22 minutes to download using a 14.4 kbps modem; 11 minutes with 28.8 kbps; 2.5 minutes with a 56k ISDN line; and 20 to 30 seconds with a fractional (256k) T1 line. Lower-resolution

SLIP/PPP account. Online services such as CompuServe and America Online do not offer this type of account, but there are a number of ways that such a site can be set up. A discussion of each follows, in order of most expensive to least expensive.

First, you can use your own computer at your own facility, in which case you will want to hook up a T1 line or some other high-bandwidth means of communication. Then you will need to register your unique IP address, which takes about six weeks to complete. The resulting Internet node would be entirely owned and maintained by

you. It's an expensive option for a small operation, but it's what some big companies do. (Surprisingly, I've been told that Sony—generally regarded as a large company—actually rents space on someone else's computer and has its name aliased at an Internet gateway to point toward their site.) This may have changed, however; the pace of change on the Internet is remarkable.

Alternatively, you can share a node with a local Internet service



Home Page for Process Recording Studios

sound files are, of course, smaller, but the smaller they are, the worse they sound. In fact, it's not unusual for pages that are heavy on graphics to take up to a minute to open using a slower (14.4 kbps) modem. In view of that fact, it might be more accurate to call it The Information Cowpath.

CREATING YOUR OWN HOME PAGE

Having a page on the WWW requires a different account—usually called a

Dawn of a New Legacy

The Sound of the Legacy Console in the All New api L200 Rack System

All-Discrete Modules Include:

205 Direct Box	225 Compressor (pictured)
212 Mic Pre (pictured)	235 Noise Gate (pictured)
215 Sweepable Filter	245 De-Esser

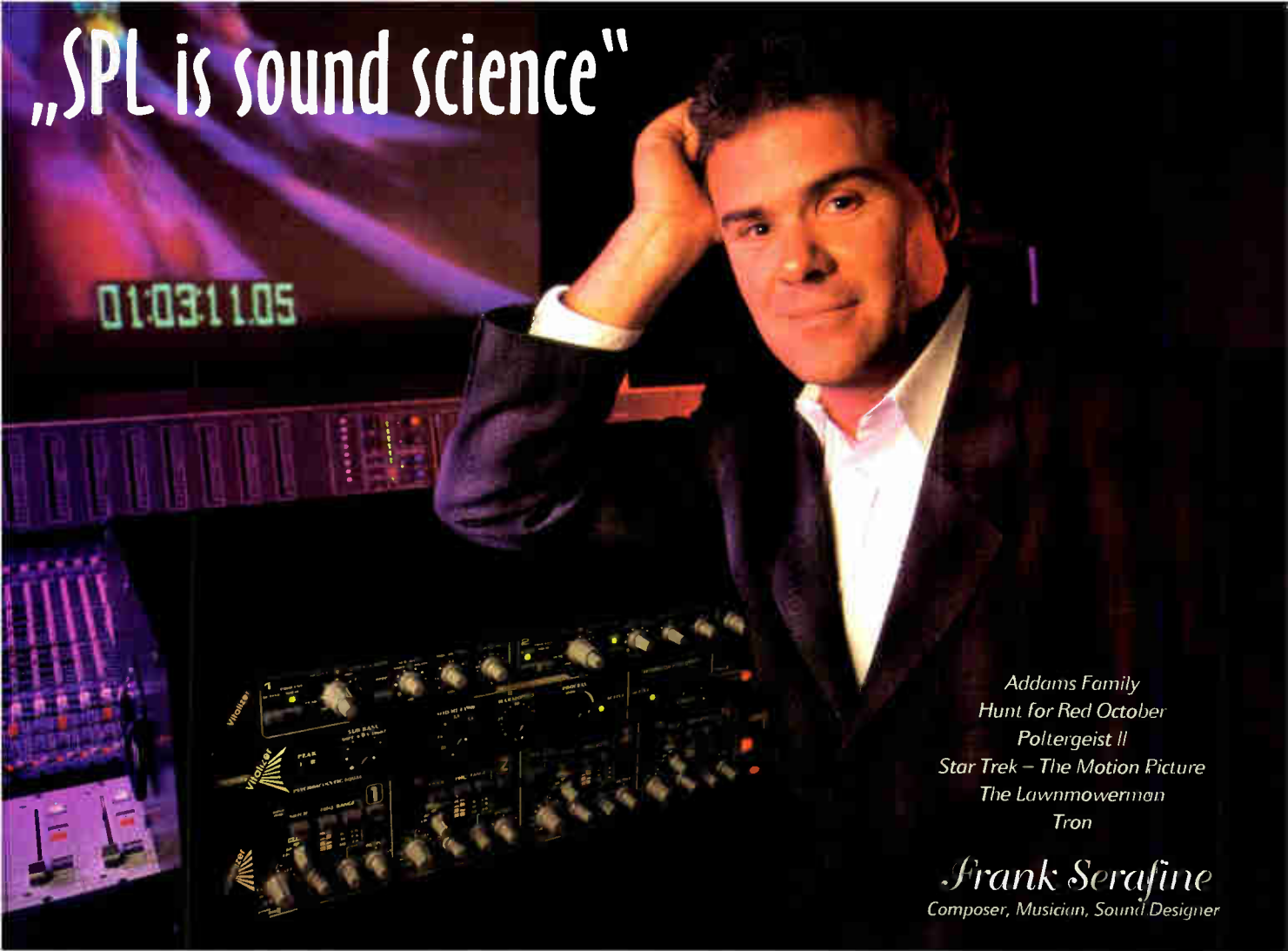
L 200

<p>Canada Coast to Coast 416-221-0721</p> <p>UK Sound Network 44-181-372-3170</p> <p>Japan Timelord 81-3-3794-5575</p> <p>North American Console Sales 708-653-4544</p>	<p>Southeastern USA Harris Audio</p> <p>Massachusetts-New England Area Professional Audio Design</p> <p>Texas/South Central US Studio Tech</p>	<p>See us at AES Booth #256</p> <p>New York City/Surrounding Vicinity Studio Consultants, Inc.</p> <p>Southern California/Los Angeles Westlake Audio</p>
---	--	--

api Corporate Office: 7655-G Fullerton Road · Springfield, VA 22153 · (703) 455-8188 · Fax: (703) 455-4240

USE READER SERVICE CARD FOR MORE INFO

„SPL is sound science“



Addams Family
Hunt for Red October
Poltergeist II
Star Trek – The Motion Picture
The Lawnmowerman
Tron

Frank Serafine
 Composer, Musician, Sound Designer



STEREO VITALIZER® from \$ 799.--



CLASSIC VITALIZER® from \$ 999.--



OPTIMIZER \$ 1,659.--



EQ MAGIX \$ 1,659.--



Excellent for pre-dubbing production dialogue and ADR for motion pictures and television, the OPTIMIZER and VITALIZER® prove to be great processors from the front end of our digital workstations all the way through to our final mixed printmasters.

SPL's VITALIZER® technology is true audio science. The CLASSIC VITALIZER® and the STEREO VITALIZER® are psycho-acoustic magic boxes. They contain bass frequencies, enhance mid and high range frequencies, stretch surround sound and widen stereo imaging.

The OPTIMIZER provides our studios with creative frequency equalization enhancement as well as noise control and elimination.

FRANK SERAFINE

New Product: The new EQ MAGIX includes the technology of VITALIZER and OPTIMIZER in an outboard EQ unit. It combines these with a high performance microphone preamplifier and a dual channel output stage. The EQ MAGIX comes in a professional RF-proof chassis with a stunning metalwork finish.

See us at AES Booth #447

the above are suggested retail prices

International sales consultancy: ICM GmbH

+49 (93 42) 2 18 66; Fax +49 (93 42) 2 25 44

SOUND PERFORMANCE LABORATORY
 world radio history
 USE READER SERVICE CARD FOR MORE INFO

distributed in the US and the U.K. by: **beyerdynamic**
 US: c. (800) 293 4463, Fax (516) 293 3288; UK: c. (273) 479 411, Fax (273) 471 825

\$6295*

Powerful.

100 layers per track.
Bar/Beat Editing.

Time compression.

Pitch Correction.

Full Automation.

Interface for

DA-88/ADAT/RS-422.

Trigger Mode.

Portability.

No computer needed.

SMPTE/MMC/MTC/SPP Sync.

Video Output.

Scrub Preview.

Backup to SCSI/Audio DAT.

Non Destructive Editing.

Punch In/Out.

Reliability.

Portable/Stand Alone.

"No Crash" performance.

Fast.

Easy to learn.

Confidence.

DM-800
Digital Audio
Workstation!



Work
smarter.

Go.

 **Roland®**

Call for FREE Video.

Roland Corporation U.S., 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685-5141 Ext. 756
Roland Canada Music Ltd., 5480 Parkwood Way, Richmond, B.C. V6V 2M4 (604) 270-6626

USE READER SERVICE CARD FOR MORE INFO

Audio Resources On the World Wide Web

Any list of useful World Wide Web sites is necessarily incomplete, but here are some web-sites that *Mix* has visited and found interesting.

The Audio Engineering Society website has an admirably clean and efficient layout and includes a comprehensive catalog of links to other sites (http://www.cudenver.edu/aes/audio_links.html). The National Association of Broadcasters (NAB) (<http://www.nab.org/>), World of Audio (http://www.magicnet.net/rz/world_of_audio/woa.html), the Audio Page (<http://bundy.hibo.no/~rpd/audio.html>), SoundWave (<http://www.SoundWave.com/>), the Internet Underground Music Archive (<http://www.iuma.com:80/>), and the University of North Texas (<http://www.scs.unt.edu/recstudio/audlinks>) all maintain useful collections of links to other directories and audio resources.

Manufacturers' sites vary; some only offer online sales brochures and marketing copy, others really attempt to address customers' needs. Carver Corporation (<http://www.halcyon.com/carver/welcome.html>), Fender (<http://www.fender.com/>), Community Light and Sound (<http://www.community.chestertpa.us/>), and Kurzweil (<http://www.musicpro.com/musicpro/Kurzweil>) are among the more interesting examples.

Finally, no list of web sites is complete without the URLs for sites that should be visited just because they are there. The Useless WWW Pages (<http://www.primus.com/staff/paulp/useless.html>) is a good place to start. The edible, starchy tuber formerly known as Mr. Potato Head has now moved to <http://winnie.acsu.buffalo.edu/potatoe/>. Need a new perspective on life? Try reading recent obituaries at <http://catless.ncl.ac.uk/Obituary/README.html>.

—Chris Michie

provider, usually for a monthly fee. You can a) use your own computer and disk space, either at their site or yours, or b) rent disk space on their computer system.

Sharing a node brings two important advantages: a system operator who maintains the system, and a local high-bandwidth connection to the outside world. The disadvantages are that you don't have unlimited high-bandwidth access to your content for purposes of changing your page or getting, say, demographic information on those who visit your site.

If your computer/server is located at the provider's site, you can have as much disk space as you want, hooked right into their T1 line, connected directly to the Net. If your computer is located at your own site, you'll want a fairly high-bandwidth connection to their site—another expense.

Using someone else's server at their site, you can place your data on disk space that you rent—typically \$40 a month for 5 MB. Some providers charge a flat rate per month with unlimited access; others charge an hourly rate for online time over a specified number of hours per month. Also, some providers charge a monthly Transfer Bandwidth Allocation Fee, where you are allowed *x* megabytes to be downloaded from your Web site per month, with incremental charges for overages.

An address will be associated with this account. In the case of our local provider, Best Communications, their IP address is <http://www.best.com>. Your home page could be found by appending your address, i.e., <http://www.best.com/yourcompany.com>. The address corresponds to a specific computer and disk space where your home page resides.

If you prefer, your provider can register a custom domain name for your company for an additional one-time fee. With a custom domain name, your address will look like this: <http://www.yourcompany.com>. This offers the advantage of a more professional appearance, for both your home page and for e-mail purposes.

Some service providers also will track the number—and to some extent, the location—of people who have visited your site. This data can be e-mailed to you daily.

USING HTML

HTML documents—that is, those documents that allow text, graphics and other digital media to be organized and displayed on a Web page—can be created by writing an HTML script in any word processor that can save as a text document. Netscape (or any other Web-browsing software) translates this HTML script into a graphic interface. The script defines the text (ASCII), layout, paths to images (normally 8-bit GIF or JPEG) and other media such as

QuickTime movies and AIFF sound files, as well as navigation paths to other relevant pages. These pages may have been designed specifically to link to the home page (and are normally located at the same site as the home page), or they may have been designed by someone else and reside at remote WWW sites. HTML is a simple scripting language, and one of the attractions of the Web structure is that the browsing software makes it easy to view (and copy!)

```
<TITLE>The Process Home Page</TITLE>
<body font size=5 background="back1.gif" text=#000000
alink=#FFF000
vlink=#FFFF00 link=#000fff>
<center><IMG SRC=prshome.gif>
<P>

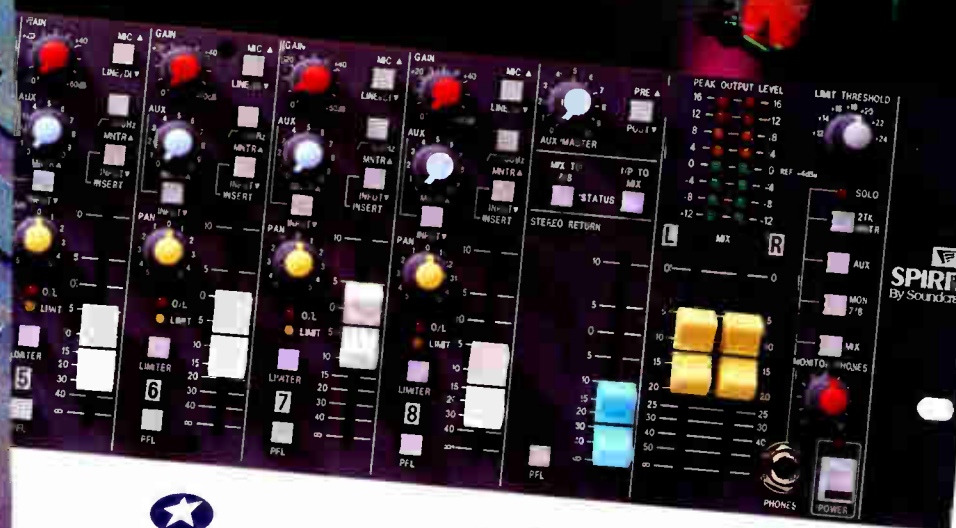
<H1>The Process Recording Studios, Inc</H1>
<hr>
<center><A HREF = "vo.html"><IMG SRC = "vo.gif" border=0 ALT
=
"[Vocal Booth]"></A>
<A HREF = "equip.html"><IMG SRC = "equip.gif" border=0 ALT =
"[Equipment List]"></A>
<A HREF = "rates.html"><IMG SRC = "rates.gif" border=0 ALT =
"[Studio Rates]"></A>
<A HREF = "dir.html"><IMG SRC = "dir.gif" border=0 ALT =
"[Directions to The Process]"></A><br>
<A HREF = "mailto:info@theprocess.com">Click here to contact
The Process by E-mail</A>
<hr>

<h4> The Process Recording Studios is a full service audio production
facility. We have three totally digital production studios. <A HREF
=
"controla.html">Studio A</A>
```

Partial HTML script for the Process Home Page

MIX TO DIGITAL MULTITRACK ANYWHERE

SPIRIT



LIVE RECORDING AND MIXING



RECORDING ANYWHERE

Pro TRACKER



It's so easy to take a digital multitrack recorder out on the road. But teaming it up with a compact, affordable mixer that's up to the job of making studio quality live digital recordings direct to tape is not so easy.

So Spirit have created ProTracker:

We've packed a high quality 8 channel in-line mixer into a 3U case. ProTracker has an ultra clean signal path, and everything you need to make professional digital quality recordings – yet ProTracker will also excel when you want to overdub; it'll even mix your front-of-house sound while you're recording. ProTracker's key to digital quality recording lies in its unique integration of superior components into the straightest possible signal path between its input and its balanced tape output, effectively giving you a pure direct-to-tape mix. To keep a tight rein on levels going to tape – and to prevent accidental digital overload distortion when a band member decides to crank up the volume – there's a fast limiter with switchable threshold; you just set and forget it. Take a good look at the impressive feature list...

MAIN FEATURES

- In-line monitoring signal format – 2 discrete inputs per channel
- 8 channels with 60mm linear faders (>90dB cut off)
- Expansion sockets for daisy-chaining ProTrackers
- New high quality, high gain mic preamp (-129dBu EIN) with switchable 48V phantom power on every input
- Balanced line inputs with built-in DI capability for instruments
- Switchable High Pass Filter on every channel
- Built-in Limiter (300µSec attack time 3 Sec release), selectable on every channel
- Insert and Aux switchable between channel and monitor paths
- Aux globally switchable pre/post fader
- PFL on each channel
- Overload and Limiter indicators on each channel
- Monitor fader and Pan control
- Balanced Tape Send Return, switchable between +4dBu and -10dBV
- Separate pre-fade Insert and Return sockets, eliminating Y-cables
- Stereo Effects Return with fader and PFL
- Inputs switchable to Mix to allow simultaneous front-of-house mixing and recording
- Mix routable to Tape Sends 7/8 for simultaneous 2-track recording, without affecting multitrack feeds from channels 1 to 6
- Headphone monitoring of 2-track return, Aux, 7/8 or Mix
- Solo indicator
- Monitor Outputs follow headphone output
- Mix Output and 2-Track Return accept +4dBu XLRs or -10dBV RCA phons
- 100 – 240 VAC operation with internal universal switching power supply
- Road quality construction

See us at AES Booth #707

Superb Live Recordings

ProTracker is the perfect live recording partner for affordable digital multitracks such as ADAT[™] and DA-88[™]; and, like digital multitracks, you can link several ProTrackers together for additional tracks. Each channel is equipped with our best ever mic preamp and a balanced line input with direct instrument capability, so you don't have to use any noisy DI boxes. A High Pass Filter on each input cuts mic popping and stage rumble. With ProTracker, you can not only record to multitrack but you can also make and monitor a 2-track DAT master at the same time.



Overdub or Record Anytime, Anywhere

ProTracker is designed for the road. That's why we have incorporated a power supply that works all around the world, so you can make the best location recordings wherever you go. And with its compact rack design, ProTracker will fit into any outside-broadcast or location recording system.

8760 South Sandy Parkway,
Sandy, Utah 84070.
Tel: 801-566 9135
Fax: 801-566 2086

* ADAT is a registered trademark of Alesis Corporation
** DA-88 is a registered trademark of Casam



SPIRIT

By Soundcraft

A Harman International Company



8 Channel Mic/Line Preamp with Digital Output

8 Channel **MicAD** Converter Line Phantom SoftClip
DSP Noise Shaping MIDI Remote Peak Hold 8x20Bit...

Worldwide Distribution: **STUDER**, Regensdorf, Switzerland: +41 1 870 75 11
Los Angeles: (818) 703 1100 Nashville: (615) 391 3399 New York: (212) 626 6734 Toronto: (416) 510 1347 London: + 44 1 707 66 50 00

need
160 Bit
get



MicAD

H A Harman International Company

AUDIO & MULTIMEDIA

the scripts for any given page. So it's entirely possible to learn HTML by comparing pages you like with the scripts that were used to create them. And there's plenty of help online, as well. One excellent example is "A Beginner's Guide to HTML," which is an interactive HTML document available from the National Center for Supercomputing Applications (pubs@ncsa.uiuc.edu).

You can create and refine your home page without ever going online, by using your local computer, your HTML scripts, your media and your browser. Once you have the page how you want it, additional software applications such as Fetch allow you to upload your media to the correct location at your IP address.

Of course, HTML is only a tool that allows you to display digital media on the Web. The point is to say something about your facility or company, and as with all marketing-informational opportunities, you need to put some serious thought into what messages you want to convey. Do you want to create a page with text only? Or do you also want

to include images? If so, you need to either have the software, the skills and the time to produce those images, or be willing to let someone translate your vision. Do you want to include audio or QuickTime movies as part of your message? Are you willing and able to create these media as well? And one of the most important pieces of this puzzle is to find a solution that doesn't take forever to load into a browser, yet is compelling enough to make a good impression.

Today the Web is bustling with activity, and even with its relative lack of audio, there is much to be gained from surfing. If you haven't already done so, it's a good way to calibrate yourself, check out the competition, and determine first-hand whether it's appropriate for you stake out some virtual real estate of your own. ■

Paul Potyén is a contributing editor of Mix and an interactive producer at ESCAtech media, a Bay Area multimedia company that develops interactive applications such as (surprise!) Web pages for clients. The ESCAtech home page can be found at <http://www.escatech.com>.

Need Help?

Designing a home page is not difficult. But designing a good home page requires a combination of skills such as writing, audio production, graphic design and a hefty dose of creativity. In many ways, this process is similar to desktop publishing: Simply buying a copy of Ventura or PageMaker won't suddenly transform you into a graphic design genius.

However, the growing interest in creating a business presence on the Internet has spawned a booming market, with hundreds of companies offering such services. A few firms, such as Baudway Communications (617/450-0060) and MusicPro (615/848-5321), specialize in Internet communication design services for the music and pro audio industries.

But for those who want to try their own hand, the following publications—listed alphabetically—are recommended. Most of these are

available in computer or technical bookstores.

—George Petersen

- *Build a Web Site*, by NET.Genesis and Devra Hall, published by Prima Press
- *Creating Cool Web Pages With HTML* by Dave Taylor, published by IDG Books
- *Launching a Business on the Web*, by David Cook and Deborah Sellers, published by Cue Books
- *Publish on the Web in HTML in a Week*, by Laura Lamay, published by SAMS Books
- *The HTML Manual of Style: The Definitive Instant Resource for HTML*, by Larry Aronson, published by Ziff-Davis
- *The HTML Reference Card* (an inexpensive, 16-panel reference card from Specialized Systems Consultants, 206/782-7733)

Worth its weight in gold—and platinum.

Tony Brown discovers the AT4050 studio microphone.



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

"I use it every session on something," says Tony. "There are several great mics that engineers always like to bring out—and this is one of them."

The Audio-Technica AT4050 delivers supremely transparent and accurate sound without sacrificing warmth and ambiance. The large-diaphragm design utilizes two capacitor elements to provide consistent, superior performance in three switchable polar patterns (cardioid, omnidirectional and figure-of-eight). Transformerless circuitry provides exceptional transient response and clean output even under extremely high SPL conditions.

And while it's certainly *worth* its weight in gold, the rich, versatile performance of the AT4050 is available for much less than \$400 per ounce!

To discover studio microphone excellence for yourself, call, write or fax:

Audio-Technica U.S., Inc.
1221 Commerce Drive
Stow, Ohio 44224
(216) 686-2600
Fax: (216) 686-0719

U.K.: Audio-Technica Ltd.
Old Lane, Leeds LS11 8AG
0113 277 1441
Fax: 0113 270 4836



audio-technica®

THE NEW TSR-24S LETS YOU CREATE YOUR OWN SOUNDS IN TWO STEPS. 1-DREAM THEM UP. 2-LAY THEM DOWN.

With the TSR-24S, frustrating menus and time-consuming steps don't control your programming. You do. Choose the effects you want, in the order you



want, then program and listen to them instantly. No catches. Naturally, the TSR-24S has plenty of raw material, with an arsenal of more than 75 effects. Plus, multiple modulation effects

94 DB S/N RATIO

When it comes to sound, not even compact discs are as clean as the TSR-24S. Our Silencer™ digital noise gate wipes out noise by writing digital zeros when there's no signal present.

94 dB

SPECIAL EFFECTS

OVER 75 EFFECTS

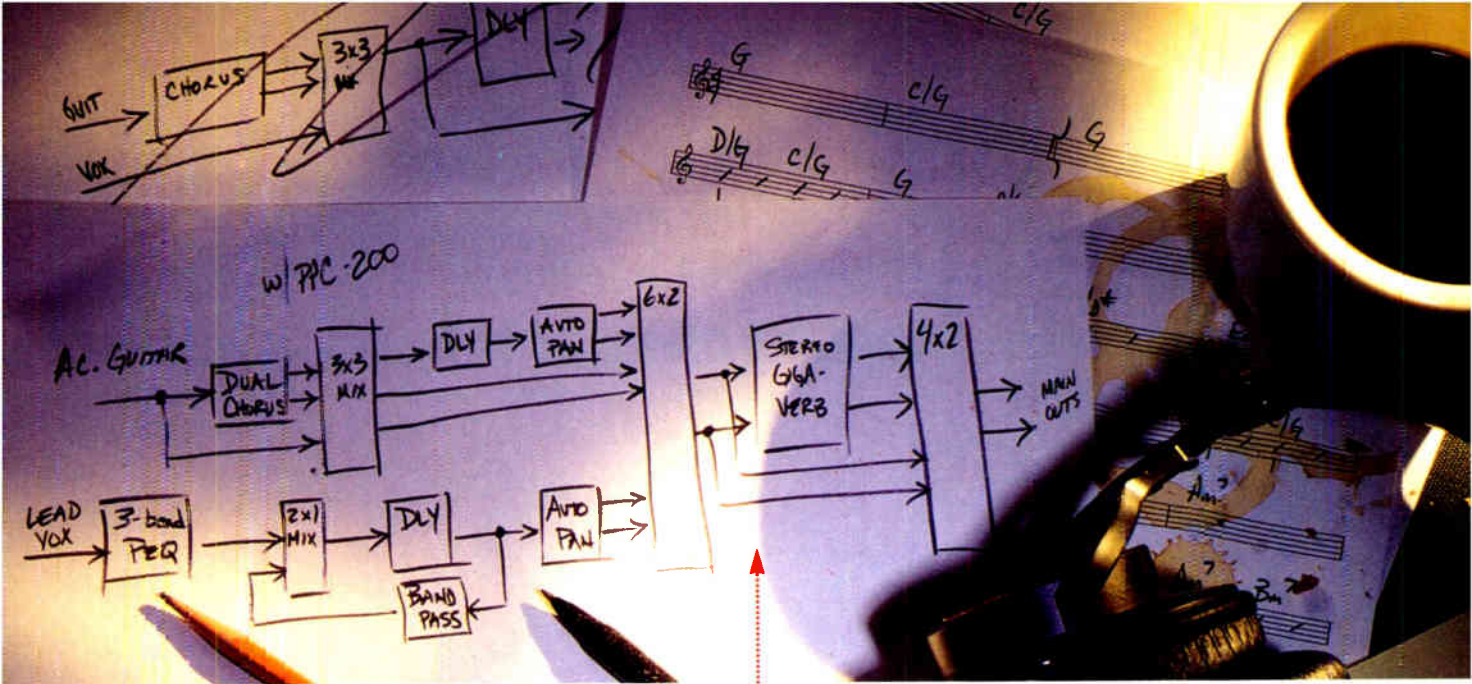
Gigaverb (the world's most flexible reverb), crystal clear sampling, multitap and modulated delays, multi-phase choruses and flangers, duckers, auto panners, 4-voice phasers, 10 separate EQs, 4 octaves of multi-voiced pitch shifting, arpeggiators, and more.

DUAL DISCRETE STEREO

Take true stereo inputs, add four assignable outputs, and you get a lot of routing configurations. Let's see, there's stereo in, quad out; mono in, quad out; dual mono in, dual stereo out...well, you count 'em.



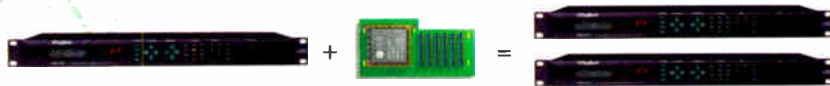
HAVE A TSR-24? No problem—upgrading is a snap. Just contact your nearest DigiTech dealer.



capability and instant module/parameter access mean your great ideas become great music in a matter of seconds. No other machine at any price can match its flexibility. But even before you start dreaming up new sounds, you'll have to take the real first step. Drop by your nearest DigiTech dealer today.



A Harman International Company

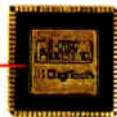


EXPANDABLE

Add the available PPC 200 card, and you'll have the power of two TSR-24S processors. Parallel processing means seamless effect changes and more.

S-DISC™

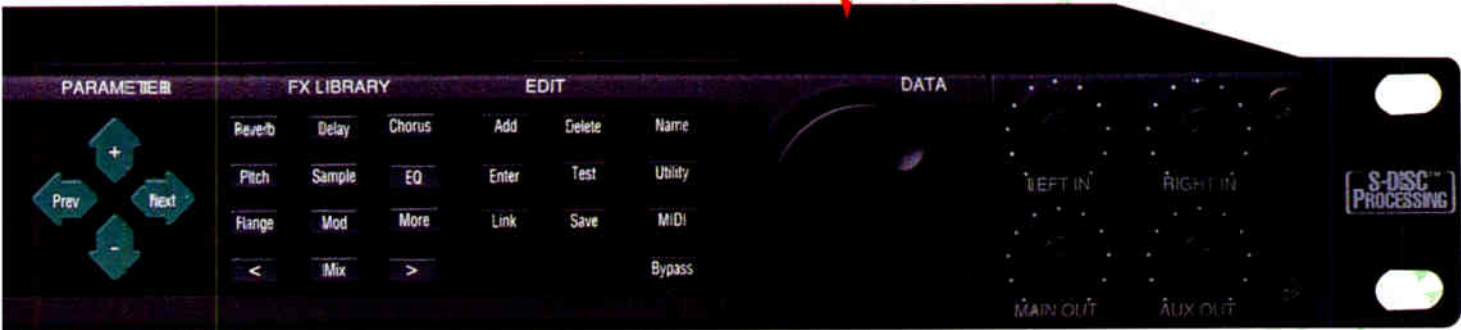
This chip defines DSP horsepower. S-DISC delivers superior sound, quiet operation and performance unmatched by anything in the market. This incredibly powerful chip was designed specifically for audio.



ALGORITHMS

Want reverb, chorus and flange?
 Press a couple of buttons.
 Reverb, chorus and reverb again?
 Redundant effects are not a
 problem. Link effects in any
 order to create algorithms, then
 program them in nearly limitless
 combinations.

See us at Booth #707



RESTORING & REFURBISHING

VINTAGE AUDIO EQUIPMENT

BY JOHN LA GROU

That obsolete junk we sold a few years ago? We're buying it back with a passion. Vintage envy is alive and well in pro audio. This insatiable resurgence is due, in part, to the desire to achieve the ultimate sound. Modern integrated circuits often leave us wanting more—more emotion, more character, more color and complexity. As in life, we sometimes find those missing qualities in our past.

An increasing demand for vintage audio devices means a greater need for qualified repair and restoration technicians. Often, the older the gear, the more attention it requires. Tubes, transistors, capacitors and electro-mechanical parts all have a limited service life. The know-how required to renew vintage gear can take

decades to acquire. Finding seasoned pros who can navigate their way through the vintage maze is not easy.

Many audio craftspersons focus on one specialty, such as microphones or tape machines. Others become generalists, practicing their art on numerous vintage items. This month, we'll visit with a few of these retro-masters—learning what they do and how they do it. We'll explore many facets of vintage recording gear, including mic preamps, EQs, compressors, microphones, tape machines and more.

MICHAEL SPITZ, ATR SERVICE COMPANY

The ATR Service Company in Northern California specializes in earlier Ampex tape machines, such as the ATR-100, ATR-124 and MM-series recorders. Since 1979, Spitz has been servicing and refurbishing Ampex machines for recording studios, mastering facilities and tape dupe facilities.

"As a former employee of Ampex, I learned quite a bit about tape machine parts, design and repair," Spitz says. "I've applied my expe-





ILLUSTRATION DMITRY PANICH

rience on numerous Ampex machines but feel my real specialty is the ATR-100.

"The ATR-100 represents the epitome of analog tape machine design. It arguably has no contemporary equals, including digital formats," Spitz maintains. "The ATR-100 remains the de facto standard for mix and mastering in many of the world's finest studios and mastering houses."

I asked Spitz to explain the process of refurbishing an ATR-100. With respect to transports, he says, "Sonic performance starts with a stable transport and correct heads properly matched to electronics, and unless the transport is 100 percent, the best heads and electronics will not perform their best. The key to transport performance is azimuth stability, low wow and flutter, exacting speed accuracy and the gentlest

—CONTINUED ON PAGE 50

RUPERT NEVE

Rupert Neve is a name synonymous with vintage excellence. His consoles and console modules from the '60s and the '70s continue to be used on a wide variety of successful modern recordings. I asked Neve what it is about his earliest designs that contemporary producers and engineers find entirely addictive. He replied, "People primarily interested in sound are universally disenchanted with digital sound quality and the lack of real advance in analog quality in recent years. Older and simpler designs, predating usable ICs, were Class-A and often single-sided configurations which did not generate high-order harmonics. In short, these early designs sound sweet, smooth and musical, notwithstanding the noise and increasing unreliability.

"Aside from their sound, our old consoles have withstood the tests of time partly because the designs were very conservative. I was dead scared of running into problems, and the simpler designs gave me the space to spread out and run things cool."

Asked if he had any thoughts on the future of pro audio, Neve says, "It's ironic. In the '60s and the '70s, many people told us that the Neve consoles sounded too 'crisp' and 'clinical.' So, the future is very difficult to predict, isn't it!" ■

Like thousands of
engineers
and editors,
these guys
do their jobs
on ProTools.™





MasterTools presents an essential palette of facilities for monitoring, repairing, optimizing and capturing your final mix with maximum resolution.



Arboretum's Hyperprism/TDM is the real-time, multi-effect TDM Plug-In version of the well known, award-winning Hyperprism stand-alone sound effects processing software.



The ProTron AudioReality Pro Tools Plug-In from Crystal River Engineering offers true 3-D spatialization of multiple sound sources in a custom acoustic space. Audio designers can create fully spatialized audio tracks in a dynamic mixing environment.



The JVP TDM Plug-In provides everything you need for voice processing: A de-esser, compressor/gate, parametric EQ, and multi-tap delay. MDT allows you to emulate any existing compressor, limiter or expander; or create completely unique settings tailored to your specific needs.



Combine Lexicon's world-class digital signal processing card with NuVerb's graphic interface, and you can get the sound you're looking for, faster, and with more precision than ever before.



QSYS/TDM allows users the ability to place individual elements in a 180-degree arc with only two speakers. This is the same patented sound technology as QSystem™, used by artists such as Sting, Roger Waters, and Pink Floyd.



The DeClicker: Today's solution to yesterday's clicks and pops. The Virtual FX Rack: A Package of five essential audio tools developed to enhance your acoustic palette.



Waves has set new standards for digital audio processing. The L1-Ultramaximizer, Q10-ParaGraphic EQ, C1-Compressor/Gate and S1-Stereo Imager provide high-quality processing within Pro Tools.

If you're thinking about staking your future on one digital audio workstation, consider this: The eight standout companies you see here are among the many developing TDM plug-ins for Pro Tools III. Which just so happens to be the one digital audio workstation used by more editors and engineers than all other systems combined. In other words, you're in pretty good company with Pro Tools.



The Tube Is Master

RESTORATION OF VINTAGE RECORDERS

by Walter Sear

A few years ago, I began to miss the nice sound of old vacuum tube mastering machines. The sound of our Studer A80 was quite acceptable, yet it seemed to lack the body and warmth of my old Ampex 300. So I dug a couple of my old Ampex 300 tape recorders out from under the pile of junk in the shop and began to fiddle around with them.

These are remarkable machines, and for many decades were the workhorses in almost every recording studio and radio station. I cleaned one up, plugged it in, threaded a reel of tape and...Magic! What a sound.

Thus began an odyssey of transforming the 300 into a ½-inch, 15/30 ips machine, changing the speeds, rebuilding the electronics and having John French (JRF Magnetic Sciences) design and build a modern set of heads. I made some of the transport parts by hand, using some aluminum stock that matched the deck perfectly. The rest is history. This became our prime mastering machine at Sear Sound. Many albums were mastered on this machine, and one major label even went so far as to bring in a mixed album, record it onto the Ampex and then take the output from the playback head and re-record onto a Studer CD-R CD recorder, just to add the sound of the Ampex machine on the album.

Just when we thought it was safe to go back into the water, I had the chance to pick up two Studer C-37 recorders. The blueprints are dated 1962, and I found that Gotham Audio (then Studer distributor) had sold six of these machines to RCA alone. Once the primary tape recorder in European studios, few C-37s were sold in the states, as Ampex controlled the market by then. I bought the two recorders instantly.

Each machine is a work of art. The electronics are all modular, which simplifies servicing. The transport hinges up and the front cabinet panel drops, providing total access for maintenance, including a convenient plate to put tools on. The deck has its own internal test meter and switch to measure various voltages throughout the recorder. A regular lightbulb is used as a variable resistor to set the proper startup torque to the motors (shades of my old Westrex film recorder that used the same idea). The wiring, harnesses and overall construction were typically Swiss. There are no VU meters on the machine, which is quite proper. When you align the machine, it should always be to the meters on the console.

The recorders were ¾-inch, 7.5/15 ips machines, so the first task was to change them into 15/30 ips machines, ½-inch. After consulting a variety of knowledgeable people—including David Manley, who owns a slew of them—I got some of the parts that I needed. Then came the critical decisions.

I called Jeff Gilman at MDI Precision Motor Works in Hudson, Mass. He has a proprietary method of building up the capstan shaft size by using a ceramic sleeve. He also machined a series of roller guides for the ½-inch tape configuration. The machine has no fixed guides—everything turns with the tape. Bill Titus did a lot of measurements for the tape path, and we added brass washer shims of different thicknesses to get all of the guides to the right height to match the head block.

The record and playback electronics were another problem. Beside the usual capacitor and tube replacements, the EQ had to be changed to conform to the various new head characteristics and tape speeds. This is a “trial and error” situation. When you change the frequency curves to try to eliminate the “head bump” in the bass, the higher frequencies are then affected. After some experimentation, we found the right

combination.

The final problems were the logic system and control switching. As machines of that vintage use relay logic, all the relays were cleaned up or replaced. Fortunately, the relays are standard “off the shelf” parts. Modern, microprocessor transport control is far superior, yet the relay system works fine, so we left it intact.

With the restoration completed, we ran wow and flutter tests. The machine came out better than the original manufacturer’s specs (at 15 ips, 0.04% weighted; and at 30 ips, 0.022% wow and flutter, 0.0175% weighted). Frequency response was what we expected, with the bass bump at 31 Hz, starting at +.6 dB and staying within reason down to 15 Hz.

The ultimate test for any piece of recording studio equipment is what the client will accept and will want to use in session. Sear Sound had the privilege of being selected to do the mixing for the Eric Clapton *Crossroads II* album, consisting of live and studio recordings that were recorded in the mid-’70s. (Jay Mark was the engineer, and Bill Levenson produced with Jerry Rappaport for PolyGram Records.)

The 2-inch masters from the ’70s, mostly 16-track, had to be baked in a convection oven at 125 degrees for a couple of hours. They were then played on our Studer A80 16-track, 2-inch machine and recorded with timecode onto a beautiful new Studer D827, as well as a 48-track digital machine (rented from Toy Specialists). I don’t like the sound of digital, but if I have to record digitally, this would be the machine of choice. It is built with the same care and attention to detail as the old C-37s. As Jay Mark decided to go ½-inch, 15 ips, Dolby SR, we set up our various 2-track machines.

The moment of truth arrived: Which of our ½-inch machines would be best suited to the Clapton project? Using blind testing, it took about one minute for the

—CONTINUED ON PAGE 50

Easy to handle

The TC M5000
gives you the
ultimate effects
now and in
the future

Reverbs
Pitch shifters
Multiband Dynamics (MD 2)
Digital Toolbox
Delays
Ambience
Tap Fac
Nonlin
Chorus
Flanger
Revpitch
Sampling
SMPTE
EQ

M5000 - A world of possibilities

Mr. Q. Junior is happy with the M5000 / ATAC userinterface

The M5000 Digital Audio Mainframe is unlike any other effects processor you have ever seen. Substantial research has gone into providing you with the ultimate user interface - the unit is logical, and so easy to use that slaving over the manual is a thing of the past! And with the new ATAC remote Control you can operate your unit from wherever you wish.

The outstanding effects you have access to in the M5000 are the result of a combination of TC's DARC™ technology and the skills of the best signal processing engineers around the world.

But what you see is not what you get - you get more! The unique design of the M5000 hardware platform allows for future upgrades of both the system's software and hardware. It will far outlast any other signal processor you own or can buy today. All M5000 owners receive regular, easy to install, software upgrades - featuring the very latest in signal processing.

For example, software release 1.15, our most recent package, includes a comprehensive 4-band Parametric Equalizer, The Digital Toolbox™ option, SMPTE and much more!

To some it may look like any other effects processor - but you know better. Call your dealer today for a full demonstration.

See us at AES Booth #119

For the name of a dealer near you call 1-800-738-4546 Ext 395

t.c. electronic
ULTIMATE SOUND MACHINES

World Radio History

USE READER SERVICE CARD FOR MORE INFO

—FROM PAGE 48, *TUBE IS MASTER*

choice to be made. The C-37 was the preferred machine to everyone. The sound had sparkle, clarity and "air" that other machines lacked.

The album was completed on the Studer C-37. The machine took a year of work, but it turned out well. At 30 ips, the Ampex 300 has an "airier" sound, with more second-harmonic distortion, which many people find pleasing. The Studer is more accurate in terms of frequency response, but this is purely a matter of taste. No solid-state machine in our studio is comparable in sound to either of these machines.

I have always felt the deficien-

cy of the sound of transistor equipment. Knowing this, I have always run a studio full of tube gear. Because of my 30 years' prejudice, I go to great lengths to be sure that this does not bleed over into the listening tests that we do. Neither I nor the visiting engineers know which machine or device they are listening to. They simply select button "A," "B" or "C." The differences are clear and apparent. As it often happens, the engineer's decision is the same as that of the producer and studio personnel. There is a clear and distinct difference, and in all the years of testing equipment, I can't recall any situation where vacuum tubes didn't sound superior to transistors. ■

—FROM PAGE 45, *RESTORING VINTAGE GEAR*
of tape handling.

"I've seen only two ATR-100s in the last four years that required only minor repairs, and all ATRs benefit from upgrading," says Spitz. "Most of my customers ask me to modify their ATR-100 to exceed original performance specs. This means a lot of changes.

"Excepting heads, I make all mechanical wear parts for the ATR-100. My mastering grade urethane capstan tachometer ensures a wow and flutter below .015 percent, and my low-mass tape guides require less arm servo correction. I also make a urethane wide track replacement take-up bearing, stainless steel lifter sleeves and all the optical glass parts.

"On ATR-100s," Spitz continues, "I also match the capstan and reel motor output drivers, completely recap the power supply, slightly modify some grounding, repaint the cabinet and pedestal to original Ampex colors, re-silk-screen all worn panels and install a new wrist pad. After that, I'll install new Flux Magnetics Mastering Series heads and recheck all performance parameters."

With respect to audio electronics, Spitz has a somewhat different attitude. He's "not an advocate of modifying the original signal system. Maybe a few caps here and there, but I believe the sound character is exceptional in its stock condition

and usually wins controlled blind-fold tests against most mods I'm aware of. The sound quality is why the machine has attained vintage status to begin with.

"If you want a different sonic personality," Spitz suggests, "I offer a dual-triode vacuum tube repro amp for the ATR-100. It sits alongside the original Ampex transistor repro card, and either circuit can be selected by a switch. It's like having two machines in one space and offers an ability to make a reasonable listening choice."

Spitz's customers include Sony Music, Gateway Mastering, A&M, Ocean Way Recording, Masterfonics, Bad Animals and many others.

MARTINS SAULESPURENS AND SKIPPER WISE, B.L.U.E.

For the last six years, a little company called B.L.U.E. (Baltic Latvian Universal Electronics) has been quietly modifying and upgrading tube microphones for top studios and engineers worldwide. JVC recording artist and B.L.U.E. principal Skipper Wise discusses his company's approach to vintage microphone restoration and modification.

"In 1989, we did two records for Cypress/A&M—a very fussy label. These recordings were among the first Sony DASH projects, and we desired the highest-quality and lowest-noise mics we could find. That's when we

really started working on microphones," says Wise. "The records were both commercially successful and praised for their sonic qualities. Many friends, recording artists and engineers, began to request our mic modifications for their own use.

"Since then," continues Wise, "we've been developing a wide range of products specifically for improving the performance of vintage tube microphones. My partner Martins and designer Janis are both degreed electronics engineers who've built what's now a small microphone factory in Latvia capable of fabricating precision microphone parts, from the smallest screw to large body shells, for applications ranging from replacements to entirely new designs.

"What's more, we anticipated the trend in vintage microphones and, over the years, have been purchasing huge quantities of N.O.S. [new old stock] parts from many European sources. We've been doing this since the late '80s. We now have hand-selected AC-701K tubes in the original sealed white Neumann box as well as Russian equivalents, Neumann and AKG mic transformers of all types, over 20 varieties of original capsules, dozens of connector types and much more. We're also developing our own capsules and replacement tubes."

What's the process of a typical B.L.U.E. modification? According to Wise, "We go through the entire microphone and power supply. We replace capsules, rewire with Teflon-insulated silver wire, select a very low-noise tube such as our B.L.U.E. 6C1P replacement for the EC92, replace the archaic connectors with N.O.S. or new Neutriks, replace deteriorated electrical components and upgrade circuits and transformers. We also completely replace the power supply with a toroid supply of our own design, manufactured in our Latvian factory.

"To test our modifications," Wise explains, "we maintain a 48-track analog and digital studio. It's constantly in use, and we have a large collection of B.L.U.E.-modified microphones, including Telefunken, Neumann, AKG, Schoeps, Lomo, Liepzig and more. My recording contract with JVC keeps us in the studio quite a bit, and we're always experimenting with novel mic mods to capture new and distinct qualities of sound."

Aside from microphone work,

ABSOLUTE MAGTC

DIGITAL PROCESSING:

- NEVE DTC
- WEISS 102 SERIES

ANALOG PROCESSING:

- NEVE
- AVALON
- SPL

CONVERTERS:

- PRISM SOUND AD-1
- PRISM SOUND DA-1
- APOGEE D/A 1000
- APOGEE A/D 1000
- WADIA

NOISE SHAPING:

- PRISM SOUND SNS

DAW:

- SONIC SOLUTIONS

RECORDERS:

- SONY
- PHILLIPS
- MONTAGNI

DISPLAYS:

- DIAGRAM DISPLAY
- MEYER SOUND HD-1

DIGITAL ROUTING:

- Z-SYSTEMS

TAPE MACHINES:

- AMPEX
- SONY
- STUDER

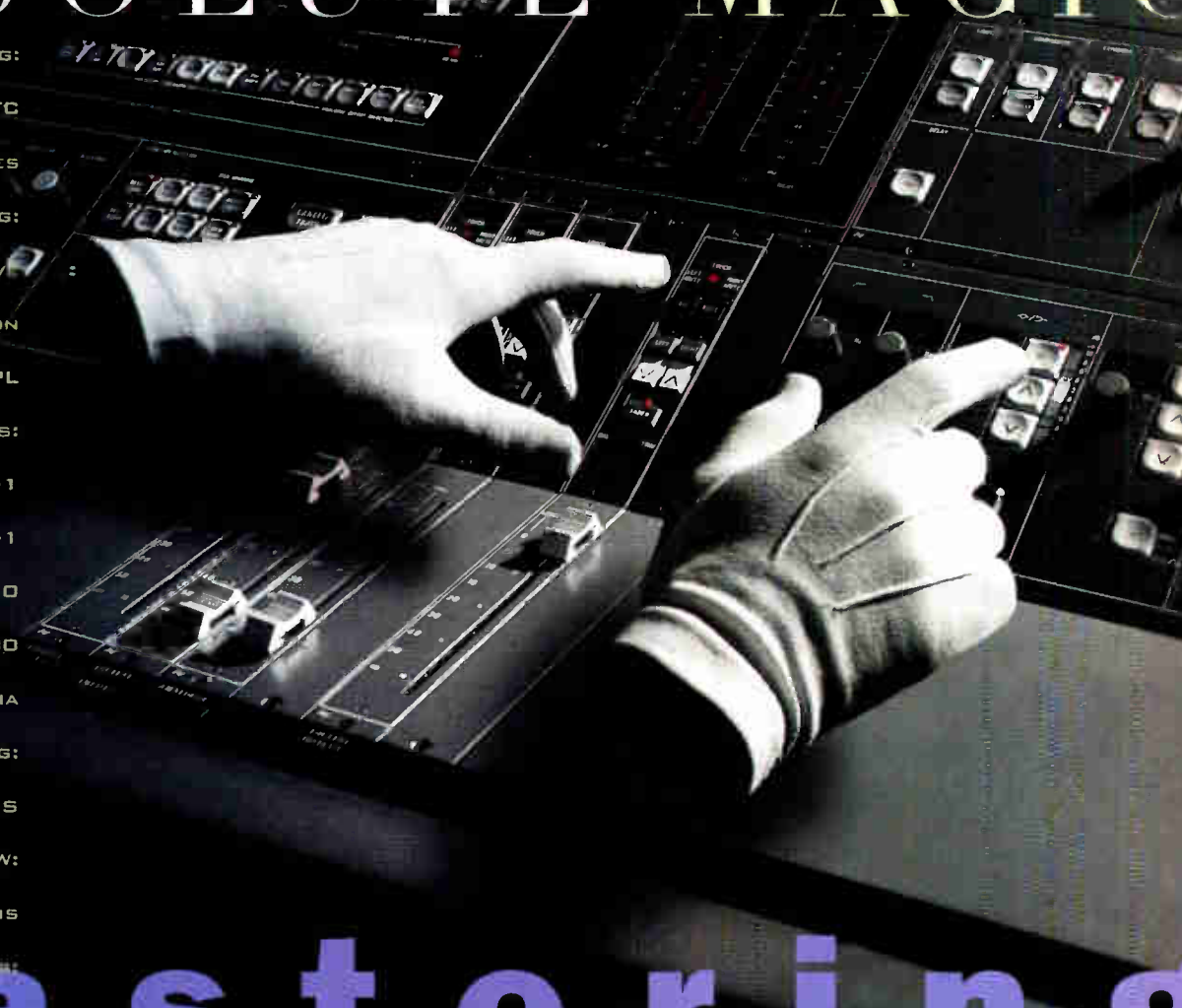
MITSUBISHI

DISC CUTTING:

- NEWMAN

STUDIO DESIGN:

- EMTEC



Mastering

Mastering Engineers: Leon Zervos, Tom Brick, Jim Brick, Brad Johnson, Bruno Opitz

Absolute Audio, Inc. 56 W. 45th St., 3rd Floor, New York, New York 10036

Contact: Murat Aktar at 212.730.2044 • Fax 212.730.2204



ABSOLUTE AUDIO

USE READER SERVICE CARD FOR MORE INFO

ABSOLUTE AUDIO

World Radio History

B.L.U.E. also manufactures a range of hard-to-find vintage accessories, such as U47, U67, C24 and 251 shock mounts, M49/M50 yoke mounts, numerous cables, even hand-built, velvet-lined hardwood cases with original engraved logo and mic identification. B.L.U.E. sent me some of their work for inspection. Their yoke mount fit my M49 like a glove and indeed looks like a piece of fine German engineering. Additionally, a B.L.U.E.-modified Gefell UM57 was noticeably quieter and richer than my stock UM57.

"We consider microphones more like musical instruments," muses Wise. "Our work turns a technical procedure into an art form. Of course, we also maintain an anechoic chamber with Brüel & Kjær test equipment and PC-based MLS for objective analysis. Scientific analysis is good, but tube mics are not necessarily technical wonders of accuracy. We try to keep the right perspective on our work. See, the image a great tube mic can create is sometimes one-of-a kind. They are one link to the engineer, artist or producer in realizing 'that sound'

locked within their head and relating it to others."

B.L.U.E.'s customers include Take 6, Shawn Murphy, Steve Albini, Russ Hogarth, Fred Vogler, Jim Webb, Mark Linett, Richard Page, Andora Studios and Sound-on-Sound Studios, among others.

KEN MCKIM, TROUBLE REPORT

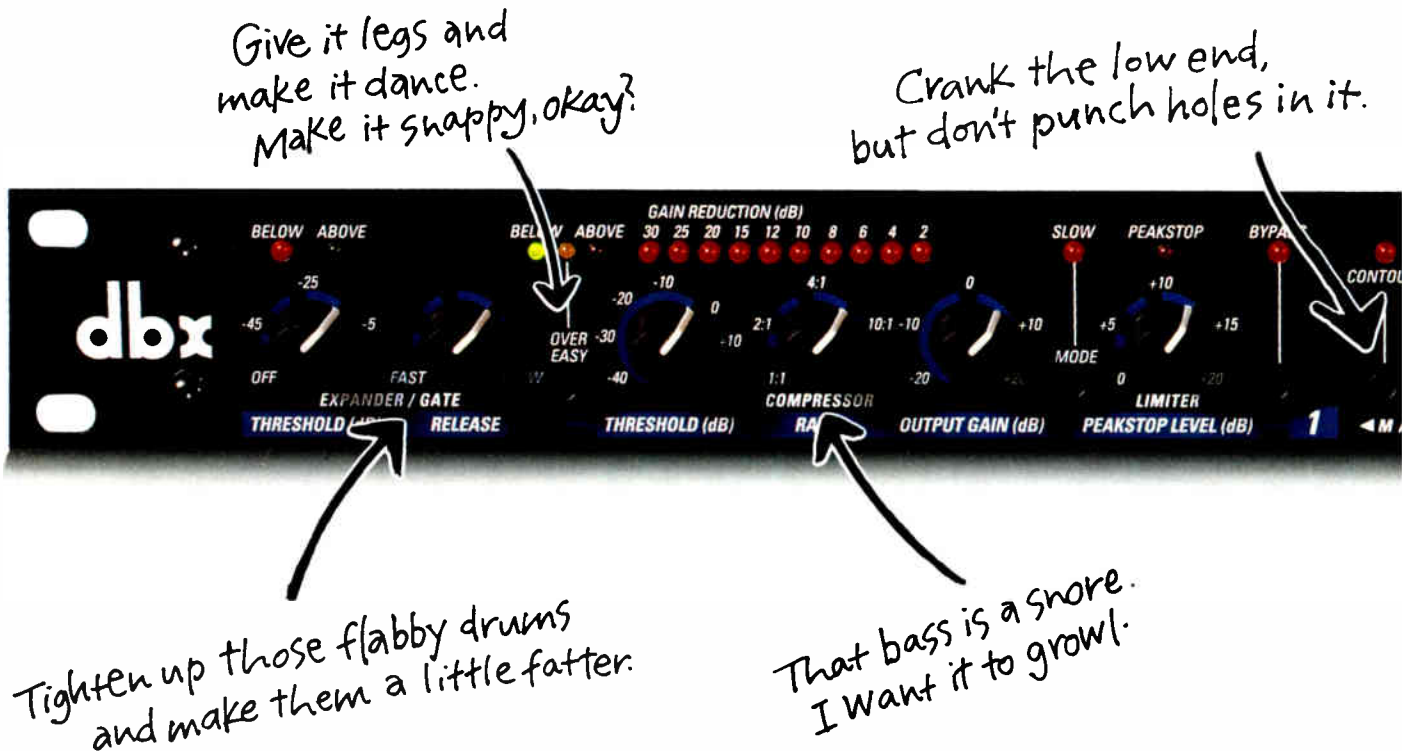
With some 20 years experience as a chief technical engineer, Ken McKim of Trouble Report, a vintage audio services company in upstate New York, has intimate knowledge of tube processing gear, including Teletronix and Fairchild limiters, Pultec equalizers, EMT reverb plates and Telefunken microphone preamplifiers.

"Other than simply not passing signal, a rack unit usually winds up on our bench because it's producing a distorted signal or emitting some form of noise," says McKim. "Often, owners of poorly maintained vintage equipment will notice a 'dark, thin or cloudy' sound. However, in attempting to rationalize their multi-kilobuck investment, these characterizations often become sentiment-

alized into 'fat, sweet and airy.' It doesn't have to be this way. Vintage tube gear can sound great, perhaps more uniquely beautiful than any solid-state device, if it's in perfect working order."

I asked McKim to explain how Trouble Report would evaluate and refurbish a typical piece of tube rack gear. "There are some big clues that indicate a need for refurbishing. Spitting and crackling are obvious giveaways—usually caused by faulty tubes, failing capacitors, bad resistors or oxidized contacts. Hum is likewise intolerable. In a well-maintained tube device, I would expect a barely perceptible trace of 60 cycle evenly mixed into a very low thermal noise floor. Conspicuous hum suggests failure in tube shielding or a filament defect. Likewise, 120 cycle hum would most likely indicate a faulty power supply.

"From there," he continues, "one might encounter a lack of low-frequency energy—possibly related to coupling capacitors. Or perhaps the highs are rolled-off—often a bad cap in a feedback loop. There are many areas in a 30 or 40-year-old circuit



that can and do fail often. We'll fix specific problems in old gear, but we strongly recommend comprehensive refurbishing. Without completely going through the entire circuit, it's hard to bring a unit back to published spec. And the probability is high that it will fail again very soon.

"A major overhaul always includes replacing critical components. All rectifier tubes and power supply filter condensers are changed, and every audio tube is replaced with new, select, properly matched tubes. Finding replacement tubes, however, is often a chore. Many old tubes are obsolete and, when you're lucky enough to find some, the price can be quite high. We're all praying that the Russians will get their act together, or that an American concern shows an interest in recommissioning a closed U.S. plant.

"Other mandatory refurb items include changing, and possibly upgrading, the coupling capacitors, feedback caps, potentiometers, switches, and connectors. Tube sockets should also be cleaned or replaced. Lastly, all wiring should be thoroughly checked and the cabinet

cleaned inside and out.

"In serious cases, we may need to replace transformers. Many audio and power transformers are still available off-the-shelf from vendors like Thordarson and Magnatek. If not, broadline distributors can often cross an older part number to some newer version. If the part just isn't available, we'll interpolate the required spec and find something close or, on occasion, build one. The cost for building a transformer is usually under \$300, which is no more absurd than the notion of tossing that cherished tube limiter in the dumpster."

Aside from repairing vintage rack gear, Trouble Report also performs upgrades. McKim claims that, in some cases, "startling improvements in noise floor, distortion and transient response can be realized. Some of the mods include silicon regulation to tighten up sag under load, converting to a DC filament system, which lowers the noise floor, and careful selection of components and value. With special attention to input, interstage and output transformer damping, we seek to extend and smooth the over-

all performance of the unit well above and below what is generally accepted as the perceptible audio band."

**BRENT AVERILL,
BRENT AVERILL ENTERPRISES**

Between 1979 and 1985 Brent Averill engineered for Michael Jackson, continually modifying Jackson's studio gear, recording all the *Thriller* demos and earning a Platinum album in the process. Says Averill, "I had total freedom to modify and improve Michael's studio between our sessions.

"Since 1979, I've specialized in restoring just three brands of vintage equipment—Neve, API and Calrec. This has allowed me to focus and learn quite a bit about their unique design and sound. Experience tells me what to look out for, and I have a number of standard modifications I perform. After that, my ears tell me what other adjustments might be necessary.

"The Neve 1272 module is my most popular," says Averill. "The 1272 module employs the same transformers and preamplifier circuits found in the Neve 1073 console modules and sounds identical. Ru-

The 166A Can Make Even The Most Unreasonable Request Sound Right.



Egos. Prima donnas. Unreasonable requests. They come with the territory. So at your suggestion we've improved the world's most popular compressor to make it even more accommodating. The new 166A now comes with Hard Knee and OverEasy® compression. Adjustable release times. XLR plugs. Not to mention a hipper, snazzier, 'scuse me while I stare, new look. All of which ensures quicker setup, better sound and less hassle in every session. At least from the equipment.



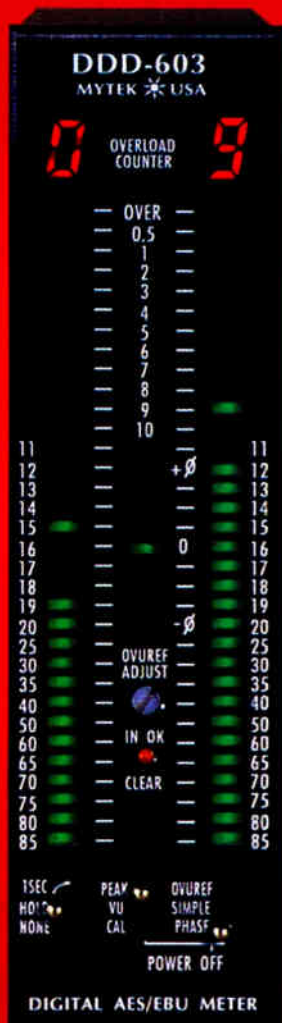
See us at Booth #606

166A COMPRESSOR/LIMITER/GATE

H A Harman International Company

© 1994 dbx Professional Products 8760 South Sandy Parkway, Sandy UT 84107
Phone 801-568-7660 FAX 801-568-7662 International FAX 603-672-4246

What you see
is
what you get!



What you see is the most sophisticated digital AES/EBU and SPDIF meter you can buy. Mytek DDD-603 is a true wysiwyg meter. It is the meter you can always trust:

"1630 compatible overs" *Over or sample counter*
 Peak VU or Hi-res calibration modes *Phase meter*
 Various upgradable software versions *\$1795*

To find out more about the DDD-603 and our line of 20 bit, HDCD, workstation and multichannel A/D and D/A converters call us today or visit our Web page at:

<http://www.ios.com/~mytek/mytek.html>

MYTEK DIGITAL, PO BOX 1023, NEW YORK, NY 10276
 TEL: (212)-388 2677 FAX: (212)- 686 4948

See us at the AES '95 show!

pert Neve used 1272s as his basic building block in every console. They were configured as line amps, mic amps, buffers, sends, summers and more. I've transformed hundreds of 1272s into mic preamps.

"The 1272 modules are similar, in some respects, to most other refurbishing I do. That is, most electrolytic capacitors are changed, switches are cleaned or replaced, coupling caps are replaced with non-polarized types, transistors are tested and replaced, we recheck wiring and connectors and replace any other components that have degraded or failed.

"After everything is working perfectly, I'll mount the 1272 into a chassis with a 1073-type gain switch. I'll then add a DI input and an output level control. The level control emulates a fader on a Neve console. Finally, I wire in a power supply and it's ready to roll. With the price of 1073 modules sky high, this modification makes a lot of sense."

Averill provides a variety of other services. For instance, he says, "I transform API 312 preamp cards into a complete mic preamp that is pin-compatible with API 500-series equalizers. I build 1073 and other 10-series Neve modules into a horizontal rack with new power supply and faceplate. I'm also rebuilding old Calrec console modules and Neve console limiters in the same manner. All of these packages employ Mogami cable, silver solder, new connectors, pots, switches and an oversized power supply. These practices yield consistency, reliability and the original authentic sound at its best."

Brent also builds many of the parts no longer available from the original manufacturers. "I'm always looking for ways to maintain the original look of vintage gear," says Averill. "To achieve it, I've had to build knob inserts, switch caps, faceplates, brackets, plastic parts, meter covers and much more."

Why does Averill spend so much time getting the details correct? "Every good engineer and producer demands recording equipment that is working at its full potential. It's not that old API and Neve preamps are particularly accurate, rather, they have personality, a character like nothing else. It's a joy to recreate these pieces of history so the next generation of recordists and artists can experience the same potential we've relied upon for so long." ■

VINTAGE & RESTORATION RESOURCES

INTERVIEW SUBJECTS

- Michael Spitz, ATR Service Company: 415/574-1165
- Skipper Wise, B.L.U.E.: 818/986-2583
- Ken McKim, Trouble Report: 914/679-8900
- Brent Averill Enterprises: 818/784-2046

GENERAL RESOURCES

- Bob Alach, Alacronics: 617/239-0000 (rack gear, other)
- Atlantic Sound Repair: 508/875-1076 (Lexicon repair)
- Randy Blevins: 615/242-0596 (MCI parts)
- Bill Bradley: 216/723-6494 (tube mics)
- ENAK: 609/589-6186 (RCA ribbon mics)
- Dick Gardner: 612/458-1193 (Shure ribbon mics)
- Bill Hayes: 714/774-0342 (Altec ribbon mics)
- Magnetek: 800/624-6384 (transformers)
- Mercenary Audio: 508/543-0069 (rack gear)
- Stephen Paul Audio: 818/566-8231 (condenser & tube mics)
- Wright's Electronic Service: 206/859-3592 (Ampex parts)

RECORDER REPAIRS & PARTS

- AMP Services: 407/659-4805 (heads, motors, Otari, Sony & Tascam parts)
- Athan Corp.: 415/589-5206 (rollers, motors, circuit cards)
- Bart Gass: 801/674-5363 (3M parts)
- IEM: 708/358-4622 (heads, motors)
- JRF Magnetic Sciences: 201/579-5773 (heads, MCI/Sony & 3M parts)
- Paul McManus: 619/223-1730 (Ampex, 3M & Scully repairs)
- MIDI Precision Motorworks: 508/562-4420 (motors, transports)
- Saki Magnetics: 818/880-4054 (heads)
- Sequoia Electronics: 408/363-1646 (Scully, Metrotech & Ampex parts)
- Sprague Magnetics: 818/994-6602 (heads, Ampex, Otari, MCI, Scully, Tascam & Technics parts)
- TSI: 708/392-2958 (Ampex parts)
- VIF Intl.: 800/848-4428 (Ampex & ITC parts)

masterpieces

In an era of mixed analogue and digital audio technology, the requirements of mastering engineers have never been more precise. It is in response to growing demand that Focusrite has developed two new products, designed to address the key processing functions of equalisation and dynamic control.

The **Blue 315 Mastering EQ** and the **Blue 330 Mastering Compression Limiter** both make use of the highest quality switches for all rotary functions. These provide precise and repeatable settings in units of unequalled build quality, ensuring long-term reliability and performance.

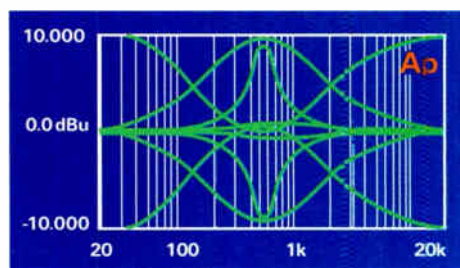
Blue 315

It was the widespread desire to see the legendary A 110 Equaliser available for mastering which led to the creation of the Blue 315. The simple request was for rotary switches on all functions, but of course there is a great deal more to mastering than recallability of rotary switches alone.



Mastering is the process by which a mixed product is refined – the fine-tuning and assembly for particular media. Private discussions with individual mastering engineers, coupled with careful research, revealed many small differences between a programme equaliser and a product designed for top-quality mastering. These differences were the starting point in the design of the impressive 315.

The frequency ranges have been gently expanded to allow for finer resolution and the Q controls boast higher resolution and wider low-end range. In addition, the boost and cuts are designed with small increments close to the null point and larger steps at the extremities. The filters have minimum ripple roll-off and the extra-fine variables of the input gain controls allow for absolute precision.



Mastering will always be a very personal skill, and it is with this in mind that the 315 has been constructed to allow simple adjustments according to individual preference.

This technological 'masterpiece' has been achieved without any sacrifice of Focusrite's traditional standards. You are assured of the best performance parameters (often superior to digital), the highest quality components and construction, along with both transparency of sound and ease of use.

"The Blue EQ is a superb sound sculpting tool. It allows me to develop textures no other equaliser enables you to achieve"

– Tom Coyne, Sterling Sound, New York.

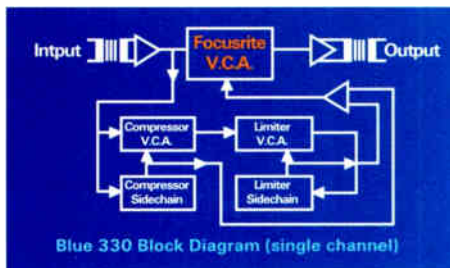
"In almost a year I've used my three old EQ's three times! Any other questions?"

– John Matousek, Masterworks, Los Angeles.

Blue 330

As the product of customer demand and extensive research, the Blue 330 represents the transformation of the Focusrite Red 3 Compressor and Limiter into Mastering format. Unique and unrivalled in all its attributes, we feel it genuinely deserves masterpiece status alongside the 315.

The structure of the circuits is very different to that of other compressors/limiters. The 330 separates the compressing and limiting processes, which are then implemented by one signal path VCA through combined controls signals. You are able to compress and limit in turn, meaning that the limiter only compresses the peaks that remain after the completion of the compression process. The overall result is clean and less intrusive than that which can be achieved



with a compressor that rolls over into limiting.

Our diagram shows that the main signal path has only the Focusrite proprietary VCA between input and output. Its feed is from two separate sidechain circuits – compressor and limiter – each with their own VCA.

Just like the 315, the 330's control ranges and sensitivities have been suitably adjusted to meet the needs of fine-resolution mastering. The input gain and make-up gain controls are of the same sensitivity, allowing tandem contra operation, so that a number of other settings can therefore be raised or lowered without re-adjusting each control.

Both the Blue 315 and the Blue 330 are now available for evaluation, either direct through Focusrite in the UK, or via our appointed distributor elsewhere in the world. To find out more, please contact us today.



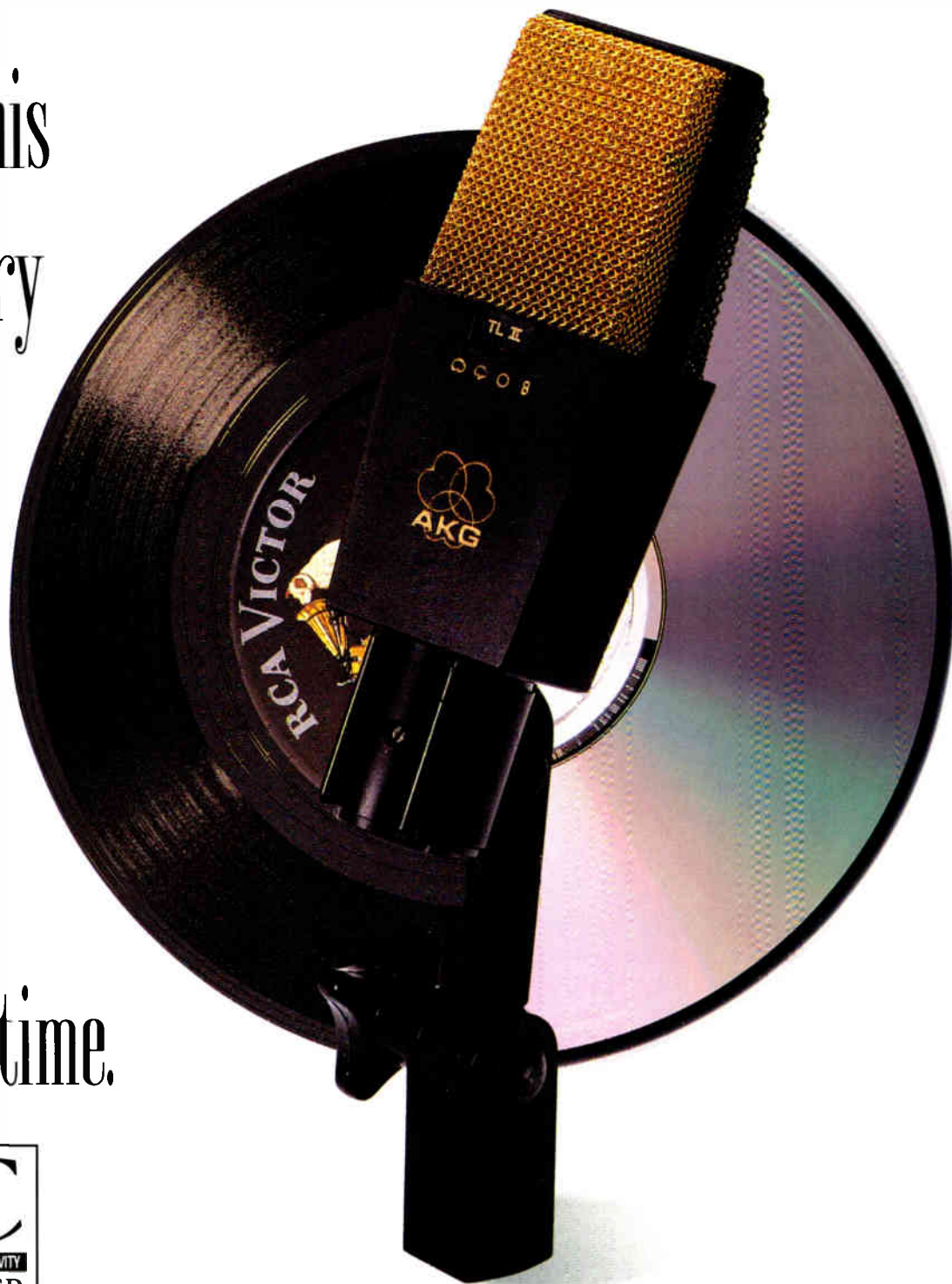
Focusrite Audio Engineering Ltd.

Focusrite Ltd, The Old Mill, Bourne End, Bucks SL8 5AN, England Tel: +44 (0) 1628 819456 Fax: +44 (0) 1628 819443
 Focusrite Inc, 200 Main St, Farmingdale, NY 11735 Tel: (516) 249 1399 Fax: (516) 753 1020
 Focusrite Canada, 100 St. Laurent St, Montreal, QC H2T 1A5 Canada Tel: (514) 947 9112

USE READER SERVICE CARD FOR MORE INFO

See us at AES Booth #112

Sound This
Legendary
Only
Comes
Around
Twice
In A Lifetime.



Introducing the AKG Vintage TL. Not since the 1950's has a microphone so faithfully captured the warmth and character of the original AKG C12 mic. Now the legendary presence and openness are back, thanks to an acoustically perfect re-creation of the original C12 capsule. What's more, transformerless C414 circuitry allows the Vintage TL to exceed all of today's digital requirements. So you get the best of two legendary sounds, in one affordable mic. AKG. It all comes back to the sound.





[1954]



[1955]



[1956]



[1957]



[1958]



[1959]



[1960]



[1961]



[1962]



[1963]

We'd like to thank all the various C12 impersonators over the ensuing years

for painstakingly trying to capture the original C12 sound and, instead, helping to make the originals



worth up to \$7000. We'll take it from here. [1994] It's Back.



AKG stopped making the legendary C12 in 1963. Since then, people have spent decades and small fortunes trying to recreate its remarkably pure sound. Now after thirty years we've decided to bring back the original. So you can get a real C12 at a more realistic price. And all those impersonators can get a life.



H A Harman International Company

See us at AES Booth #424

AKG, 8500 Balboa Blvd., Northridge, CA 91329 USA
Phone: 818-830-8278 Fax: 818-830-7825

DA-88 MODIFICATIONS

Listening Is Believing

BY GARY WOODS

Two of my favorite activities are recording acoustic musicians and comparing the sound of similar pieces of recording gear. Recently, I had an opportunity to combine these passions in an event I called “The Great DA-88 Mod-off”—audio listening tests to compare Tascam’s DA-88 modular digital multitrack with a modified version of the same recorder and with the Sony PCM-800.

The DA-88 modifications were

performed by Jim Williams and Rick Luxenberg of Audio Upgrades in Los Angeles. The modifications consisted primarily of upgrading the converter chips, rebuilding the output filters and changing the op amps from single in-line to dual in-line (see accompanying sidebar for details). The cost is \$800.

The listening test was “blind,” in that the evaluators had no idea which machine they were listening to. As we were dealing with subtle differences in sound, each selection was heard at least twice on each machine. For the sake of brevity, I’ve included only a sample of the com-





Tascam DA-88

The Audio Upgrades DA-88 Modification

This \$800 alteration is fairly extensive. On the A/D card, all the coupling caps are eliminated, except for one set in front of the A/D chip, which is bypassed with a German polypropylene film cap, lowering the LF roll-off point by 2 Hz. The Analog Devices DA1865N D/A converter chips are replaced with higher-spec "J" grade chips, and the two-pole Butterworth output filters are rebuilt into two-pole Bessel filters. The Bessel is a linear phase filter, which gives excellent square wave response and half the phase shift of the Butterworth. The phase shift drops to under 45 degrees at 20 kHz. The op amps are changed from an 8-pin, single in-line package to a dual in-line, four-pin on a side, standard chip using 24 daughter circuit boards. The replacement op amps use high-speed, video-type linear technology, with a 600-volt slew rate. For more information, contact Audio Upgrades, 6410 Matilija, Van Nuys, CA 91401; (818) 353-7418. ■

ments on each sound source.

The site for our demonstration was Ocean Studios, a relatively new facility in Burbank, Calif. Originally constructed in 1926 as a Chrysler dealership, Ocean is a large brick building with high ceilings and skylights, which give it a warm, airy feeling. The control room—designed by the Waterland Group's Vincent Van Hauff, who designed A&M and Conway's "A" rooms—has a customized Neve 8108 console. Large monitors are by TAD; the near-fields are Yamaha NS-10Ms. Microphone preamps are Langevin tube and API solid-state. The mic closet features tube A&Gs, Neumanns, Telefunken and many more. So far, the studio has been used by producers such as

David Foster, James Guthrie and Maurice White and artists including Peter Cetera, Chaka Khan, Dionne Warwick and 4 Non Blondes.

For the tests, we recorded a variety of artists, including vocalists Dick Monda and Nancy Rando; percussionist Bob Leatherbarrow; guitarist Jim Fox; violinist Kirsten Fife; cellist Stephanie Fife; upright bassist Anne Atkins; bassoonist Chuck Fernandez; trumpeter Duane Floch; and Steve Durnin on French horn. All are in-demand session performers in Los Angeles and have impressive credits in film, TV, symphony, records and stage. Joining these players in evaluating the equipment were Freddie Piro (of Ambrosia fame and part owner of Ocean), guitarist/producer Drew Haney and myself.



Sony PCM-800

By their very nature, listening tests are subjective—largely unscientific and highly unpredictable—much the same as musical tastes. In

some examples, the players comment on the reproduction of their own instruments, which adds an insight into the testing. Sometimes,

what sounds “crisp” to one set of ears sounds “brittle” to another, which is exactly what makes such tests so interesting. With that in mind, we begin with...

Mysteries of the Universe

Listening tests are entertaining and sometimes even educational. One of the mysteries uncovered by these tests was the sonic difference between the stock DA-88 and the Sony PCM-800, despite the fact that these machines have identical converters. Digitally, other than a few synchronization and interfacing features, the two are electronically similar. Puzzled by such differences, the panelists at one point actually added a second PCM-800 to the equation. This didn't solve the riddle, as the second PCM-800 had the same sonic footprint as the first. Other PCM-800 users around the nation

have also reported subtle differences between the DA-88 and Sony PCM-800.

Are such differences merely a case of mass hysteria on the part of the panel? Not at all. In fact, the PCM-800's perception as “darker” and the DA-88's as “brighter” provides an important clue to the mystery. Though the machines have identical converters and DSP circuitry, minor differences in the way the two decks process master clock and internal timing information can create small—but noticeable—differences in reproduction, particularly in the 10kHz (and up) “air” band. So which is the “right” machine? The one that sounds best to your own ears and preferences.

—George Petersen

MALE VOCAL (DICK MONDA)

Sony PCM-800

Durnin: “I like the way this machine rolls off for vocals.”

Monda: “Clips midrange.”

Rando: “Singer is in your face. Great.”

Stock DA-88

Durnin: “Sounds a bit muffled.”

Monda: “Most natural sound to what I expected myself to sound like.”

Piro: “First choice.”

Modified DA-88

Durnin: “Sounds good and flat for response curve.”

Monda: “Warmest.”

Rando: “Not much response in the top end, duller.”

FEMALE VOCAL (NANCY RANDO)

Sony PCM-800

Haney: “Sounds somewhat mid-rangey, not much brightness.”

Woods: “Sounds darker. The top is not present, and mids are more pro-

—CONTINUED ON PAGE 63

Third-Party Accessories For the DA-88

When a popular product comes along, third-party providers often devise and manufacture accessories and add-ons that make the original product even better. Here's a look at what some third-party providers have developed to aid the growing ranks of Hi-8mm MDM enthusiasts.

MIDI sequencers provided one of the earliest platforms for integrating unrelated products. The MIDI Machine Control (MMC) specification is a common protocol allowing software developers to integrate tape transport commands for controlling the DA-88 and other MMC-compatible products into the sequencer-based working environment. Before using MMC to control the DA-88, you'll need either Tascam's SY-88 controller card or its new MMC-88 synchronizer. Listed here are some software companies

that implement DA-88/MMC support into their products.

EMagic (916/477-1051) is working on a template that works in the Environment Window of Notator Logic to control any and all functions of the DA-88. Currently, the basic transport and extended features (such as track slip) of the MMC-88 are accessible via Logic, but the template is more elegant. The template is free to registered owners and will be bundled with Version 2.5, the next release.

According to Opcode Systems (415/856-3333), the company's Vision, Studio Vision A/V and Studio Vision Pro sequencers support MCC for DA-88 control, and all the basic transport functions are available from software.

Mark of the Unicorn's (617/576-2760) Performer and Digital Performer software control the normal DA-88 transport functions. MOTU also promises a Custom Console that uses onscreen sliders and buttons to control the so-called High-

er Functions of the DA-88. These functions, which are accessed through Continuous Controller or Sysex MIDI commands, include such things as track advance and delay.

Twelve Tone Systems' (617/926-2480) Cakewalk Sequencer supports MMC. Twelve Tone also makes available an MMC tutorial file including information on advanced topics like automated punch-in and out. This file is available on CompuServe.

Hardware controllers, especially from third parties, have become popular for handling transport functions. JL Cooper Electronics' (310/306-4131) CuePoint is a universal autolocator that uses MMC to communicate with the DA-88, other MDMs and Tascam's DA-60 timecode DAT machine. Access to the DA-88 is via the MIDI port on the SY-88 sync card or MMC-88. CuePoint offers 100 locate points, tape transport control,

—CONTINUED ON PAGE 62



MTV Europe and Allen & Heath
An association of technical excellence

GL4

Everyday, audio professionals everywhere are finding the GL4 superior in quality of audio path, ease of operation, and for flexibility in front of house and monitor applications, and overall value. Contact your professional audio dealer today and audition the console that's raising eyebrows around the globe.

**ALLEN
&
HEATH**

H A Harman International Company

See us at AES Booth #606

Allen & Heath: 8760 South Sandy Parkway • Sandy, UT 84070 • (801) 568-7660 • Fax (801) 568-7662
World Radio History

—FROM PAGE 60, DA-88 ACCESSORIES

track-arming functions, jog/shuttle wheel, and digital editing functions between two or more units. Optional Macintosh software converts the tempo and meter changes of a MIDI file into locate points. A new CuePoint interface allows communication with video and analog tape recorders, using Sony 9-pin protocol. Retail is \$849.

The Adams-Smith (508/562-3801) Super Controller is its next-generation control system. This device offers sync port control of the DA-88: Via the serial port of one unit, up to 16 DA-88s can be controlled, including arming tracks 1-128, activating punch-in and outs, etc. Two versions of the system are available—the Editing version retails for \$17,800; the Machine Control version is \$12,900.

Mark of the Unicorn's Digital Time Piece is a synchronizer that converts sync formats, MMC and SMPTE for precisely locking multiple digital audio systems—either

tape- or disk-based. The unit converts any format of longitudinal SMPTE timecode to word clock and has an internal time base that generates SMPTE, MMC and word clock. It converts SMPTE to/from ADAT sync, Sony 9-pin and MTC.

Video Media (408/227-9977), the originators of the V-LAN Control Network—which can control and synchronize up to 31 devices, including video and audio—have recently added control of ADATs and DA-88s to the system. A typical system is about \$6,000, including all the software and hardware, for control of about six different units. The company's Web site (www.video-media.com) displays a picture of the products and serves as an online catalog.

The Grass Valley Group (916/478-3800) offers a means of using the DA-88 to play back or record in the video post environment. The DA-88 can be controlled through either their VPE product line or Sabre Editing System. Up to

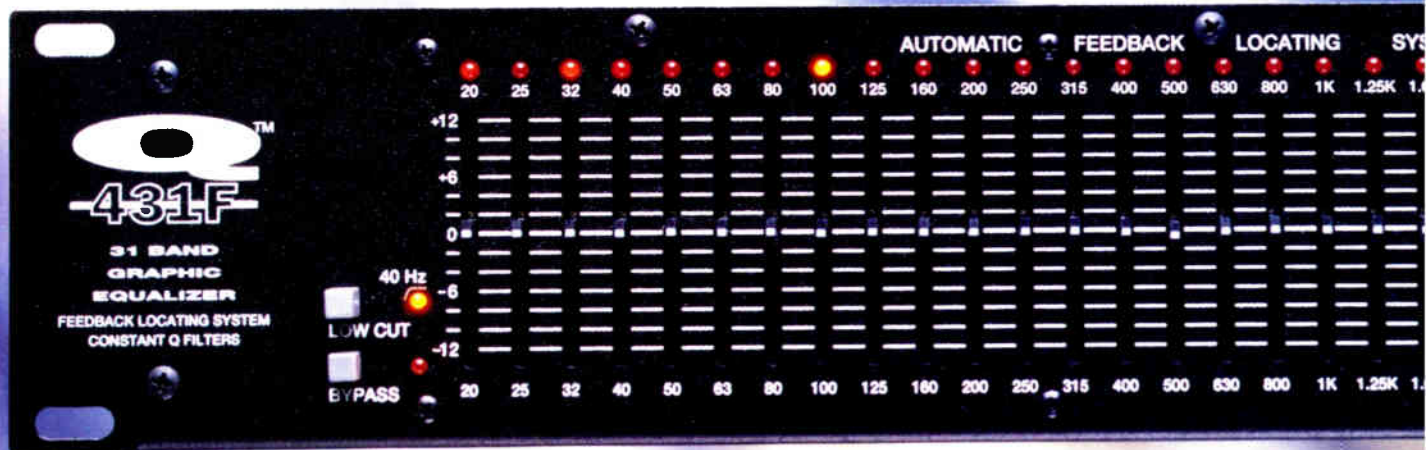
four tracks are controlled, so accessing all eight tracks requires some manual (front panel) selection. Control is via the SY-88's RS-422 port.

Soundmaster (416/741-7057) markets a DA-88 interface for its Integrated Operations Nucleus (ION) system. The ION interface puts the DA-88 under the serial control of the Soundmaster SYNCRO synchronizer, allowing DA-88 operations to be remotely controlled via a PC host computer and scheduled to occur at precise SMPTE timecode locations. The system also provides full synchronization control of the DA-88 and any number of other audio, video or film transports. Up to eight groups of 16 DA-88 units could be controlled in this manner, totalling 128 machines, or 1,024 discrete digital tracks.

Mixing consoles—Some manufacturers place transport controls directly into their boards. Euphonix (415/855-0400) builds digitally con-

—CONTINUED ON PAGE 67

BE ILLUMINATED



- When feedback occurs the Feedback Locator™ automatically lights an LED over the correct slider. The LED will stay lit for a few seconds if a feedback stops before an adjustment is made. If the feedback frequency is between two sliders, the Feedback Locator will light the two appropriate LEDs, with variations in LED intensity to indicate if the feedback frequency is closer to one slider or the other. And if a different feedback occurs while an LED is lit, the Feedback Locator instantly lights

—FROM PAGE 60, DA-88
nounced.”

Rando: “Great reproduction, singer very present.”

Stock DA-88

Haney: “Much brighter than number one (Sony PCM-800). There is some distortion on the high end.”

Monda: “Good reproduction of natural sound.”

Fernandez: “This machine treats voices very nicely. A little warmer sound.”

Modified DA-88

Haney: “The voice is warmer, and the highs do not sound shrill or distorted.”

Woods: “The voice sounds natural. It is what I heard recorded.”

Rando: “Sounds thin, overall duller, sounds like there’s information missing.”

PIANO (NANCY RANDO)

Sony PCM-800

Durnin: “Warm bottom, missing some ‘air’ at the top.”

Fox: “Sounds somewhat darker than I would like. Highs are not as present.”

Rando: “Clean, good sustain response. Sounded most realistic.”

Stock DA-88

Durnin: “Good mid, lacking both top and bottom transients.”

Fox: “Better upper end. Slightly harsh.”

Piro: “Bottom warmer, top brighter than number one (Sony PCM-800).”

Modified DA-88

Durnin: “Best overtones, nice transients, best overall sound.”

Fox: “More even, and somewhat more ‘analog.’”

Piro: “Bottom not as tight as number two (stock DA-88).”

PERCUSSION

(BOB LEATHERBARROW)

Sony PCM-800

Fernandez: “Picks up the biggest variety, widest range.”

Rando: “Can feel sticks hit cymbals and each ring of the bell tree.”

Haney: “Many of the overtones seemed lost on the cymbal and mark tree.”

Stock DA-88

Piro: “First choice.”

Rando: “Don’t hear ring of transients as well. Less detail and articulation.”

Haney: “The cymbal was more lively; the highs, however, are some-

what harsh.”

Modified DA-88

Fernandez: “Almost as full as number one (Sony PCM-800), better than number two (stock DA-88).”

Rando: “Clean, good articulation, but a little dull on the high end.”

Haney: “The cymbal was fantastic, the overtones from the cymbal and bell were easy to hear.”

GUITAR (JIM FOX)

Sony PCM-800

Rando: “Sparkly, great presence.”

Woods: “Seems to be what designers had in mind. Sounds best on this application.”

Fernandez: “Best, most open.”

Stock DA-88

Durnin: “Fundamental tones are good.”

Woods: “A problem with bringing out stray harmonics.”

Fernandez: “Slightly covered, not as many highs.”

Modified DA-88

Rando: “Cloaked, further back from listener.”

Woods: “Best of the three.”

Fernandez: “Close to the sound of number one (Sony PCM-800) but not

THE Q 431F EQUALIZER WITH AUTOMATIC FEEDBACK LOCATING SYSTEM



\$299.99

- 31-bands of 1/3 octave graphic equalization, standard ISO centers, +12dB cut/boost.
- Low cut filter and Bypass switches with LEDs.
- 20Hz to 20kHz bandwidth.
- Independent overall gain control.
- Two rack spaces.
- Shielded internal power supply.
- +18 dB max input/output levels.

the other LED. • The Constant Q filters control slider frequency-band width so slider adjustments won't affect adjacent slider frequencies. Constant Q filters also improve headroom at high cut/boost levels. Compare to other EQs using inferior gyrator circuitry which doesn't limit band width.

See us at AES Booth #544

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.A. only) Send check or money order to: Monitor Magazine, Peavey Electronics, 211A Street, Meridian, MS 39301(601) 483-5365 • Fax: 484-1278 • 1995

USE READER SERVICE CARD FOR MORE INFO

as natural."

VIOLIN (KIRSTEN FIFE)

Sony PCM-800

Durnin: "Nice transients, top end a bit rough."

Monda: "Muted highs, distorted the violin's overtones."

Fernandez: "Very sensitive, most natural sound."

Stock DA-88

Durnin: "Midrange nice on pizzicato."

Monda: "Slight midrange distortion."

Fernandez: "Seemed warmer, fewer highs."

Modified DA-88

Durnin: "Top end smoother, nice transients, top end transients very smooth."

Monda: "Sounded most like a violin."

Fernandez: "Warmer, again fewer highs in sound."

CELLO (STEPHANIE FIFE)

Sony PCM-800

Fernandez: "Again, most open and natural sound."

Fox: "Harsh, makes the cello sound more nasal than it is."

Durnin: "Same lack of air."

Stock DA-88

Fernandez: "Muffled sound, slightly covered."

Fox: "Seems to bring out whatever subtleties may exist in the performance."

Durnin: "Sound is warmer, good for strings."

Modified DA-88

Fernandez: "Better than number two (stock DA-88), more covered than number one (Sony PCM-800)."

Fox: "Great! Everything is there, with nothing pushed."

Durnin: "Can really hear the rosin sound."

ACOUSTIC BASS (ANNE ATKINS)

Sony PCM-800

Durnin: "Warm."

Fernandez: "Fine, but other machines are better."

Rando: "Very real-sounding, authentic."

Stock DA-88

Durnin: "Bottom sounds good, but less warm, nice bow sounds."

Fernandez: "More bows to this one, fuller tone."

Rando: "Don't hear attack of 'pizz' very well. Don't feel rumble of low-

est frequencies."

Modified DA-88

Durnin: "Best of both worlds, gives attack and bowing sound, yet adds some warm transients."

Fernandez: "Biggest, fullest sound; this machine likes low instruments!"

Piro: "Overall best of three machines."

BASSOON (CHUCK FERNANDEZ)

Sony PCM-800

Woods: "The lows sound fine."

Durnin: "Best bottom, nice and warm."

Rando: "Could hear top end of valves clicking—astonishing. Really feel the player in front of me."

Stock DA-88

Woods: "Better, the definition is good. The high end is slightly gritty or distorted."

Fernandez: "Harmonics [are] best on this machine."

Piro: "I like number two (stock DA-88) better than number one (Sony PCM-800). Seems to pick more up."

Modified DA-88

Woods: "The sound is very good. Mids are slightly hotter on this ma-

—CONTINUED ON PAGE 68



HOW THE INDUSTRY HAS RECEIVED OUR NEW FERROFLUIDS.

See us at AES Booth #1169

The audio world enjoys added performance with FerroSound.

The new generation of FerroSound ferrofluids represents the great leap forward that the audio industry has been waiting for.

These innovative fluids enable speakers to match ongoing improvements in the rest of the sound system. Applied to the voice coil, they withstand unprecedented sound pressure levels and heat. They also reduce spectral contamination (distortion) and power compression effects.

Results: longer-lived speakers with greater dynamic range — and an authentic performance boost that's audible from first note to last.

No wonder knowledgeable listeners in home hi-fi, auto sound, and even professional audio are jumping at the chance to audition speakers with FerroSound. For more information, call today at 603/883-9800 — or fax 603/883-2308.



Ferrofluidics Corporation, 40 Simon Street, Nashua, NH 03061

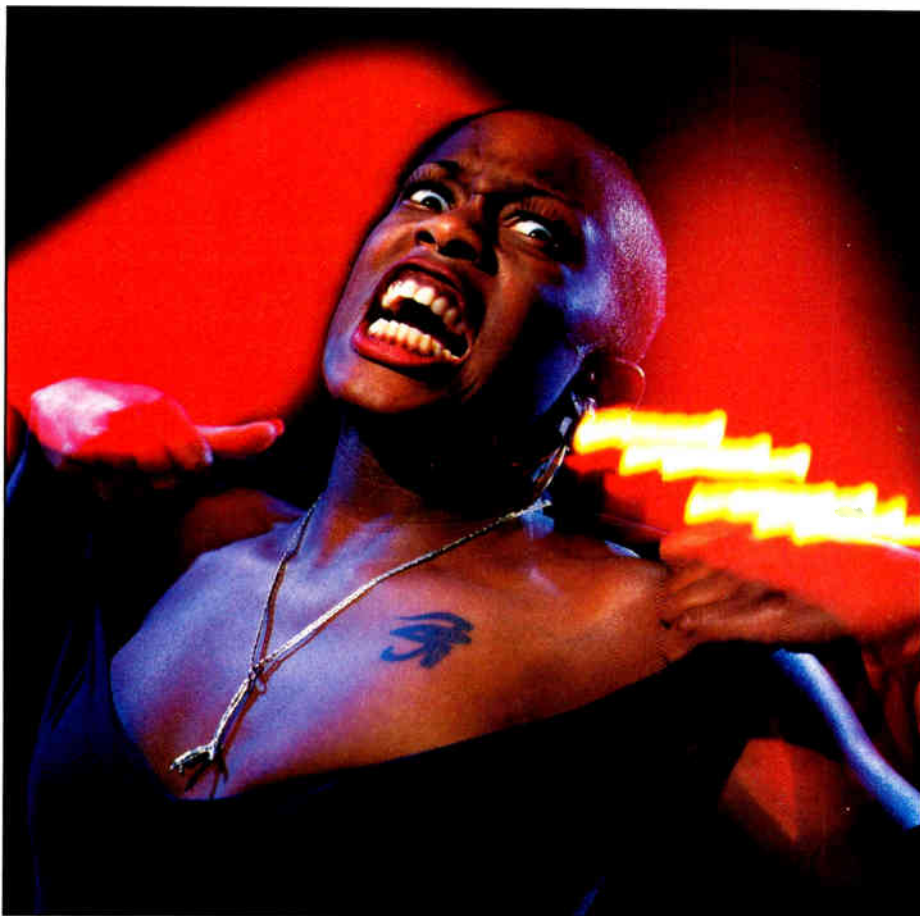
© 1994. FerroSound and related graphics are registered trademarks of Ferrofluidics Corp.

USE READER SERVICE CARD FOR MORE INFO

World Radio History

**With Dolby Fax digital audio,
you can hear artists that are out of this world.**

Without ever leaving your chair.



There's a hot new talent that you must hear right now. Or a remix that needs your immediate OK. You can't wait for air express. And you *won't* drive across town.

The Dolby Fax™ system provides the solution. Using Dolby digital audio coding over economical ISDN lines, it allows you to link facilities

across the continent or around the world in real time, all with the highest audio quality available.

Whether you're auditioning new artists, overdubbing with regional talent, or checking a remix for approval, the Dolby Fax saves you time, money and expensive travel.

Contact Dolby Laboratories today for a

free interactive brochure-on-disk available in PC and Macintosh formats.

1-800-365-2973

Dolby Laboratories Inc.
Wootton Bassett, Wiltshire SN4 8QJ England Tel: 01793-842100
Fax: 01793-842101
100 Potrero Ave. San Francisco, CA 94103-4813 Tel: 415-558-0200
Fax: 415-863-1373 e-mail: info@dolby.com
Dolby, Dolby Fax, and the double-D symbol are trademarks of
Dolby Laboratories Licensing Corporation © 1995 Dolby Laboratories S95/10472

See us at AES Booth #318

DD Dolby® FAX™
DIGITAL AUDIO TELECOMMUNICATIONS

USE READER SERVICE CARD FOR MORE INFO

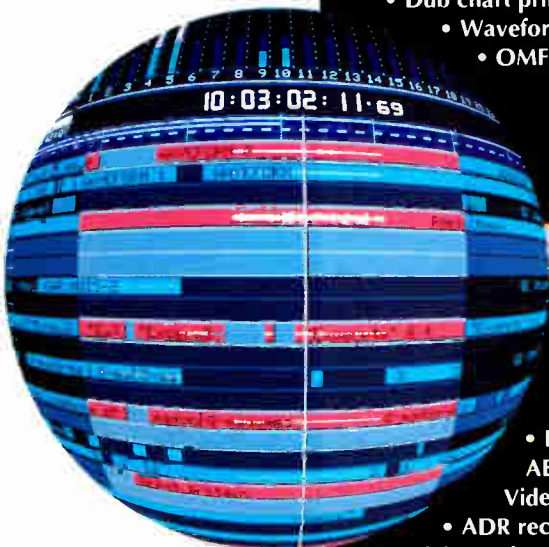
World Radio History

Add more muscle

DIGITAL AUDIO
20
YEARS OF INNOVATION
1975 - 1995

with the power of the Mfx3 workstation
(the multi-track replacement)

- 24 Track I/O in Digital and Analog (AES EBU, SPDIF, Yamaha)
- 24 Tracks with realtime crossfades on every track from one HDD
- Integrated video and audio machine control
- Hard disk video option
- Instant zoom from 6 frames to 8 hours
- Scrolling waveforms on all tracks
- Dedicated controller
- Object oriented editing environment
- Overdub and takes management
- Comprehensive input routing
- Stereo mix output
- Record direct to MOD
- Edit 24 tracks from MOD
- EDL auto conform option
- Forward and reverse playback
- Four band parametric clip based EQ
- Timefx™ compression expansion, Varispeed, Varipitch software
- Powerful audio scrubbing - with Audio Freeze Frame
 - Dub chart printing
 - Waveform reverse
 - OMF



- External sync to LTC, 9 Pin, AES/EBU, Word Clock, Video Black
- ADR recording software
- Highspeed networking option.

See us at AES Booth #856

mfx3

USA Phone 1800-4-FAIRLIGHT, Los Angeles Phone 310-287 1400 Fax 310-287 0200
Europe - London Phone 0171-267 3323 Fax 0171-267 0919
Asia - Sydney Phone 02-9975 1230 Fax 02- 9975 1368
Tokyo Phone 3-5450 8531 Fax 3-5450 8530

fairlight

THE BENCHMARK IN DIGITAL AUDIO

USE READER SERVICE CARD FOR MORE INFO



—FROM PAGE 62 DA-88 ACCESSORIES

trolled analog mixers with integrated transport control. Euphonix was involved with Tascam from the beginning in supporting the DA-88, usually using MMC in large multitrack situations. Controlling all the transports from the desk makes the system more like a large workstation rather than two separate systems, which speeds up operations

considerably.

Featured in the August *Mix* and slated for year-end deliveries is Yamaha's (714-522-9011) 02XR, a digital, 8-bus recording console targeted at under \$10,000. The 24x16x8x2 mixer has 24 analog inputs and 16 digital tape returns, for up to 40 inputs. Standard features include 100mm moving faders, interchangeable digital I/O cards

(ADAT, TDIF-1 or AES EBU), two onboard effects processors, eight aux sends, dynamics processors on all inputs and outputs, 4-band parametric EQ and all console functions automatable to SMPTE or MTC.

Rocktron's (810-853-3055) Project X is a completely digital mixing console, designed to accommodate the TDIF-1 or ADAT interface. It is

—CONTINUED ON PAGE 68

Ace Music's 40 years of experience says a satisfied customer is the bottom line! If you're not one of our customers now, give us a call...
You'll want to be!



We **REALLY** are a full-line music store- We understand your time is money, so we let you ask the questions.
Try us...
Call us today!

As professionals, we offer you concise information, a great price, and a new unit in a factory sealed box.
30-Day return policy!

Ace Music Center
13630 West Dixie Hwy.
North Miami, FL 33161

(305) 892-2733

Fax: (305) 893-7934
Mon.-Fri. 10:00-5:00 EST
All major credit cards accepted

an in-line design, but unlike most, where you have limited EQ on one half of the channel strip, the Project X system will offer complete signal processing on both halves. This means that each channel will have digital Hush, 4-band parametric EQ, compression with sidechain inserts for de-essing, digital delay for time correction, and noise gates. Also, there will be two onboard effects processors, based on Rocktron's Intelliverb/Intelliflex. A full system—64 channels and 24 record buses, with 100% automation—will retail between \$30,000 and \$35,000.

Synthesizers are another area where two types of products have found a meeting ground. Kurzweil's (617/890-2929) DMTi Digital Multi-track interface is a box allowing the direct transfer of eight channels of digital audio from its K2500 sampling/synthesis workstation to DA-88 or ADAT. It can take two pairs of AES/EBU inputs and convert them to an S/PDIF out or do sample-rate conversion. Using two DMTi units, you could configure one to be ADAT and one be Tascam and bidirectionally convert one format to the other. Also, two channels of digital audio can be sent into the K2500, use its DSP capabilities, and be routed back into the recorder. Pricing is under \$1,500, with cards for DA-88 or ADAT at around \$400 each.

Hard disk editors are commonplace in most studios, and many manufacturers now provide means for transferring tracks between tape-based MDMs and disk-based DAWs.

Sonic Solutions (415/893-8000) now offers a \$1,595 interface box for going directly into/out of a Sonic System via TDIF-1. E-mu Systems (408/438-1921) plans a TDIF-1 interface card option for its 8-channel Darwin workstation. Studer/Editech's (415/326-7030) Dyaxis has implemented the TDIF interface, and no extra hardware or software is required, as it's included with the basic package. Soundscape (805/495-7375) plans a TDIF-1 interface option for its SSHDR1 workstation in the next few months. Digital Audio Labs (612/473-7626) offers TDIF-1 digital I/O for its brand-new V8 workstation. New from Roland (213/685-5141) is the DIF-800 interface for its DM-800 recorder/ editor, which includes not only TDIF-1 track transfers, but also RS-422 control capability. Otari's (415/341-5900) UFC-

24 is a universal format converter that converts up to 24 channels of ProDigi, SDIF-2, ADAT lightpipe, Tascam TDIF-1 and (optionally) AES/EBU I/O. Retail is \$1,995.

Spectral's (206/487-2931) Translator digital format converter permits direct transfers between DA-88, ADAT, Yamaha Y2 and Spectral's SMDAI workstation formats. Its new Translator Plus adds four pairs of stereo AES/EBU I/O to the digital audio formats handled by the Translator. Both units offer real-time bidirectional digital audio translation between eight channels of any of the supported formats.

Finally, in the area of digital audio and digital video, Avid Technology (508/640-6789) uses DA-88 compatible MIDI Machine Control for transport functions in its high-end digital video editors.

Outboard gear—Drawmer's Model 1962 (distributed by QMI, 508/435-3666) is a very analog, tube-based, 2-channel mic preamp/equalizer/peak limiter/ mixer/dynamic enhancer with analog and (optional) AES/EBU, S/PDIF and TDIF-1 outputs.

Studer's D19 MicAD is an 8-channel mic/line preamp with built-in A/D converters and outputs to AES/EBU, SDIF, ADAT and Tascam TDIF-1. It has manual (or MIDI!) control of levels, 20-bit A/D converters and switchable DSP dithering with noise shaping for use with 16-bit decks or workstations.

Apogee Electronics' (310/915-1000) AD-1000 is a 20-bit A/D converter that interfaces directly with the TDIF connector. This means that you don't need one of Tascam's IF-88A interfaces and can bypass the internal converters and apply Apogee's UV22 coding to retain much of that 20-bit resolution on a 16-bit recording. The AD-1000 also has two microphone preamplifiers with phantom power. Retail is \$2,995. Just announced is the AD-8000 (\$4,400), an 8-channel A/D converter featuring Apogee's latest 20-bit resolution technology and UV22 coding. Interfaces include AES/EBU and optional cards for TDIF, ADAT and other digital formats.

British manufacturer PrismSound (distributed by Audio Intervisual Design, 213/845-1155) offers the MR-2024T, an interface/adaptor for recording eight 16-bit channels, six 20-bit channels or four 24-bit channels on the DA-88. The unit has four pairs of AES/EBU digital inputs and

outputs, an S/PDIF I/O pair and four word sync outs. Two TDIF-1 digital ports provide connection to the main DA-88 and a backup deck, if desired. Applications include 20/24-bit music recording (or as a high-resolution mixdown deck), layback to 20-bit digital VTRs and 4- or 6-channel mixing for film/video surround sound.

Rane Corporation's (206/355-6000) PaqRat allows storing two channels of 20-bit digital audio on a DA-88 or ADAT. PaqRat takes the 20-bit signal from your outboard converter and splits it into two 20-bit channels on four tracks of your MDM, so you can record on either channels 1-4, or 5-8. The device is primarily for those who want to do 20-bit masters or would like to back up their hard drives. It also provides a 16-bit dithered output for a smooth transition from 20- to 16-bit for mastering. The Tascam version is \$899.

So, there you have it: some, but by no means all, of the third-party providers for the Tascam DA-88. Also, several manufacturers talked about some exciting developments that they didn't want reported yet, and I'm sure that we'll be seeing more at this month's AES in New York.

—Gary Woods

chine."

Fernandez: "Best recording, warmer, richest sound."

Rando: "Seems colored, not as realistic. More removed from the listener, duller, thinner."

TRUMPET (DUANE FLOCH)

Sony PCM-800

Haney: "A lot of midrange, would make me reach for the EQ."

Fox: "Very fine reproduction."

Durnin: "Top end rolls off."

Stock DA-88

Haney: "Bright, but not bad. I would roll off some of the bright edge."

Fox: "Slightly bright, a little harsh."

Durnin: "Lacks brassy overtones, smoothes tones too much."

Modified DA-88

Haney: "Warm and rich-sounding, seemed more natural."

Fox: "Not as bright as number one (Sony PCM-800), better than number two (stock DA-88)."

Durnin: "Lets the air through, good brass overtones, can really hear the 'live' quality."

FRENCH HORN (STEVE DURNIN)

Sony PCM-800

Woods: "Nice midrange. Round and full."

Rando: "Very clean."

Fernandez: "Very open and full."

Stock DA-88

Woods: "Slightly better than number one (Sony PCM-800). Highs are nice and clear."

Rando: "Horn sounds 'splattier,' 'dirtier.'"

Piro: "First choice."

Modified DA-88

Woods: "Real—sounds like a horn from beginning to end."

Rando: "Clean sound."

Fernandez: "Warmest sound of the three, smoothest."

OVERALL EVALUATIONS

Sony PCM-800

Durnin: "This machine had a warm bottom, rolled off the top end nicely for many instruments, but lacked very top 'air' when sometimes needed."

Woods: "This machine consistently sounded darker than the other two."

Rando: "My favorite; open, lots of air and presence. Great detail."

Monda: "My overall least favorite."

Stock DA-88

Durnin: "Machine captured fundamentals well but lacked ability to capture transients."

Woods: "This machine tended toward the brighter side. Its upper end was more accentuated than the other two."

Rando: "My least favorite. Has nastier sound, duller, more artificial."

Monda: "This machine seemed to give the best results overall."

Modified DA-88

Durnin: "Best frequency-to-level ratio, collected transients best, with both low and high frequencies."

Woods: "It had a warm analog sound, yet its clarity and detail were still there."

Rando: "Good, clean second place. Wanted more detail, didn't feel total sound was replicated."

Monda: "Very close second."

• • •

The bottom line is that all of these machines sounded very, very good. The differences were small, and only really apparent when compared directly. I would be happy to have any of these in my studio. In summary,

you should make your decision after listening to the machines yourself.

CREDITS AND THANKS

The Sony PCM-800 was provided by Project One, North Hollywood. The stock DA-88 came directly from Tascam (thanks to Roger Maycock), and the DB25 connectors for the balanced ins and outs on the DA-88s were provided by Monster Cable. I selected them for this demo because of the tight twisted pair construction with a double-wrapped foil shield on each channel. The connectors provided excellent noise and crosstalk rejection.

The most important credit for the whole demonstration goes to my friend, composer/producer Jay Rando. He came up with the original idea, talked Tascam into letting us do it, found the studio to donate the time, and most important, every time I said, "This ain't gonna happen," he went out and made it happen. ■

Gary Woods, a composer, arranger and orchestrator who has worked on The Mod Squad, The Love Boat and with artists ranging from Whitney Houston to Jim Nabors, serves on the board of directors of the Society of Composers and Lyricists.

THE LEGEND CONTINUES....

Two channels of exceptional equalisation, with unique 'personality'.

1961
VACUUM TUBE
EQUALISER

- Four main equaliser sections, each having six switchable, overlapping frequencies, variable bandwidth from 0.3 Octave to 3 Octaves and ± 18 dB of boost and cut.
- Separate active tube stages for each of the four main equaliser sections for increased harmonic clarity.
- Two additional active tube stages for each output.
- Variable high pass and low pass filter sections with 12dB/Oct 'roll-off'
- Input level control from -20dB to +20dB to optimise signal level and drive the tubes 'soft' or 'hot'.



Q.M.I.
25 SOUTH STREET, HOPKINTON,
MA 01748, USA.
TEL: (508) 435 3666 FAX: (508) 435 4243

CANADA
Gerraudio
Tel: (416) 696 2779
Fax: (416) 467 5819

MEXICO
Audio Dynamics
Tel: (5) 538 0050
Fax: (5) 519 6977

Drawmer Tel: +44 924 378669 Fax: +44 924 290460

Drawmer

See us at AES Booth #1106

USE READER SERVICE CARD FOR MORE INFO

Can You Say Compression?

MIXING & MASTERING

For Radio

If you've spent endless hours in the studio producing the ultimate single, the chart-topper that will send a zillion listeners into an appreciative trance (and make you filthy rich), it may come as a shock to hear your pop opus on the radio.

It is a good bet that many of the most formative musical moments in our lives arrived courtesy of crappy little transistor boxes, single dashboard speaker car radios and other less than ideal audio setups. But none of us as kids realized the degree of processed sonic mangling that stations employed to deliver those magical sounds.

In their neverending quest to find and establish station identity (and meet FCC regulations), radio stations

commonly use staggering amounts of compression. One result is that, unless you structure the dynamics of your mix very carefully, most radio stations will apply enough compression and limiting to turn your mix inside out. How, then, can one mix a final master so that the inevitable radio compression will not radically alter your balances?

We asked some producers, engineers and mastering engineers to speak their minds on the subject. Our thanks to John Agnello, Michael Brauer, Greg Calbi, Richard Dodd, Don Gehman, Brian Lee and Benny Quinn for their time and insight in contributing to this article.

JOHN AGNELLO

John Agnello has extensive credits as a producer and engineer in modern rock and alternative music. His clients include The Breeders, Dinosaur Jr., Redd Kross, Screaming Trees, Grither,

Dish, Buffalo Tom, Triple Fast Action, Bivouac, Lemonheads, Tad, Gigolo Aunts and many more.

"Obviously, before music television, a lot of people mixed for radio, and a lot of those records were mixed for radio compression. There are a couple of different schools of thought. One is that you make it sound slamming on the radio, and when people buy it and bring it home, they get what they get. Another school of thought is to not really concern yourself with the radio. Then there is the guy in the middle, which is what I think I try to do. At least back when I was really concerned with radio, I tried to make a record sound kind of punchy on the radio, but not like a whole different record when you brought it home and listened to it on a regular system without the heavy radio compression.

"I just like the sound of bus compression on the mix anyway. I am a big fan of that stuff. When I was mixing more for radio, I would have the whole mix up and basically sit there with this really hard-line compressor that was cranked at 20 to 1. I would check vocals and work on the mix, so I could tell what the radio might do, while monitoring through the compressor. This would help you tell how much of the 'suck' you would get from the radio.

"In fact, I would go to tape with the compressor, but not at 20 to 1—I would go back to more of a normal setting. [Agnello listens through Auratones or similar speakers in order to approximate the typical consumer's listening setup.]

"MTV is here, but most people still listen to TV on a little mono speaker. If your snare drum is out of phase and it comes out on MTV, there is not going to be any snare in that mix. I use the phase button more than I use the EQ button, especially on drums and things like that. Also, check the phase if you have a bass DI and a microphone, or if you are running a bunch of different mics on a guitar amp. You should always check the phase on those. If you are really careful about that kind of stuff, you can

BY RICK CLARK



ILLUSTRATION: CHARLIE POWELL

PORTADAT

SERIOUSLY PROFESSIONAL PORTABLE DAT

THE BRITISH DEFENCE RESEARCH AGENCY
MEASURING HELICOPTER NOISE AND VIBRATION

British Crown Copyright/MOD

NATIONAL GEOGRAPHIC WILDLIFE
FILM MAKER HUGH MILES ON THE
TRAIL OF THE CHILEAN PUMA

SHOOTING THE INDEPENDENT FILM
DOCUMENTARY "DUTCH HARBOR" IN ALASKA

ON THE SET OF THE LATEST MEL BROOKS MOVIE
"DRACULA: DEAD AND LOVING IT"

IN SWAZILAND FOR THE BBC TV
DOCUMENTARY "UNDER THE SUN"



PORTADAT
PDR1000



TIMECODE-EQUIPPED
PORTADAT PDR1000TC

Superior sound quality, great handling and all the right features have rapidly established the PORTADAT professional portable DAT recorder as an international industry standard, with thousands of machines already hard at work around the world. Now you can get the full PORTADAT story direct from the professionals in **The PORTADAT News Bulletin** – 16 pages packed full with PORTADAT information, user interviews, accessories, updates and useful hints and tips. Call Independent Audio today on 207 773 2424 for your free copy.

**PORTADAT
NEWS BULLETIN**

Call Independent Audio
for your free copy



Independent Audio Inc - 295 Forest Avenue Suite 121, Portland, Maine 04101-2000, USA - Tel: 207 773 2424 - Fax: 207 773 2422 - E-Mail: 75671.3316@compuserve.com
Studer Canada Ltd - 1947 Leslie Street, Toronto, Ontario M3B 2M3, Canada - Tel: 416 510 1347 - Fax: 416 510 1294
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

USE READER SERVICE CARD FOR MORE INFO

actually mix for maximum rock, as opposed to constantly EQing something that is screwed up on a different level.

"I think that it is really important to regularly reference your mix in mono, if you are concerned that your records really slam on MTV or any kind of music television. You can really tell how well your vocals are going to come out if you work in mono at lower volumes; referencing on different speakers is also a good way to get a sense of your mix."

MICHAEL BRAUER

One of popular music's greatest mix masters, Michael Brauer has created hit soundscapes for Bruce Springsteen, Aerosmith, the Rolling Stones, Sade, Eric Clapton, Tony Bennett, Luther Vandross, James Brown and many others. With the help of Nick Balsamo at Sony Music Studios in New York, Brauer has designed and patented an audio processor called the MHB 850, slated to be on the market within the year. When Brauer isn't mixing or inventing, he actively participates in bike racing throughout the world.

"The different approaches to mixing for radio and for albums have nearly merged. This is because of the need for the recorded signal to be printed on tape or digital as loud as possible, with the possible exclusion of classical and jazz music, because those musical forms are so pure and compression would be heard immediately. [Brauer says no compressors were used for his *Tony Bennett Unplugged* mixes.] The mixer accomplishes this task by using an array of compressors to keep the audio dynamic range down to 2 to 3 dB. The mastering engineer takes over and has his or her own custom-made toys of A/D converters and secret weapons to make the CD as loud as those little 0's and 1's can stand.

"Radio stations have their own limiters and EQs with which to process their own output signal, in order to make things as loud as possible. The less you do to activate those signal processors, the better your song will retain its original sound. The potential problem is that you can end up with a mix that has no dynamic excitement left to it. It's been squeezed to the point of being loud, but small.

"Over the years, I've found ways to get the most dynamic breathing room possible within the 2 to 3 dB window.

I break down my mix into two or three parts instead of putting my mix through one stereo compressor. The bottom part of the record (A) includes bass, drums, percussion. The top part of the record (B) includes guitars, keys, synth, vocals, etc. The third part (C) is sometimes used for vocals or solos only. I assign my reverbs to A or B, depending on the source.

"The dynamic of the bottom end of the record is no longer affected by the dynamic of the top part of the mix. Once this concept is understood and executed, you then experiment by getting A to affect B, B to A, or C, etc. When done properly, the bottom of the record pumps on its own, independent of the top end of the music.

"The problems I used to have with just using a stereo compressor became a vicious cycle. If I wanted a lot more bottom, the compression would

The potential problem is that you can end up with a mix that has no dynamic excitement left to it. It's been squeezed to the point of being loud, but small.
—Michael Brauer

be triggered and work harder, causing the vocals to get quieter. If I wanted more vocals or more solo instruments, my drums and bass suffered. By the second or third chorus of a song, the dynamics need to be coming to a peak. You don't want the compressor holding you back. Ten years ago, the use of a stereo compressor was less of a problem, because the dynamic audio range was smaller. 808s and Aphex changed all that.

"My mix of Dionne Farris' 'I Know' is typical of this style of mixing. The bottom end just keeps pumping along as the vocals and guitars have their own dynamic breathing room, all within that small little dynamic window. The complete album, video and radio mixes are all the same."

GREG CALBI

Greg Calbi has mastered many of the

greatest albums of the past 25 years, including releases by U2, Paul Simon, Talking Heads, Bruce Springsteen, David Bowie, Eric Clapton, John Lennon, Yes, Dire Straits, The Ramones, Lou Reed, Brian Eno, James Taylor, the Rolling Stones, Van Morrison, R.E.M., Tom Petty & The Heartbreakers, Bob Dylan, Dr. John and many more.

"In a very petty sense, people are very conscious of their records being louder than everybody else's records. Everyone wants their mastering to be louder. We are having a lot of problems with that, because people are cutting these CDs so hot that they are not really playing back well on cheaper equipment, and a lot of people have cheaper equipment.

"Many mastering engineers have gotten disgusted, because it has really gotten to a point of diminishing returns. Why are we making them as loud as this? It's because musicians and producers all want a more muscular sound, but if they were all taken down a couple of dB, they might sound a little cleaner.

"This is an example of almost a lack of confidence. Everybody wants that little extra edge. If they feel volume is one of those edges, then that is something that I can give them, because all I do is turn the 0 to +1, and it is all of a sudden louder. The fact of the matter is, if you give radio something, and their compressors hit it the right way and you have it tweaked up right, it is going to sound loud anyway. If your record is bright and clean, it will cut through a small speaker on a car. If it is real busy and dense, you will get that muffled quality.

"Someone recently talked to a guy on radio who said that he likes to get stuff that is real low-level off the CDs, so his compressors at the station can kind of do their thing. He felt it made stuff sound better than stuff that was real hot. We always thought that the hotter you cut it, the hotter it was going to sound on the radio. Well, suddenly, here was another twist on that debate. I thought, 'Now this really takes the cake, because I've heard everything.'

"I have a feeling that things sound great on the radio, [depending] more on how the parts are played and the whole thing is thought out from the get-go. The other day, I heard a Springsteen song, 'Tunnel of Love,' on the radio. It sounded great, and it was so simple. The bass was down there

playing the part. Guys like Springsteen and Bryan Adams write and arrange songs that are in the range made for radio. They give you one thing to digest at a time. There aren't all these layered parts conflicting with each other. These are some basic tenets of arranging that kind of hold up on a little speaker. In my opinion, I think it comes more from the conceptual stage."

RICHARD DODD

Whether it is Tom Petty, with or without The Heartbreakers, or Wilco's gritty alterna-country/rock, Boz Scaggs' bluesy R&B influenced pop, the Traveling Wilburys, George Harrison or the recent harmony-rich pop of Billy Pilgrim, producer/engineer/mixer Richard Dodd consistently creates exciting and unique radio-friendly records that still maintain a high level of sonic integrity. Currently, Dodd is wrapping up production on Atlantic artist Francis Dunnerly's second album.

"Here's a great analogy. We have a pint pot of beer and, with reference to mixing to radio, radio processing makes it a point to always keep that pint full. If we underfill it, their system will fill it. If you overfill it, or attempt to, it will chop it off and make sure that only a pint of beer is there. That only leaves us with control over the content of that pot. It can be a delicate, light crystal-clear liquid, or a thick dark and goeey liquid. Those are the parameters we have to work. If you want it thick and dark and goeey, you can put a bunch of stuff in there and make it dense and sludgy. That is what it is going to sound like. If you leave it clear and open, it is going to have an apparent dynamic. It is going to be sparkling and have clarity and space. That is basically what we do. We make the decision.

"The stronger the song, the stronger the performance, the clearer we can allow that liquid to be and get away with it. If the song or performance is perhaps lacking, we tend to go for the denser, thicker darker approach. That is the control we have, but basically, there is still only a pint pot. That is just the way it is.

"If you want a voice and guitar at the front of the song to be minus six, and when the band kicks in to be at least zero, you are never going to hear it like that on the radio. The nature of the compressor is to bring the quiet things up and the loud things down.

But if you use that facility correctly, then you can get the radio compression to remix the song for you.

"I'm not going to make music for what type of processing radio thinks sounds right today, because tomorrow they are going to think something else is right. Then every piece of music that I made today is wrong. So I don't mix for the radio, but I do mix with the radio in mind. Sometimes I strap on a couple of ridiculous limiters across the monitors and fake what an FM radio might do. I'm mon-

**Remember
that whatever is bad
about a mix, the radio
is going to emphasize it
and make it worse.**

—Richard Dodd

itoring through them, so I can make the proper adjustments.

"Even though you can't have the dynamic, there are ways to create that sense of dynamic on the radio. I take things out. I turn the band down. It is under-mixing. Otherwise, without witnessing what happens through a second set of limiters, you don't stand a chance.

"A slower-tempo song can be apparently louder than an up-tempo song. If you have a drummer bashing away at a hundred miles an hour, it is going to eat up all the space and there won't be room for anything. Remember that whatever is bad about a mix, the radio is going to emphasize it and make it worse. If you have something that is really laid back, with all the space in the world, that allows time for the effects of radio to recover, before they act again. That can also be an effective dynamic, which you otherwise wouldn't have gotten with the fast, busy track.

"By extracting from the content, you can compensate for the lack of dynamic in a song. Less is more, basically, and extraction is part of the trick. It is in taking away, even if it is just using the facility to bring what you took out back again. Basically, when Tom Petty is singing, not much else is going on. When he stops, something interesting happens."

DON GEHMAN

Over the past 20 years, producer/engineer Don Gehman has been associated with some of rock and pop's most significant artists, including John Mellencamp, R.E.M., the Bee Gees, Barbra Streisand, Tracy Chapman and Hootie & The Blowfish, who recently spent five weeks at the Number One position on the album charts.

"I think the key to a great-sounding radio mix is to get your balances correct. I'm not just referring the correct balance of basic core elements, like snare, vocal, bass and guitar, but the frequencies within them are what have to be balanced as well. That way, everything hits the compressor with equal power.

"I used to always use bus limiting, like on an SSL or [through] this little Neve stereo compressor I have. For many years, I just let that thing fly with 8 to 10 dB of compression and just flatten everything out. When it went into mastering, I would have people sometimes complain that it was a little over-compressed, but they could work with it. They might say they couldn't bend it into the frequency ranges that they needed.

"I have been working with Eddy Schreyer over at Future Disc Systems, and he has encouraged me to use less [bus] limiting and more individual limiting and get my balances right. It has taught me a valuable lesson.

"What we are doing now is I'll try to contain that bus limiting to 2 to 4 dB, just enough to give me a hint of what things are hitting at. It is kind of a meter of which things are too dynamic. I'll then go back and individually limit things in a softer way, so that the bus limiter stops working. Then I can take it in and put it on this digital limiter, which is this Harmonia Mundi that Eddy's got, which is invisible. It doesn't make any sounds that are like bus limiters that I know. We tighten it up a little bit more to give it some more level to the disc. That results in something that doesn't sound compressed. It is very natural.

"You can hit a radio limiter and have something that is very wide-open-sounding, if the frequencies, like from 50 cycles to 1,000 cycles, are all balanced out so that they hit the limiter equally and your relationships aren't going to move. They are all going to stay the same, but you've got to get that all sorted out before it goes into that broadcast limiter.

"The way you do that is by using

Their Wish was OUR COMMAND



T

he Eventide DSP4000 Ultra-Harmonizer® brand effects processor won this past year's TEC Award for signal processing. But when we asked the top professionals who inspired the DSP4000 what they wanted in version 2 software, they demanded even more:



Jude Cole
I DON'T KNOW WHY I ACT LIKE THIS
Produced by Kevin Killen

KEVIN KILLEN "Give me the power to do everything at once."

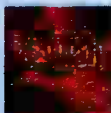
"Now I can strap together EQ, digital reverb, pitch correction, and a modulatable delay line with individual mix levels and pan positions in ONE preset! All with totally transparent audio quality so as not to degrade the tone I've worked so hard to achieve. Now THAT's power."



John Elefante
WINDOWS OF HEAVEN
Produced by John & Dinc Elefante

JOHN & DINO ELEFANTE "We need really good digital compression modules"

"Best digital compressor we've heard yet - we left our own preset up in the machine after one of our sessions, then the people from TNN's "Live at the Ryman" TV series (featuring Pam Tillis, Rickie Scaggs and Reba McEntire) came in and said "Hey, this sounds great." They wouldn't let us take the DSP4000 out of the room!"



Nine Inch Nails
THE DOWNWARD SPIRAL
Produced by Flood and Trent Reznor

FLOOD "Can you make the patch editor more usable?"

"You did it! The NEW patch editor is finally really usable in a creative way - whatever I imagine in my head I can now create in the mix - the new distortion modules are fantastic."



Steve Vai
ALIEN LOVE SECRETS
Produced by Steve Vai

STEVE VAI "I want to go beyond effects." I want it to sound real."

"I've always wanted a pitch shift device that would simulate the differences in timing and tone of having two or three other guitarists in the room playing along. With the DSP4000's new software. I can have one voice slightly behind me, one right on top of me, a third drifting between the two, all with their own unique tone, and even distortion - very realistic simulation of multiple players."



Billy Joel
THE RIVER OF DREAMS
Live set engineered by Kooster McAllister

KOOSTER McALLISTER "Make it faster and easier to use. That's what we need in the truck."

"Yes! The new software makes things happen a lot faster. And it's a lot easier to set up. Fewer keystrokes, more intuitive. And the new sampler card is everything you promised. At Record Plant Remote, the DSP4000 is the box we count on most."

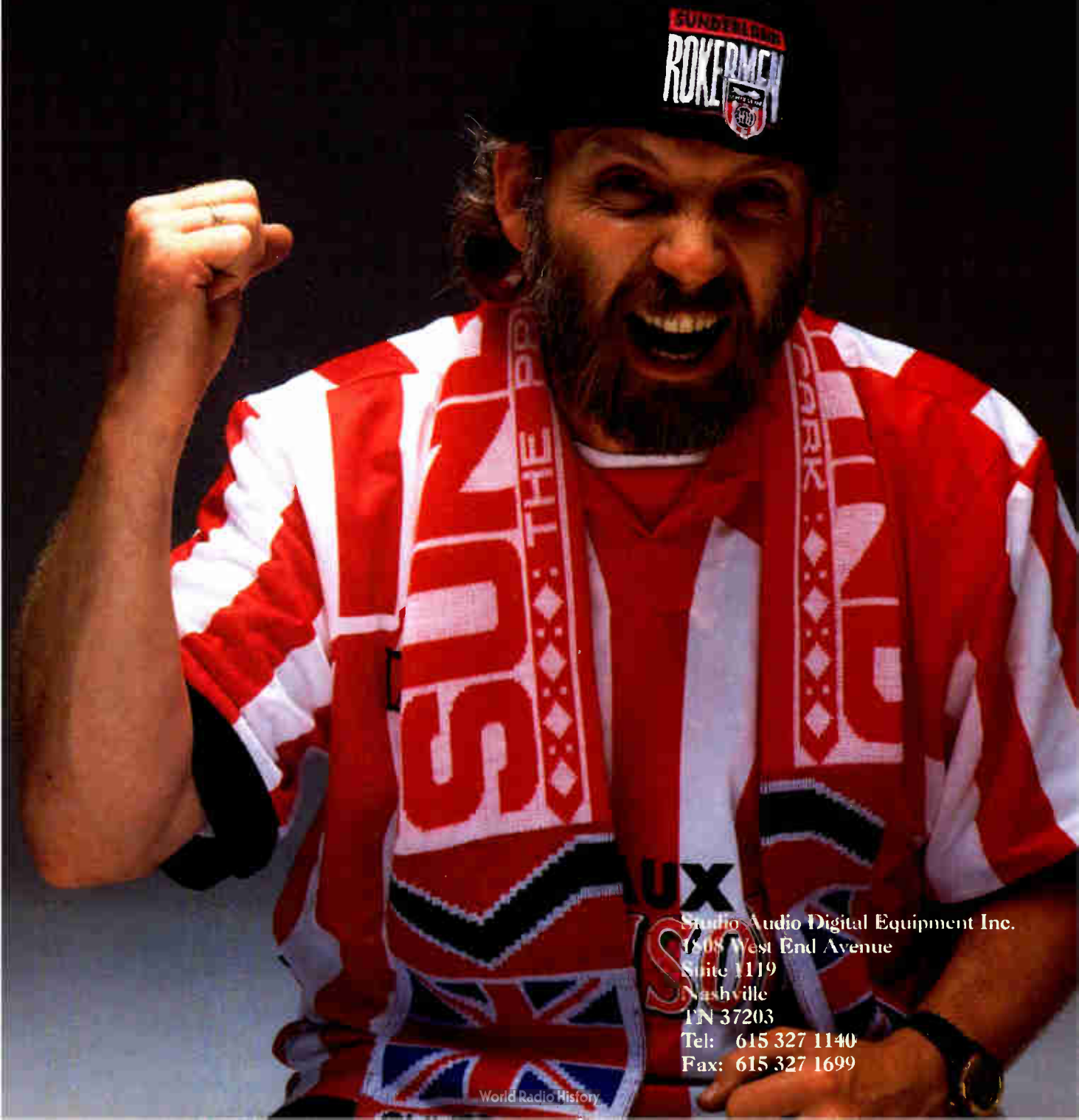
DSP4000 v2 MAKES IT POSSIBLE

If you can dream it, you can do it - faster, easier and better - with v2 Software, now playing on the Eventide DSP4000 Ultra Harmonizer processor: 130 effects modules and over 500 presets, all 30% faster and easier to use. Powerful internal sampler option also available. Call Eventide or your DSP4000 pro dealer and get into all it's got.

Eventide
the next step

See us at AES Booth #162

Player



Studio Audio Digital Equipment Inc.
1508 West End Avenue
Suite 1119
Nashville
TN 37203
Tel: 615 327 1140
Fax: 615 327 1699

Team Player

The SADiE Turnkey System

Our team has set the standard for customer support.

- *free lifetime software updates*
- *365 days a year, 24 hours a day free customer support*
- *still unbeatable for price and features*

\$9,995.00



SADiE version 3 scheduled 4th qtr 1995 and free upgrade to existing customers. Key features:

- *background recording*
- *waveform and scrub editing in playlist*
- *unlimited virtual tracks*
- *clip based automation of level, pan, Eq., dynamics*
- *real-time Eq., dynamics in mixer*
- *fully integrated project management*
- *Windows 95 compatible*

For more information call Studio Audio at 615 327 1140



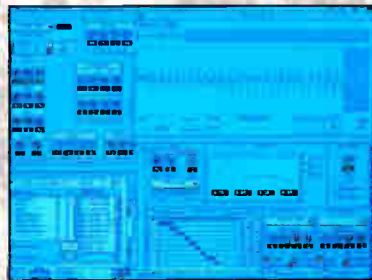
* SADiE hardware controllers and 17" monitors shown in the photograph are chargeable options to the turnkey system.

World Radio History SERVICE CARD FOR MORE INFO

POWER TO SPARE . . .

- 32 Voice 16 Bit Professional Stereo Sampler.
- Powerful S3000 LSI allows full Akai Power Edit™ capability.
- Two megabytes of on board RAM.
- 25 PIN SCSI port.
- Midi file player.
- Reads S1000/S3000, Roland™, and E-MU™ sound libraries.
- M.E.S.A.™ sampler edit/librarian MAC software compatible.

\$2000
DIGITAL SAMPLER
\$1195.00 Suggested retail price.



M.E.S.A.™

ASK YOUR DEALER ABOUT THE
CD-ROM
AKAI
SAMPLE
LIBRARY
FOR S1000/S1100
AND S3000
\$129.⁹⁵ EACH.



In 1986 Akai revolutionized digital sampling with the introduction of the legendary S900. The revolution continues with our new fully expandable S2000 professional sampler.

Open architecture design allows such powerful options as output expansion from 2 to 10, on board SampleVerb™ effects processing, second LSI card for doubling your processing power, flash ROM, SIMM RAM, hard disk, and CD ROM sample acquisition, editing, and playback.

M.E.S.A.™ (Modular Editing System by AKAI) is our incredibly intelligent Mac based sample edit/librarian software that enables an unprecedented level of control and customization of the S2000's sampling capabilities. M.E.S.A.'s remote control and data transfer capabilities extend to other Akai gear like our DR8 Hard Disk Recorder, allowing complete control over an entire Akai editing suite. M.E.S.A.™ is free to registered S2000 users.

Don't let your creativity be limited by inferior sampling products. You owe it to yourself to test drive the Akai S2000 at your local Akai dealer.

ROOM TO GROW.

- Multi-8/D™-board adds 8 assignable outputs plus SP/DIF digital I/O. Price \$299.
- SampleVerb™-4 bus voice-assignable, studio quality, multi-effect processor board. Price \$399.
- RAM expandable to 32 MEG using standard 4 or 16 MEG 72 PIN SIMMS.
- (2) ROM card slots allow up to 16 MEG of non-volatile flash ROM for critical applications.
- Floppy based operating system software allows easy software upgrades (no more O/S ROM replacements!)

AKAI
professional

1316 E. Lancaster Ave. • Ft. Worth, TX 76102
Phone 817-336-5114 • Fax 817-870-1271

**When you mix,
listen in mono every now
and then, so you know
that when it goes to
mono, it will still sound
just as good and in phase.**

—Brian Lee

some example of it, to kind of test out. I use a bus limiter to kind of show me where I am hitting too hard, and then I take it away and get rid of it and let the mix breathe. That is the trick that I am finding more and more in helping get balances just right.

"With the whole practice of frequency balancing, I know you can have tracks that seem dynamic on radio. Green Day's 'Longview' is a great example. That chorus slams in, but it is balanced out well enough that when the chorus hits the limiter, it just adjusts the level and doesn't gulp anything else up.

"If you have bass frequencies that come in too loud and aren't balanced in the midrange, the limiter 'sees' whatever is loudest and puts that on top. If the low end is too loud, then everything will come out muddy when it hits. If all the frequencies are balanced, the limiter will equally turn down the balances, with them all staying intact, and life goes on, just as you intended."

BRIAN LEE

For the past three years, Brian Lee has made a name as Bob Ludwig's rising star at Gateway Mastering in Portland, Maine. Among his credits are Janet Jackson, Pearl Jam, Ozzy Osbourne, Gypsy Kings, Lou Reed, Gloria Estefan, Charlie Daniels and Cachao. Lee echoes the sentiments of others in saying that it is very important to check for phase problems by referencing to mono regularly in the mix stage.

"When you mix, you should definitely be listening in mono every now and then, so you know that when it goes to mono, it will still sound just as good and in phase. I believe that the fullness of the overall sound, when you are in stereo, can cause you to pay more attention to the instruments and effects than to the vocal.

"Interestingly, a lot of people use phase for weird effects. We have

done heavy metal albums that are really out of phase. [Producers] especially like to put a lot of effects on the vocal. Maybe they just didn't think it was going to get played on the radio, but some stuff was totally out of phase, and if you pushed the mono button, everything just went away. We could've put everything back in phase, but I think they would think it would ruin the effect that they wanted.

"We do suggest that you get a mix the way you think it should sound and get a few different passes, like vocal up and vocal down. Mixing is very expensive, and you should get

as much out of it as you can. If you are going to Hit Factory, or some studio like that, that is a lot of money a day. You don't want to have to go back and rebook time and remix the whole thing, just to get the vocal right. When you are mixing, you should also do your instrumental TV track and versions with lead and background vocals up and down.

"If you have the time and patience to do that, you will be in great shape, because when you get to this stage of mastering, you can actually sit back and reflect and say, 'I need more vocal on this particular section,' or 'I think this particular vocal is overshadow-

M-1

MICROPHONE PREAMPLIFIER

(ACTUAL SIZE)

"No comparison!" "Whoa!" "Even the producer could tell the difference!"
A few typical comments! The M-1 is clearly superior. 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 990A-24V 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; shielded toroidal power transformer with 6-position voltage selector switch; silver plated XLRs; ground-lift switches; phantom power, polarity reverse and gain controls.

Options: VU-1 meter (shown); PK-1 meter; the Jensen JT-11-BM output transformer (the world's best); gold plated XLRs.

THE JOHN HARDY COMPANY

P.O. Box AA631
Evanston, IL 60204

Phone: 708-864-8060 Fax: 708-864-8076

USE READER SERVICE CARD #249 FOR MORE INFO

owing this part of the song. I think it needs to be brought down.' Then you can do edits at that point. [Lee works on a Sonic Solutions system.]

"When you are traveling around from studio to studio, listening and mixing, you may think a mix sounds great until you hear it on another system, and for some reason things sound like crap. You may find yourself saying, 'What is going on here?' Usually, mastering is a third party's subjective opinion about the whole process. We know our speakers very well, and when you bring your work in here, hopefully, we will have some frame of reference for you to get it right."

BENNY QUINN

Over the past 20 years, Benny Quinn has been one of Nashville's most prominent mastering engineers, with credits covering every genre from symphonic and rock to country, gospel, R&B and jazz. He's mastered Elvis Presley, Aaron Copland, Johnny Cash, Isaac Hayes, Alabama, Dixie Dregs, Indigo Girls, Bela Fleck, Bob Seger, Cracker, Widespread Panic,

Amy Grant, Boston Pops Orchestra, Willie Nelson, Nanci Griffith, Lyle Lovett, Reba McEntire and many others. Quinn has worked at Masterfonics, one of the country's most highly regarded mastering facilities, as a mastering engineer for the past 12 years.

"Everything has to be very clear-sounding. You have to make sure that everything is distinguishable, as far as the instrumentation is concerned, and that can be done with a combination of EQ and limiting.

"The low end is what will normally grab and kick a compressor or limiter at a [radio] station. If you have too much low end, and it is too cloudy and big, then all you will hear are the station's compressors grabbing the low end and moving everything up and down with it.

"While I typically don't cut the bottom end off, I do try to make sure that the bottom end is clean and present. Normally, you will find frequencies in the low end that are rather cloudy. This changes from song to song and mix to mix.

"You can often find one or two frequencies that may create more 'cloud'

than distinction. You may be rolling off at that frequency, using a real broad bandwidth and then possibly even adding back a very similar close frequency...maybe even the same one, using a very narrow bandwidth. What you do is take that 'cloud' and that 'woof' out of the low end. That usually helps significantly, as far as radio processing is concerned. The top end doesn't seem to hit the station's signal processing as hard as the bottom end, and radio compression doesn't seem to hurt the top end as much as it does the bottom end.

"Most rock stations compress more heavily than other station formats do. When something is out of phase, it causes very strange sounds in the reverbs. You will hear more reverb—on the track while played on the radio—if the phasing problem is with the original signal and not with the reverbs on the track itself. The original signal will want to cancel and the reverbs won't, making things sound even more swimmy." ■

Rick Clark is a Memphis-based Mix contributing editor.

WE SELL 3M TAPE

Audio Tape • Video Tape • Data Media



- Dynamite Prices
- Complete Inventory
- Fast Delivery



Call For Our Media
Catalog Featuring
3M Products.



See us at AES Booth #1283

**STEADI
SYSTEMS**
A DIVISION OF WALT DAVIS ENTERPRISES

New York • 30 West 21st St. New York, N.Y. 10010 • 212.647.0900 • 800.626.0946
Hollywood/Film & Tape • 1014 N. Highland Ave. Hollywood, CA 90038 • 213.461.6868 • 800.451.6920
Irvine • 714.660.9335 • 800.229.5798 Miami • 305.375.8273 • 800.990.8273

USE READER SERVICE CARD FOR MORE INFO

Mike Frondelli - Engineer/Producer
Director Capitol Records Studios



TWO PROS WHO KNOW GREAT SOUND.

TWO MICS THAT MAKE THEM VERY HAPPY.

Mike Frondelli, Director of Capitol Records Studios, has a connoisseur's mic locker, including more than 50 Neumann mics dating back to the 1940's. Newest in the collection? The mic Mike calls "the working man's Neumann," the TLM 193. Because it sounds so good in so many applications, Frondelli recommends the TLM 193 as "the one mic to have" for Capitol acts setting up project studios.

The TLM 193 is a stripped down, cardioid-only version of our famous TLM 170. It provides oodles of headroom, has virtually no self-noise, and can immediately give your project studio that professional sound (particularly on vocals) that you've been missing. (By the way, the TLM 193 has become our biggest seller.) It carries a retail price of less than \$1500.



TLM 193

Robert Scovill, live sound stalwart and winner of three TEC awards for Live Sound Excellence, knows a great microphone when he hears one. He has toured as the front-of-house mixer with bands like Rush, Def Leppard and most recently

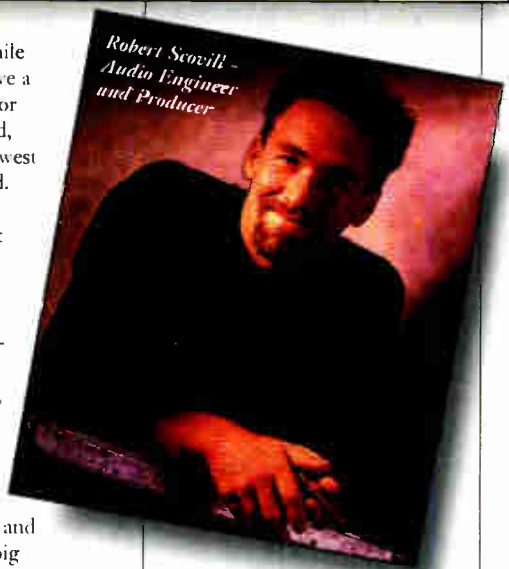
Tom Petty. "I am using the new KM 184 both out on tour and at MusiCanvas." (Robert's studio in Scottsdale.)

"The KM 184 carries all of the Neumann signatures, and I have had great success on a wide variety of sources, from the subtleties of violin to the extremes of distorted guitar."

The KM 184 is perfect for instruments of all kinds, and excels at overhead drum miking and capturing the elusive acoustic guitar. For professional quality at less than \$700 each, a stereo pair of KM 184s can easily be a part of ANY studio.

Let's face it. While Neumann mics have a stellar reputation for rich, opulent sound, they are not the lowest priced mics around. Why? Because we have to ensure that our microphones satisfy even the most demanding engineers in hyper-critical recording environments. But, we *have* found a way to take a few of the bells and whistles off a couple of our mics and still give you that big (HUGE) studio sound on a project studio budget.

The bottom line is this: before you go dropping big cash on outboard gear trying to make your studio sound good, consider the most important part of the signal path, your microphones. The only way to get great sound out of your studio is to capture great sound as well as Neumann... not even close.



Robert Scovill -
Audio Engineer
and Producer



KM 184



Neumann/USA

6 Vista Drive, PO Box 987
Old Lyme, CT 06371
Tel: 203-434-5220 Fax: 203-434-3148

In Canada: 221 LaBrosse Ave.,
Pte-Claire, PQ H9R 1A3
Tel: 514-426-3013 • Fax: 514-426-3953

NEW YORK A TIME FOR OPTIMISM

NEW YORK

BY DAN DALEY

The reinvigoration of New York as a center for the arts has received substantial media play in recent months. From the renaissance of the Big Apple as a place to shoot and post movies to the refurbishment of Times Square, where peep shows are being replaced by Disney corporate ventures and the return of MTV's Video Music Awards, New Yorkers have been expressing a level of optimism not seen for a long time.

You can feel it within the professional studio community. In fact, the condition of the city itself is cited often by studio owners and managers in talking about their industry. The very essence of New York has traditionally suffused its music and the places where its music is made. Studio rates may be down a bit, but so is the murder rate this year.

Everything is a matter of degree, though. The levels of optimism range from guarded to ardent across the spectrum of facility sizes. It's illustrated by the fact that, though New York continues to mourn the loss over the years of leading studios such as Media (now the La Bar Bat nightclub), Sigma and Skyline, the remaining large facilities—including Right

Track and Hit Factory—have expanded.

The city's strong urban music base is beginning to come out of personal recording environments to use commercial studios more, even as jingles—one of the traditional evergreens of New York studios—have done just the opposite, with commercials now recorded at the music houses that write them, more often than not. It's produced a changing landscape in New York that has motivated adaptation from studios, producers, engineers and musicians.

What New York does have in common with the rest of the country, however, is a fixation on rates. Although studio owners, for the most part, say rates are static but sufficient, few are willing to go on record about them, indicating an uneasiness about both rate structures and profitability. The contrast between this and the expansions that many studios have undertaken illustrates the crux of an issue that every commercial studio in the world faces today: How do you maintain a state-of-the-art facility with the increasing costs of high-end pro studio gear while you are faced with a relatively static revenue base and encroachment by an

ILLUSTRATION: HALSTEAD HANNAH



good," and that many facilities, including Power Station, have been at least able to hold rates. However, Bongiovi stresses, projecting the business side beyond studio time rentals is critical to survival and is something he says Power Station has been predicated upon from the beginning. "I haven't said this before for the record, but Power Station was built on production royalties, mine and the productions we have taken an equity position in," he says. "It does okay as a

If it's realistic to use rental houses as barometers of the health of the New York studio industry, I'd say it's very healthy.
— **Bill Tesar**

studio, but it does much better as a facility that develops intellectual properties. So in that sense, we're not really in the traditional time-selling studio business."

Power Station is also building a network of facilities beyond New York. After a false start in France several years ago, the studio has started a joint venture—Power Station New England—with former defense technology contractor Sonalysts in Connecticut. The facility opened in July with an exact replication of Power Station's Studio A. And two other European ventures are planned. Power Station's approach to revenue-building via participation rather than cash has contributed to its prominent place in New York's studio rumor mill. Bongiovi concedes, as did a management shakeup that took two years to sort out. And a recently announced lender liability lawsuit by the studio against Chemical Bank is also clouding the horizon. "The thing to know is that Power Station was not so much in the

studio business as in the production business," states Bongiovi. "And when the bank made us deviate from that, that is when the problems started."

The general mood in New York, though, is one that says continued investment in a facility produces the effect of an investment in the studio community, despite the inevitable competition and differing approaches to business. "Hit Factory's investment has been paying off," says studio executive vice president Troy Germano, adding that the studio is planning further expansions. "We pretty much only keep track of what goes on here. But from what we've heard from clients and other studios, things seem to be working out well in New York at the moment for studios."

RENTALS

When one talks to the area rental companies, it's easy to get the impression that the streets of New York are paved with the same gold that immigrants used to dream about from the steerage compartments of ships pulling into Ellis Island. The demand is for digital equipment, particularly modular digital multitracks, though there is hesitancy to embrace any one format. Dreamhire reported its most profitable month at its New York location last May. "We can't keep ADATs and DA-88s in stock," reports general manager Chris Dunn. "We just got a Studer 48-track machine, and it went right out the door on a four-month rental. The rentals on digital multitracks have tended to be long-term till studios see which way the demand goes."

Bill Tesar, president of Toy Specialists, which moved into a 5,000-square-foot location recently, notes a rapidly growing demand for MDM formats, as well as for Studer and Sony 48-tracks. "Most of the rentals are going to larger facilities," he observes. "Most of the smaller and project studios don't have the budget for the same level of rentals. For them, it's mostly microphones and preamps. So whatever impact [studio] rates are having on them, we don't see it from here. But if it's realistic to use rental houses as barometers of the health of the studio industry here, I'd say it's very healthy."

Tom Lewis, vice president at Audioforce, checked a few years' worth of purchase orders and found that, although major studios indeed are the primary customers of major rental

houses, project studios' rentals are on the rise. "They're up and coming," says Lewis. "In fact, three or four of them just moved into our building."

WHERE THE JINGLES WENT

Commercial music for broadcast has been a mainstay of the studio business in New York since before television. Back then, it was the Broadway show players who did the radio spots before heading into the pits for eight o'clock curtain. The explosion that broadcast advertising underwent in the 1950s gave rise to a plethora of independent studios in Manhattan and a large cadre of session players who created the dream world of studio cats—the gig-bag-check-Radio-Registry-every-hour heaven—a myth that's come up against the cold reality of affordable recording technology.

"The people who used to be on those sessions are now parked in little rooms pushing buttons," says Irwin Fisch, a keyboard player who came of professional age during the transition. "The ability to make a living playing sessions is dwindling. If you're not programming or writing them, then the opportunity to play on jingles is considerably lessened." Fisch says the group of first-call session players in New York is now more like a small, tight core. Some, like him, have moved into the burgeoning film-scoring work in town (Fisch was working on a film remake of *Bye Bye Birdie* when we talked). Other musicians have moved into the Broadway theaters as musical revivals continue to surface on The Great White Way. "Now there's room for maybe three drummers, three bass players, maybe eight guitarists and a few horn guys," Fisch says. "Jingles were closed off by machines and music house studios, and record sessions are getting closed off by a return to band-oriented records. And at this point, the agencies see the benefits of in-house recording, and the budgets rarely encourage full live sessions." (Power Station owner Bongiovi notes that for a recent live string date at the studio, "We were fighting over who was going to get to engineer it.")

"The culture of session musicians has not evaporated, but it is considerably downsized," says Ira Siegel, one of those still making a regular living off jingles. Siegel, a guitarist, notes that the lack of opportunities now for session players in studios has meant fewer people aspire to what was once

If you can't hear that *Glitch* before They do...



...Your clients are going to Look at you Differently.

The great horned owl is extremely sensitive to sight and sound. The feathers surrounding its eyes help to gather and concentrate sound waves, its large eyes and sensitive retinas allow it to see in almost total darkness. Highly evolved senses are crucial to the owls very survival.



World Radio History
USE READER SERVICE CARD FOR MORE INFO

Audio engineers need detailed information.

Westlake Audio monitors...

Think of them as an information resource.

For more information:

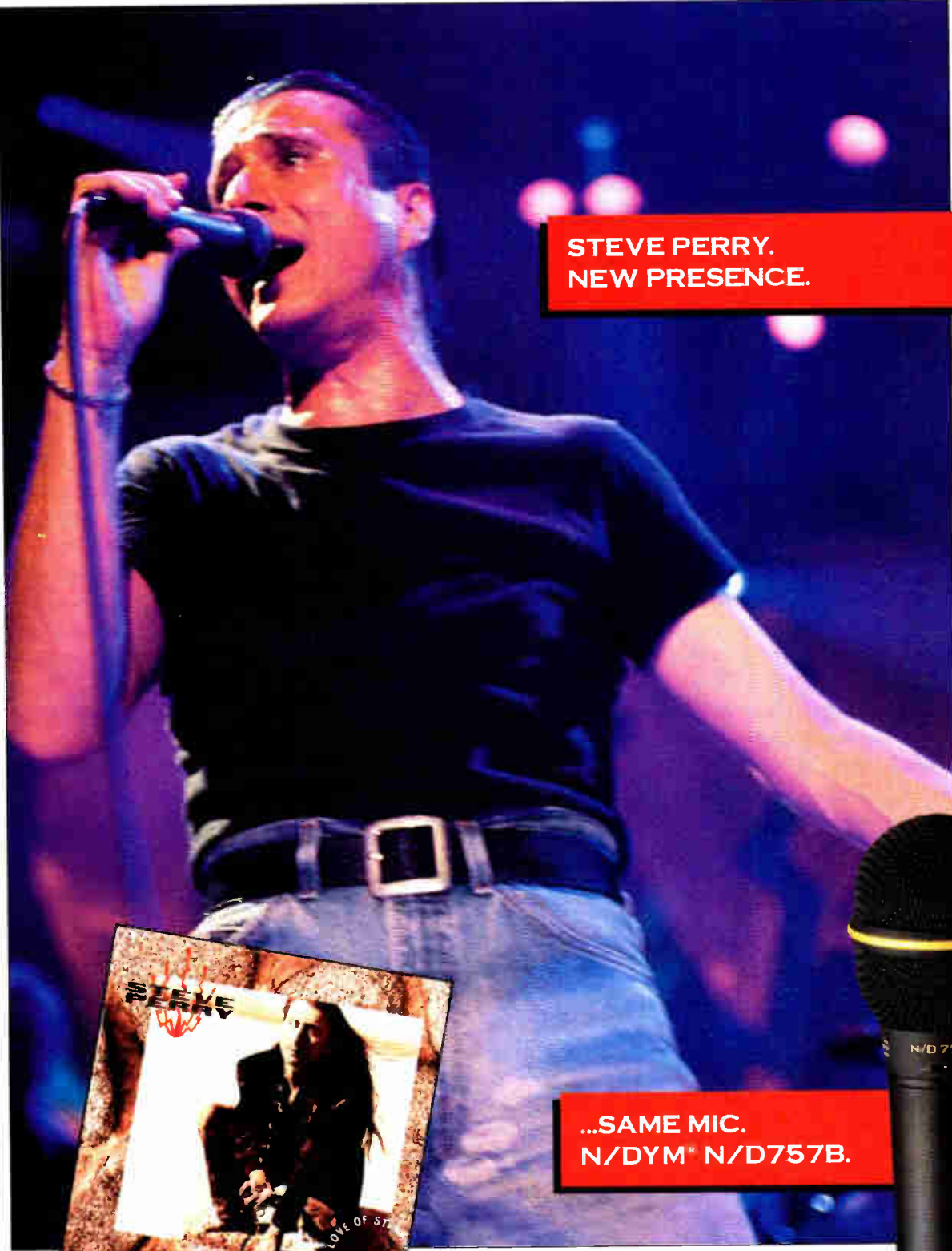
**Westlake
Audio**

2696 Lavery Court, Unit 18, Newbury Park, CA 91320
(805) 499-3686 Fax (805) 498 2571

assurance standard. No wonder N/DYM® Series III microphones offer the best sensitivity, highest output and the widest frequency response of any microphone in its class.

Electro-Voice N/DYM® Series III microphones are built at our factory in Sevensville, TN, the first professional audio manufacturing facility to receive the prestigious ISO 9002 certification — the world's foremost quality

Electro-Voice, Inc. a HARSH V. COMPANY



**STEVE PERRY.
NEW PRESENCE.**

600 Cecil St. Breda, IL 19107 610/695-6851 800/234-6851 Canada: 613/582-2141



"For the Love of Strange Medicine" — Columbia #CK44287

**...SAME MIC.
N/DYM® N/D757B.**



N/DYM® III — Clarity and Power Defined.

See us at AES Booth #812

USE READER SERVICE CARD FOR MORE INFO

World Radio History

INTRODUCING

PAQRAT™

ROGER DEFINED IT RANE DESIGNED IT.

Roger Nichols: "I asked my friends at Rane if they could design a box that would let me record two channels of 20-bit audio onto four 16-bit tracks. So they sent me a prototype box called PAQRAT. Now I can easily store lots of 20-bit mixes without having to rent a \$25,000 digital machine that needs \$200 per roll tape"



Record 18 to 24 Bits On Your 16-Bit Multitrack Recorder

The RC 24 Recording Converter, known affectionately as the "PAQRAT™", converts two 18-bit to 24-bit digital inputs into two pairs of 16-bit digital tracks—and simultaneously does the reverse!

From home studio to post-production suite, the PAQRAT enables an instantaneous quantum leap in digital capability from 16-bit multitrack recorders:

- Create 20-Bit Masters On Your 16-Bit Recorder
- Back-up Hard Disk Files Onto Affordable Tapes
- Use A 20-Bit ADC And Two 16-bit Tracks For Recording Primary Vocal or Instrument
- Record Full Quality From A 20-Bit Digital Console.

Two RC 24 Versions to Match Your Recording Format: the RC 24A provides the Alesis ADAT interface; the RC 24T provides the Tascam TDIF-1 interface.



Big savings and impressive returns for a surprisingly modest investment. Get the whole "tale" on the PAQRAT from your nearest Rane dealer.





good.” and that many facilities, including Power Station, have been at least able to hold rates. However, Bongiovi stresses, projecting the business side beyond studio time rentals is critical to survival and is something he says Power Station has been predicted upon from the beginning. “I haven’t said this before for the record, but Power Station was built on production royalties, mine and the productions we have taken an equity position in,” he says. “It does okay as a

If it’s realistic to use rental houses as barometers of the health of the New York studio industry, I’d say it’s very healthy.
— Bill Tesar

studio, but it does much better as a facility that develops intellectual properties. So in that sense, we’re not really in the traditional time-selling studio business.”

Power Station is also building a network of facilities beyond New York. After a false start in France several years ago, the studio has started a joint venture—Power Station New England—with former defense technology contractor Sonalysts in Connecticut. The facility opened in July with an exact replication of Power Station’s Studio A. And two other European ventures are planned. Power Station’s approach to revenue-building via participation rather than cash has contributed to its prominent place in New York’s studio rumor mill, Bongiovi concedes, as did a management shakeup that took two years to sort out. And a recently announced lender liability lawsuit by the studio against Chemical Bank is also clouding the horizon. “The thing to know is that Power Station was not so much in the

studio business as in the production business,” states Bongiovi. “And when the bank made us deviate from that, that is when the problems started.”

The general mood in New York, though, is one that says continued investment in a facility produces the effect of an investment in the studio community, despite the inevitable competition and differing approaches to business. “Hit Factory’s investment has been paying off,” says studio executive vice president Troy Germano, adding that the studio is planning further expansions. “We pretty much only keep track of what goes on here. But from what we’ve heard from clients and other studios, things seem to be working out well in New York at the moment for studios.”

RENTALS

When one talks to the area rental companies, it’s easy to get the impression that the streets of New York are paved with the same gold that immigrants used to dream about from the steerage compartments of ships pulling into Ellis Island. The demand is for digital equipment, particularly modular digital multitracks, though there is hesitancy to embrace any one format. Dreamhire reported its most profitable month at its New York location last May. “We can’t keep ADATs and DA-88s in stock,” reports general manager Chris Dunn. “We just got a Studer 48-track machine, and it went right out the door on a four-month rental. The rentals on digital multitracks have tended to be long-term till studios see which way the demand goes.”

Bill Tesar, president of Toy Specialists, which moved into a 5,000-square-foot location recently, notes a rapidly growing demand for MDM formats, as well as for Studer and Sony 48-tracks. “Most of the rentals are going to larger facilities,” he observes. “Most of the smaller and project studios don’t have the budget for the same level of rentals. For them, it’s mostly microphones and preamps. So whatever impact [studio] rates are having on them, we don’t see it from here. But if it’s realistic to use rental houses as barometers of the health of the studio industry here, I’d say it’s very healthy.”

Tom Lewis, vice president at Audioforce, checked a few years’ worth of purchase orders and found that, although major studios indeed are the primary customers of major rental

houses, project studios’ rentals are on the rise. “They’re up and coming,” says Lewis. “In fact, three or four of them just moved into our building.”

WHERE THE JINGLES WENT

Commercial music for broadcast has been a mainstay of the studio business in New York since before television. Back then, it was the Broadway show players who did the radio spots before heading into the pits for eight o’clock curtain. The explosion that broadcast advertising underwent in the 1950s gave rise to a plethora of independent studios in Manhattan and a large cadre of session players who created the dream world of studio cats—the gig-bag-check-Radio-Registry-every-hour heaven—a myth that’s come up against the cold reality of affordable recording technology.

“The people who used to be on those sessions are now parked in little rooms pushing buttons,” says Irwin Fisch, a keyboard player who came of professional age during the transition. “The ability to make a living playing sessions is dwindling. If you’re not programming or writing them, then the opportunity to play on jingles is considerably lessened.” Fisch says the group of first-call session players in New York is now more like a small, tight core. Some, like him, have moved into the burgeoning film-scoring work in town (Fisch was working on a film remake of *Bye Bye Birdie* when we talked). Other musicians have moved into the Broadway theaters as musical revivals continue to surface on The Great White Way. “Now there’s room for maybe three drummers, three bass players, maybe eight guitarists and a few horn guys,” Fisch says. “Jingles were closed off by machines and music house studios, and record sessions are getting closed off by a return to band-oriented records. And at this point, the agencies see the benefits of in-house recording, and the budgets rarely encourage full live sessions.” (Power Station owner Bongiovi notes that for a recent live string date at the studio, “We were fighting over who was going to get to engineer it.”)

“The culture of session musicians has not evaporated, but it is considerably downsized,” says Ira Siegel, one of those still making a regular living off jingles. Siegel, a guitarist, notes that the lack of opportunities now for session players in studios has meant fewer people aspire to what was once

affordable personal recording technology revolution?

THE STUDIOS

Maybe you don't. At least, that's one of the more candid responses elicited. "That's the reason I haven't put in Ultimatum or even considered an SSL 9000," says Richie Kessler, owner of the three-room, SSL/Neve/Harrison Platinum Island Recording. "You can't get a rate that covers the investment. And I find myself forced to compete with people who claim they are holding their rates, and based on my experience, that's simply not the case with most studios in New York."

Kessler has responded by moving in a different direction. He formed Necessary Records last year, with two acts initially signed to the label. "It's not so much a hedge against the rate situation as it is a departure," he explains. "I see the studio becoming more of a base for this and other independent labels. Just as I've seen a lot of the producers who've worked here and in other New York studios turn their home studios into their own bases. I think that's becoming the future of the studio business. With the onslaught of affordable technology, you can put a studio into six flight cases. Besides, I'd rather be doing music than running the studio as a base for someone else."

Kessler's view contrasts with that at another mid-level facility, Pilot Recording Studios, whose Trident Series 80-C room is aimed at what owner Will Schillinger says is a niche in the New York market. "We're aimed at live recording," he says. "I think you need a niche to be profitable. I don't try to compete so much as I try to service the niche." Schillinger, like most other owners, would not discuss rates except to say that they can vary significantly, depending upon the budget and length of a project. He did say that project studios have not presented him with the pressure they have elsewhere, because his focus is more on the live space, an area lacking in most project studios.

Despite the steady rates, expansions have been taking place, particularly among upper-echelon studios. Right Track Recording opened a third room recently and added an SSL 9000J console to complement its 100-input G Plus and Neve Capricorn. Owner Simon Andrews was reluctant to quote rates but did acknowledge that they have remained relatively sta-

tic in recent years. For him, growth is the only viable solution. "My theory of business is, if you stay still, that's the risk," he says. "You have to keep growing, or else you stagnate. The only difference between levels of studios is the number of dollars involved. It's just as risky for a place with a couple of hundred thousand dollars as it is for one with several million. I'd go as far as to say there actually might be a bit less risk at the top studios because there'll always be

**I find myself
forced to compete
with people who
claim they are
holding their
rates, and based
on my experience,
that's simply not
the case with most
studios in
New York.**

—Richie Kessler

people who want the highest level of facility."

Right Track has been a center for rock and pop recording in New York, as have a few others, in a time when urban genres have become dominant in the city. Dave Amlen, owner of the recently expanded Sound on Sound, which recently added a second room and an SSL G Plus with Ultimatum to its original Neve VR room, says New York has never been a rock town. "From the 1960s on, that's been in L.A. New York has always been jingles and urban/dance and jazz," he says. "It's that diversity that's always helped New York." Amlen says his rates vary, from between \$1,500 to

\$2,300 per day, depending upon the project and the level of technology required. "That was the question I asked myself before I expanded," he says. "Could I survive on the lower end of that rate scale if I had to until several leases are paid off at the end of this year? The answer was yes. But there's always negotiation going on. It's the nature of the business."

Amlen adds that the larger investments made by Right Track and Hit Factory, which built an entire new facility estimated at \$20-plus million two years ago, bringing it to a total of nine studios and five mastering rooms, have had a rising-tide-lifts-all-boats effect on New York. So Amlen counts himself in the optimist camp. "I think it's positive that they made that kind of financial commitment," he observes. "It attracts business to New York, and that helps everyone. You have to do that, because the upper-end studios need to show a world that's made up more and more of ADATs and DA-88s what a major-league facility can do for them. Especially at a time when record company budgets are going down."

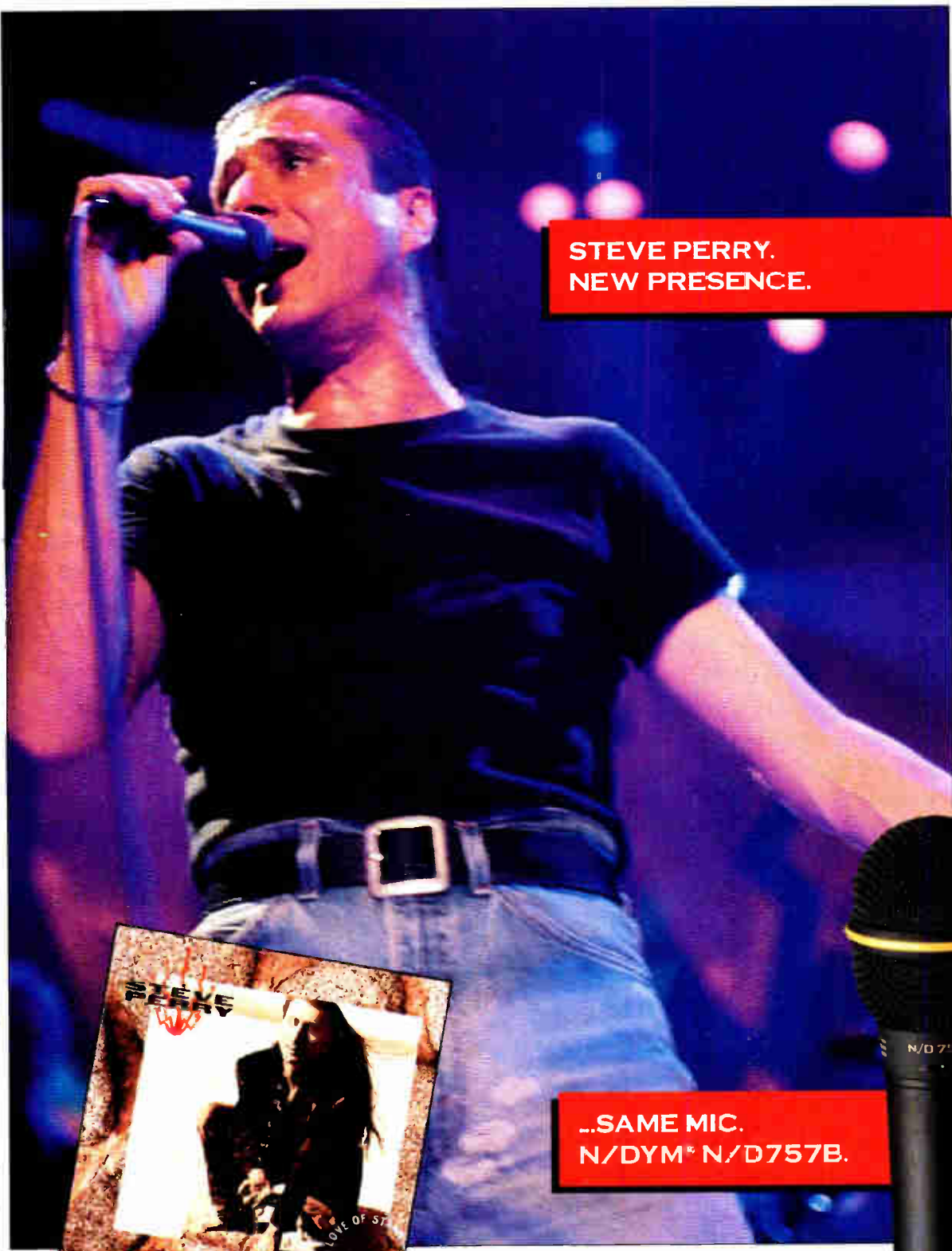
Those lower budgets have abetted a resurgence of rock in New York, mainly among alternative artists, some of whom in the current radio market can quickly become successful mainstream acts with commensurate budgets. "Business here has been good because bands are back in style," says David Harrington, manager at Greene Street Recording, which recently installed Flying Faders on its new API Legacy board. (Its second room has an Amek APC-1000.) Day rates at Greene Street vary between \$1,200 and \$2,200, depending upon technology and budgets, and Harrington acknowledged that the days of big record-company budgets are over and that negotiation is a daily occurrence. "Everyone wants a super deal now, and that impacts on technology decisions," he says. "But you can offer a good live room like this, with these consoles, because the alternative acts are becoming more aware that, just because there's three ADATs on every corner, that doesn't mean that you get the same record."

Live rooms are what Power Station has been based on, says founder and owner Tony Bongiovi. The facility has three studios, three MIDI rooms and a large A/V studio/stage. Bongiovi's observation on the health of New York's studio community is that it is "fair to

assurance standard. No wonder N/DYM® Series III microphones offer the best sensitivity, highest output and the widest frequency response of any microphone in its class.

Electro-Voice N/DYM® Series III microphones are built at our factory in Sevierville, TN, the first professional audio manufacturing facility to receive the prestigious ISO 9002 certification—the world's foremost quality

Electro-Voice, Inc., a HARSIS IV company



**STEVE PERRY.
NEW PRESENCE.**

600 Cecil St. Buchanan, MI 49107 616/695-6831 800/254-6831 Canada: 615/582-2141



**...SAME MIC.
N/DYM® N/D757B.**



N/DYM® III — Clarity and Power Defined.

See us at AES Booth #812

USE READER SERVICE CARD FOR MORE INFO

World Radio History

If you can't hear that *Glitch* before They do...



...Your clients are going to Look at you Differently.

The great horned owl is extremely sensitive to sight and sound. The feathers surrounding its eyes help to gather and concentrate sound waves, its large eyes and sensitive retinas allow it to see in almost total darkness. Highly evolved senses are crucial to the owls very survival.



World Radio History
USE READER SERVICE CARD FOR MORE INFO

Audio engineers need detailed information.

Westlake Audio monitors...

Think of them as an information resource.

For more information:

**Westlake
Audio**

2696 Lavery Court, Unit 18, Newbury Park, CA 91320
(805) 499-3686 Fax (805) 498-2571

AES BOOTH 868

Sound and Noise Control Products with Solutions

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

AlphaAudio Acoustics ACOUSTICAL SOLUTIONS, INC.®

USE READER SERVICE CARD FOR MORE INFO

dio situation is for owners to place less emphasis on big-ticket items and spend more time and effort integrating sequencing-based technology into rooms. That, however, is but one perspective in a prism of suggestions that studios have to sort through in order to stay competitive, an irony that Maserati is willing to acknowledge. However, he adds, engineers and studios are all in the same boat when it comes to rates. "My rates are no higher now, in terms of real dollars, than they were ten years ago, and I think that's true of a lot of engineers these days," he says.

Freelance jingle engineer Kevin Halpin works often at JSM, a music house-cum-studio with two rooms and three Synclavier suites. He's seen how personal recording technology is responsible for the closure of many major facilities in the past few years, a trend he says is continuing. "There's a whole new crop of people at advertising agencies now, and they're realizing that they can go to even smaller places and get the same result," he says. "Music for commercials used to have to be all first-class and top-dollar. That's not the case anymore."

Like the producers, though, it's the album/music-oriented engineers who get romantic about New York. Fernando Kral, whose engineering credits include Joe Jackson, Talking Heads and Jane's Addiction, is increasingly finding work overseas—he was heading for a session in Mexico when he spoke, asking about the water supply—but he'll take New York anytime. "If it's 2 a.m. and I need a bagel or a guitar player, I get one," he says. "I need a piece of gear at midnight. I get it. No problem. You've got this whole Virtual Alley in the form of multimedia coming to New York. I'm getting about 15 percent of my work from that now. People lament about the studios going down, but that's just cyclical. The budgets are dropping, and so are rates, but the studios work around that. There may not be quite as many major artists working in New York right now as there used to be, but that's cyclical, too. It all comes around. There's no place like New York, man!"

Dan Daley is Mix's East Coast editor. He lives in New York and Nashville. Pending approval of his Irish citizenship application, he'll have one more city in which to get to know the bail bondsmen.

We Don't Sell Everything

api

But we started selling **API** equalizers in 1971. **Bryston** power amplifiers in 1978, and **Westlake** BBSM monitors in 1983.

BRYSTON

Westlake Audio

For the past five years, we have represented **Sonic Solutions**, now offering digital editing systems, NoNOISE®, SonicCinema, and MediaNet networking.



This year, new products include the **Apogee AD-1000** 20-bit A/D converter, **Z-Systems'** digital switchers, **Genelec 1030A** portable powered monitors, and the reintroduced **SoundField** microphones.

ZSYS.

We won't sell you everything (or just anything), but we offer over 24 years of experience in helping our customers choose the very best.

GENELEC



Aardvark, AKG, API, Apogee Electronics, Audix, B&B Systems, Bryston, Calrec, Drawmer, Eventide, Gefen Systems, Genelec, Lexicon, Middle Atlantic, SigTech, Sonic Science, Sonic Solutions, SoundField, Sound Ideas, Star Case, Westlake, White Instruments, Z-Systems and other exceptional audio products.

studio consultants, inc.

321 West 44th Street New York, NY 10036 (212) 586-7376

Equipment, support, and design services for professional audio facilities and broadcasters—since 1971.

a glamorous and lucrative lifestyle. "Back in the heyday, disco and records for artists whose records were done by session players kept things going," he says. The change in technology has meant adaptation for the remaining players. Siegel estimates that he now spends about 30% of his sessions playing directly into hard disk systems like Pro Tools, more often than not in overdub rather than ensemble situations. And most of the sessions take place at either music houses or personal studios. "A lot of the session musicians who stayed in it became jingle writers and producers themselves," he says.

THE PRODUCERS

Those without vested interests in the capitalization of studios seem to wax most poetic about the less tangible things that are attractive about recording in New York. Phil Ramone, former owner of A&R Recording Studios and producer of near-mythical proportions (Billy Joel, Paul Simon, Frank Sinatra, among others, as if you need me to tell you that), still bases himself out of suburban New York to be close to both the studios and the vibe. "There's still a New York attitude," says Ramone. "The jingle world has cut up the session musician culture that used to thrive here. It's become a sort of billion-dollar cottage industry. But the musicians are still here, and in New York, you can get musicians like nowhere else." The studios, Ramone adds, are still led by a few great ones, but he agrees that it's harder for all of them to make money now.

"The only thing compatible with making money is to have a good fix-and-mix room," he says. "It's always been hard to get the real estate you need to have a great tracking room here. There are some, but New York is such a real estate-driven market that there haven't been many over the years. It either winds up being a garage with windows or a great but expensive room." Ramone regularly uses the cream of the crop, including Hit Factory, Sony Studios, Right Track and Power Station. "What I'd like to see is the studios get together and deal with the city like the film industry does," Ramone says. "My dream was to build a residential sort of facility, where you could also stay and not pay \$300 a night for a hotel room. But it's all cyclical. I don't see New York fading into the distance anytime soon."

Tommy Musto is a paradigm for

the younger, urban remixer/producer. He has his own studio, NCP, and his own custom label deal, Suburban Records, in addition to a career doing remixes for Blondie, Judy Cheeks, the Gap Band and others. He'll use commercial facilities when he needs to go

"And as long as they're selling records, the labels don't care. But in the end, New York is very urban, and urban doesn't need tracking rooms. And it's the [urban] producers who are getting the record deals. So I think the music will move to the personal

A Worm in the Apple?

One disquieting note has surfaced in New York. Despite the high profile of urban music genres in New York, it has been intimated that some studios have subtly but decidedly shifted their client bases away from rap artists over the past several years, citing unprofessional attitudes and poor payment records. As one studio manager put it, "It all too often turns into a 40-person entourage and one guy with a drum machine. You wind up having to erase graffiti from the walls."

Laura King, co-owner of Chung King Studios, which had become a nexus for much of the rap recorded in New York over the past decade, says she's heard of this attitude in tales told by clients. Chung King's original location on Centre Street, which will be phased out as the studio opens a new three-room location on Var-

ick Street, once seemed to encourage ad hoc graffiti as an interior design motif. Their forbearance gained King and her brother John a rapport with what was back then a musical fringe and which has since become a multi-million-dollar industry. The market has matured, says King, adding that Chung King has balanced a consistent respect for rap artists with a policy of charging \$250 for each incidence of graffiti. "They still sometimes do it, but they get charged for it," she says. "It's helped us maintain a very loyal client base of people with whom we share a lot of mutual respect. If the groups in the studio grow too large, we'll simply ask the artist or producer if they would send some of them home, and they do. It's not a relationship built on fear. Clients' encountering racist attitudes [at other facilities] has been implied to me. That's not tolerated here." ■

beyond the capabilities of his Soundtracs console, and he has relationships with studios like Axis and Platinum Island. But Musto's perspective is very much that of a kid from the projects (project studios, that is): "The state of recording studios in New York is kind of teetering on the edge. The technology gets cheaper, and people get their own studios, and it's gotten to the point where you can hardly tell where a record was done, whether it was a commercial or a project studio, the results are so good. Some studios are starting their own labels, using the equipment to generate more income. I think that's smart. But what's becoming more typical of New York, in our case, our label came before the studio did." Musto adds that he sees some urban acts moving toward more expensive commercial facilities after the money starts rolling in. "But they get big budgets, and frankly, they start wasting money in the studio," he says.

studios. I'm looking now for a digitally controlled console. I think the thing to be is as self-sufficient as possible."

ENGINEERS

Tony Maserati does a lot of dance remixes for acts including Mary J Blige and David Bowie. He's also gone further than anyone before him in attempting to organize engineers in New York. The year-old Allied Pool Corp. has maintained about a dozen members since its inception and went online earlier this year. "It was very difficult to organize them," recalls Maserati. "It's not a group of people used to exchanging information, mainly because it's become so competitive out there. You tend to make friends among the staff of a studio where you work a lot, and that makes you tend to think of other studios as enemies. And I think sometimes some studio owners like it that way."

Maserati's prescription for the stu-

New York BROADCAST

NETWORKS GOING STRONG, GOING DIGITAL

There was a time, more than 30 years ago, when you could flip on the television and, whatever show you were watching, chances were that it was produced in New York City. *The Tonight Show*, *The Honeymooners*, *I Love Lucy* and *The \$64,000 Question*, to name just a few, were all made here. Today, much television production has long since moved to the carpeted bungalows and sprawling soundstages of Los Angeles, but the network news broadcasts and magazines, many popular day-time talk shows and soap operas, a host of cable TV shows, and of course, late-night talk shows starring guys named Dave and Conan all still proudly call New York home.

Perhaps it's because, like most New Yorkers, the producers of these shows have an intrinsic desire to be the first to know what's going on, what's so funny

and who's been misbehaving. A more likely explanation is that the Big Apple refuses to relinquish its grip on information-gathering: at the same time, production centers for cable channels like HBO, MTV, and Comedy Central continue to grow. Consequently, network and cable television production and its audio operations are thriving, according to many audio engineers working in area studios. The number of New York-produced shows has remained steady over the past few years, and as more viewers and TV manufacturers upgrade from matchbox speakers to stereo and home theater speaker systems, New York's television broadcast studios are making major facility upgrades, combining state-of-the-art analog and digital gear in order to provide ever better broadcast audio.

The biggest technological change in

by Evan Ambinder

R T A



32 Band True RMS Real Time Analyzer 4-Channel Multiplex

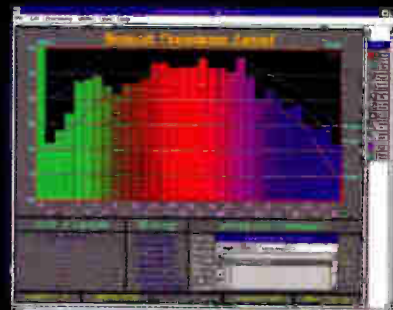
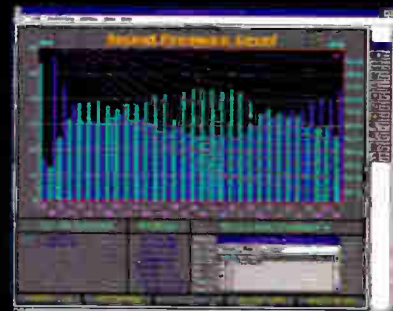
Today's ever improving audio standards, and increasingly technical and creative acoustic applications, require precision realtime acoustic measurements and documentation more than ever before.

Whether your application is home theater, cinema, church, or stadium installations, the pcRTA has powerful features and solutions for you.



PAC3 - The Portable Solution If your measurement requirements demand portability, we've got the answer. The PAC3 provides a serial interface to laptop or other computers, and more...

**Call Today for a free
Demo Disk!
Tel: (503) 620-3044**



The pcRTA gives you affordable laboratory precision and quality with all the power and features of a PC-based system. Offering 4-mic multiplexing, the pcRTA makes surround sound alignment and spatial averaging a snap. Moreover it provides built-in alignment curves for NC, SMPTE X/N, and more. Complete with ANSI filters A,B,C,D,E and a host of other features to numerous to mention!

LinearX Systems Inc
7556 SW Bridgeport Rd
Portland, OR 97224 USA

TEL: (503) 620-3044 / FAX: (503) 598-9258
BBS: (503) 598-9326 / Internet: info@linearx.com

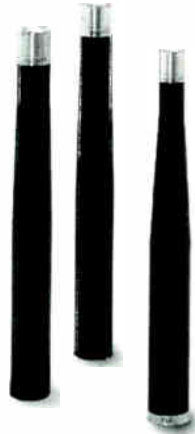
©1995 Product and Trademark names are the property of their respective owners.



International Dealers: Argentina: Interface SRL (54-1)741-1389/ **Australia:** ME Technologies 61(0)65-50-2254/ **Austria:** Audiomax 49(0)71-31-162225/ **Belgium:** Belram 32(0)2-736-50-00/ **Brazil:** SDS Equipamentos 55(0)11-887-7597/ **Canada:** Gerraudio 416-696-2779/ **China:** HiVi Research (852)2-556-9619/ **Denmark:** Finland: A&T Ljudproduktion 46(0)8-623-08-70/ **France:** Belram 32(0)2-736-50-00/ **Germany:** Audiomax 49-71-31-162225/ **Indonesia:** Ken's Audio 62(0)21-639-5806/ **Italy:** Outline snc 39-30-3581341/ **Korea:** Sammi Sound:82(02)463-0394/ **Luxembourg:** Belram 32(0)2-736-50-00/ **Malaysia:** AUVI 65-283-2544/ **New Zealand:** ME Technologies 61-65-50-2254 **Norway:** A&T Ljudproduktion 46(0)8-623-08-70/ **Philippines:** Dai-Ichi Denshi (63)2631-6980/ **Poland:** Inter-Americom 48(22)43-23-34/ **Singapore:** AUVI 65-283-2544 **Spain:** Audio Stage Design 34(94)620-27-47/ **Sweden:** A&T Ljudproduktion 46(0)8-623-08-70/ **Switzerland:** Good Vibes Ltd. 41-56-82-5020/ **Taiwan:** Gestion Taycan Intl 886-2-562-3883/ **Thailand:** AUVI 65-283-2544/ **The Netherlands:** Duran Audio 31-41-80-15583/ **UK(England):** Munro Assoc 44(0)171-403-3808.

AVALON

Pure Class A • Music Recording Systems



R4 - Remote Control

- ▶ Remote control for M4 preamplifier
 - ▶ Variable gain in accurate 2dB steps
 - ▶ Microphone phase reverse switch
 - ▶ VU metering of preamp output
 - ▶ 4,000 ft remote cable length
 - ▶ Two stage peak signal LEDs
- US\$ List 379.⁰⁰

M4 - Pure Class A Microphone Preamplifier

- ▶ 100% discrete pure Class A Cascode FET, DC coupled high current output stages
 - ▶ Inputs for dynamic, 48v condenser and B&K 4000 series high voltage microphones
 - ▶ High impedance instrument and DI input
 - ▶ Remote control i/o port (for use with R4)
 - ▶ Transformer microphone input (except B&K)
 - ▶ Low noise, +30dB output into 600 ohms
 - ▶ Variable high pass low order filter 20-200Hz
 - ▶ Input signal polarity (phase) reverse
 - ▶ -20 dB input pad for high levels
 - ▶ Sealed relays for all gain and signal switching
 - ▶ Large illuminated analog VU meter
 - ▶ Twin stage signal peak LEDs
 - ▶ International external toroidal power supply
 - ▶ Class A discrete power regulators
 - ▶ Optional B&K 130v phantom high voltage card
 - ▶ Nineteen inch rack mount adapter available
- US\$ List 1,790.⁰⁰

HIGH-END OUTBOARD
 PREAMPLIFIERS
 COMPRESSORS
 EQUALIZERS
 MASTERING EQ

U5 - Class A Direct Box

- ▶ 100% discrete warm Class A mode
 - ▶ Variable gain preamp to + 30dB
 - ▶ Dual mic and line level outputs
 - ▶ Unique six-tone bank selections bass guitar and keyboards, acoustic & electric guitars.
 - ▶ High Z input impedance
 - ▶ Very low noise -96dB
 - ▶ High cut switch eliminates noise
 - ▶ DC coupled balanced 600 ohm output
 - ▶ Speaker input to 400 watts
 - ▶ Personal headphone monitor
 - ▶ Signal present status LED
 - ▶ Active to thru selection
 - ▶ Internal AC toroidal power supply with discrete class A regulators
 - ▶ Twin channel rack mount kit available
- US\$ List 679.⁰⁰



U5 - Pure Class A HIGH VOLTAGE DIRECT BOX

S O N I C E X C E L L E N C E

Sales



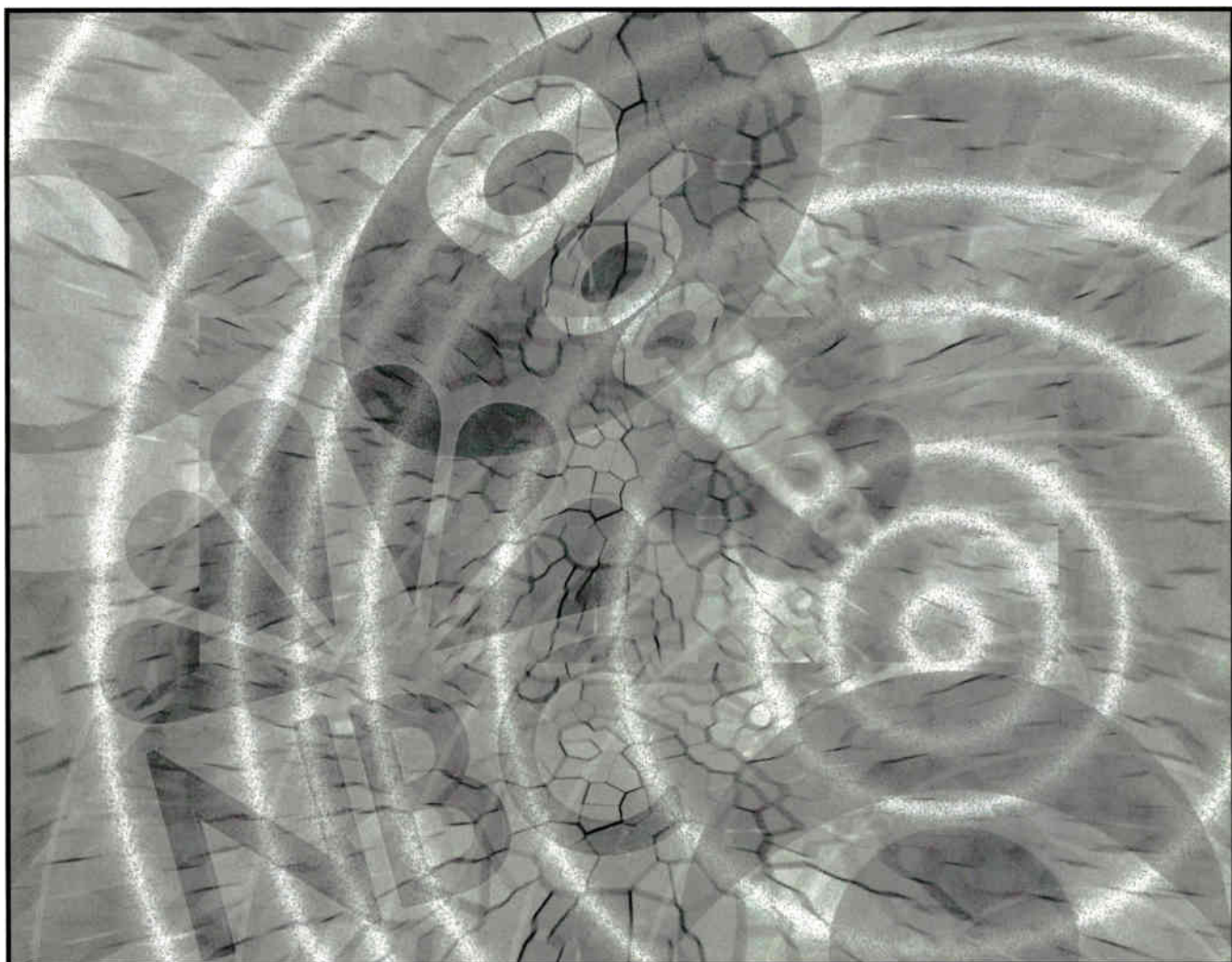
Tel: (818) 557-7605

Factory



AVALON DESIGN

PO Box 5976, San Clemente, CA 92673 USA
 Tel: (714) 492-2000 • Fax: (714) 492-4284



the past few years has, of course, been wider acceptance of digital audio. Almost every NYC broadcast studio is using digital audio workstations to edit and clean up voice-overs and music tracks, and many are also using Digicarts to track promotional spots. A few are even evaluating digital consoles to mix talent and audience feeds, prerecorded music, live bands and sound effects.

CBS

At CBS Broadcast Center, David Lazecko, director of studio operations, and his staff have been busy running audio and video production at the West 57th St. facility and at the Ed Sullivan Theater (home to you-know-who) a few blocks away on Broadway.

"We do in-house projects like the *CBS Evening News With Dan Rather*, news magazines like *60 Minutes*, all of Channel 2's [the local CBS affiliate] audio and video, as well as production for outside shows like *As the World Turns* for Proctor and Gamble, *Geraldo* for Tribune, and *Politically Incorrect* for HBO," Lazecko explains.

A typical day finds Lazecko and his crew preparing announcer and promo tracks for the news and sports de-

partments, as well as for *As the World Turns*. Like many broadcast audio shops these days, CBS is recording promos on 360 Systems' Digicart, a hard disk-based recorder which has virtually replaced the 8-track NAB carts of the analog age.

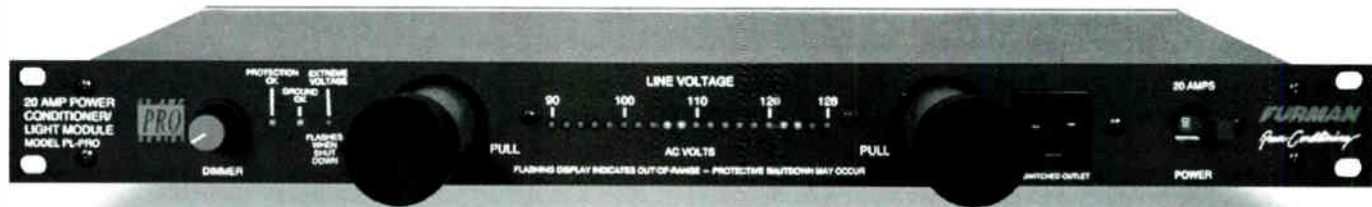
CBS has also taken a liking to another popular digital recording medium: CD-Rs. "*As the World Turns* has several composers who write for the show," says Lazecko. "The musical director tells them what to compose, and they produce tracks of varying lengths on DAT, ¼-inch tape and cassette, which we then transfer onto CD-Rs. Then the music director tells us to take track two and put it here, track three and put it there. We don't do any editing because the composers have already mixed it to the proper length, so we just fly it in live with sound effects to videotape as the show is filmed." CD-Rs have also been used to preserve more than 5,000 analog carts in CBS's archives.

For editing promo spots, Lazecko and company are currently using the AMS AudioFile system, though they are also evaluating the SSL Scenaria and Digidesign Pro Tools III systems. Lazecko points out that the increased

**At Furman,
we want
your sound
to sizzle.
Not your
equipment.**



**That's why
the new
Furman PRO Series
gives you the
absolute best
protection from
power problems
you can get.**



How does a new Furman PRO power conditioner keep your equipment out of the frying pan?

Simple. The PRO Series gives your equipment the industry's most comprehensive protection against damage from power problems. No other brand even comes close.

All three Furman PROs are rated at 20 amps/2400 watts, more than enough capacity for your project studio or touring rig. And that's just the beginning.



Only the PRO series uses all these protection components

Every Furman PRO utilizes a unique combination of MOV's, gas discharge tubes, fast-blow fuses, high voltage inductors and capacitors and high-inrush magnetic circuit breakers. That means a Furman PRO can safely absorb and dissipate a whopping 11,000 amperes of spike/surge current in any mode, even from a nearby

lightning strike. And a Furman PRO is unmatched at preventing noise from fluorescent lights and other electronic pollution from leaking into your music.

Here's another Furman PRO Series exclusive you'll really like: Extreme Voltage Shutdown. Your PRO will not turn on if it senses abnormal mains voltages. If it's already on and detects that your voltage is too high or too low, the PRO shuts down power to its outlets, instantly. No damage to your equipment, no damage to your PRO. When the mains



You always know your power and protection status before your equipment is switched on

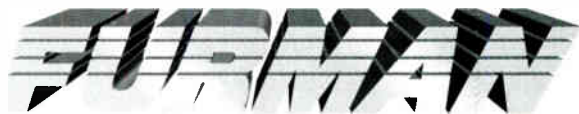
voltages return to normal, the PRO instantly restores clean, conditioned power to your equipment.

There's a new Furman PRO for every need: The PL-PRO (top) features an AC voltmeter with flashing alerts for marginally high or low voltages, and new precision-machined, dimmer-controlled rack lights that automatically switch off when either light tube is pushed in. The PM-PRO (left) is for applications where lights aren't needed — it adds an RMS-reading AC ammeter along with the voltmeter. The PS-PRO (right) applies and removes power from its outlet groups in a variable timed sequence, and alerts you to wiring faults with neon indicators.

All Furman PRO models provide LEDs to indicate Protection OK, Ground OK and Extreme Voltage Shutdown, widely-spaced rear outlets for "wall warts," and a 10 foot long, heavy duty, 12 gauge cord.

If you require PRO level power conditioning for more than one 20-amp circuit, ask for our data sheet on the new Furman PowerPort Remote AC Controller. Any number of PowerPorts can be easily networked for control and monitoring from multiple locations.

Your sound should sizzle. Not your equipment. Call or write us today — we'll send you a free color catalog.



NUMBER ONE IN POWER CONDITIONING!

Furman Sound, Inc.
30 Rich Street • Greenbrae, CA 94904 USA
Phone: (415) 927-1225 • Fax: (415) 927-4548

Furman products are made in the U.S.A.

See us at AES Booth #1261

demand for such equipment is driven by the financial aspects of nonlinear editing: lower cost, as well as increased speed and reliability.

But Lazecko's chief focus these days is on the construction of a full-blown, audio post-production center. "Our ultimate goal is to have three complete rooms. One will be a room that will allow us to do transfers onto Digicarts and CD-Rs. Another room will be a big audio post suite that we envision doing audio for large news- and sports-type programming, and a third, smaller room will be for recording announcer tracks, voice-overs and sonic clean-ups."

Lazecko and his staff are designing the entire facility and hope to have the voice-over room and dub rooms open by the end of this year. Once the studios are up and running, they will be marketed to New York-based television production companies.

"The idea is to bring in the people who we already do full-blown video production for," says Lazecko. "Right now, our outside clients have to bring their audio tapes somewhere else to get worked on. We are going to change that."

NBC

Studio refurbishments are also underway at "30 Rock," the Rockefeller Center home of shows like *NBC Nightly News*, *Dateline NBC*, *Saturday Night Live*, and *Late Night With Conan O'Brien*. NBC is building four new audio and video production suites intended for use during next year's summer Olympics. Among the equipment being evaluated are several digital consoles, including the SSL Axiom, the Neve Capricorn, Zaxcom's DMX-1000, as well as Sony and Studer consoles.

On the entertainment side, Project Engineer Jim Starzynski and his crew have been tracking and remixing several shows using a wide array of high-end digital and analog gear. "The most complicated show is *SNL* because of the magnitude of the production," says Starzynski. "Right now, we're working with a separate sound effects room, a tracking room, a music-mixing room, a music playback area and a main production room, which we call 'the funnel' because it mixes the main booms and RF mics and accepts signals from all the other consoles."

As Starzynski describes it, everything for *SNL* is recorded discretely to a Sony 3348 and 3324 from the live

Workstations?

Akai
Digidesign
Fostex
Roland
Sadie
Studer
Dale Pro Audio?

Yeah, DALE Pro Audio

Dale Pro Audio 7 East 20th St, NY, NY 10003
(212) 475-1124 FAX (212) 475-1963

USE READER SERVICE CARD FOR MORE INFO

SONY?

PCM-3348
PCM-3324S
PCM-7030
PCM-9000
Sony's Dealer Of The Year 94-95
Dale Pro Audio?

Yeah, DALE Pro Audio

Dale Pro Audio 7 East 20th St, NY, NY 10003
(212) 475-1124 FAX (212) 475-1963

Why do top performers demand Audix® OM-Series Mics?

The Red Hot Chili Peppers

Bruce Springsteen



The Breeders

Bonnie Raitt

Al Jarreau

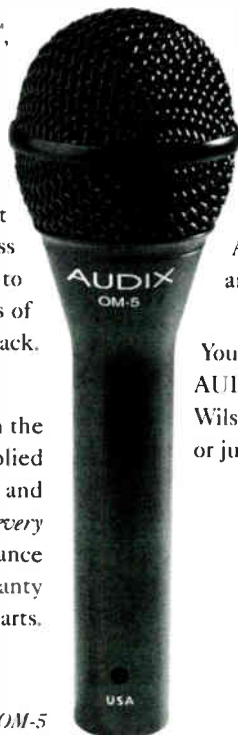
Helmet

The performance.

Performance is everything. And our Audix OM-3™, OM-5™ and OM-7™ are the best performing mics... at any price.

Leading technology. Our exclusive VLM (*Very Low Mass*) diaphragm is made of a remarkably strong, yet thin and lightweight composite Mylar®. Its lightness allows phenomenal response and quick reaction to acoustic impulses. The results are unmatched levels of resolution, rejection and gain before feedback.

Top quality. Audix makes the highest quality mics in the industry. From our rugged, electronically applied "e-coat" finish, to our durable, gold XLR connector, and high-tech, precision tooling—every element of every OM-Series mic meets the most demanding performance standards. It's why we can offer a lifetime warranty on OM-Series parts.



The OM-5

But don't just take our word. Go ahead. Shop around. Look for a mic as good as the OM-3™, OM-5™ or OM-7™. You'll be comparing them to mics costing much more. And frankly, no matter how much you spend, you won't find a better mic... just ask the pros!

Ask your dealer to demo the Audix OM-3™, OM-5™ and OM-7™. You won't be disappointed.

You can write to us at:
AUDIX, 29103 SW Kinsman Road,
Wilsonville, OR 97070; fax us at (714) 588-8172;
or just call 1-800-966-8261

Don't buy a mic without trying an Audix.

AUDIX®

© Audix Corporation, 1995. All rights reserved. Audix, the Audix logo, OM3, OM5 and OM7 are trademarks of Audix Corporation. Other trademarks are the property of their respective owners.

show. The show is then remixed on an SSL 4096 with Ultimatum for an encore broadcast. Sweetening in the remix includes some remixing of dialog, sound effects and music, and some noise reduction and some EQ'ing effected with Pro Tools II.

SNL's sound effects room, like that used for Conan, is equipped with a 22-channel BMX Pacific Recorder console. "The primary purpose of these rooms, which are hard-wired into the stereo inputs of the main production consoles, is to play back sound effects insertions live to the main control room for tape or broadcast," Starzynski says.

ABC

Fifteen blocks uptown at ABC, Dick Mulliner, general manager of post-production, broadcast operations and engineering, supervises audio mixing, sweetening and sound effects for shows like *ABC Nightly News With Peter Jennings*, *Prime Time Live* and *All My Children*.

"We have two 48-channel tracking and mixing rooms that are completely floating," says Mulliner. "Each room has a Neve VRP equipped with Massenburg Flying Fader automation with Total Recall, a 24-track analog Studer recorder and an Adams Smith 2600 synchronizing unit. We also have at least a dozen Sony 750 DAT machines between both rooms, and access to D-2 video recorders."

In addition, two sound effects rooms each house a 24-channel MX board and a 32-channel Sonic Solutions system fitted with USP cards (the department has a total of eight Sonic Solutions systems).

Audio support takes on a variety of forms, depending on the show. "For example, we do music-scoring for sporting events and promos," says Mulliner. "We'll transfer and cut the music to time, stretch it, master it and then mix it back to video. Essentially, the digital workstations take the audio feed from the original videotape. From there, the music, sound effects and narration are added, 'No-Noised' and 'De-Clicked.' Then the audio goes into the primary mixing rooms, out of the Neve boards and onto the D-2 [videocassette master]. A sound archive is also made onto 24-track analog tape for encore broadcast remixes or, in the case of *All My Children*, *One Life to Live* and *Loving*, for foreign distributors so that they can dub in their own language."

DAT & MDM?

Akai
Alesis
Fostex
HHB
Otari
Panasonic
Sony
Tascam
Dale Pro Audio?

Yeah, DALE Pro Audio

Dale Pro Audio 7 East 20th St, NY, NY 10003
(212) 475-1124 FAX (212) 475-1963

USE READER SERVICE CARD FOR MORE INFO

Consoles?

Amek/TAC
Mackie
Midas
Ramsa
Sony
Soundcraft
Tascam
Yamaha
Dale Pro Audio?

Yeah, DALE Pro Audio

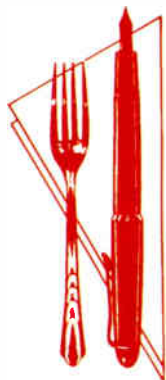
Dale Pro Audio 7 East 20th St, NY, NY 10003
(212) 475-1124 FAX (212) 475-1963

by Mr. Bonzai



HANS ZIMMER

SCORING KING



In a wide variety of blockbusters, Hans Zimmer has earned phenomenal success, taking him to the top rank of film composers. He scored last year's *The Lion King*, Disney's all-time highest-grossing feature. The soundtrack is the most successful in the history of Walt Disney Records, with more than 12 million copies sold worldwide. This year's riveting *Crimson Tide* and the lighthearted *Nine Months* have elevated Zimmer's stature a few notches more. Earlier films such as *Rainman*, *Backdraft*, *Thelma and Louise*, *Driving Miss Daisy*, *A League of Their Own* and *True Romance* exhibit Zimmer's ability to deliver the music wherever the story takes him.

German-born, Zimmer was educated in England, where he pioneered the use of synthesizers and their integration with traditional orchestra in film and television. He was

also a member of The Buggles, best known for recording the worldwide hit "Video Killed the Radio Star," the first cut shown when MTV debuted."

Today, Zimmer and his partner Jay Rifkin head up Media Ventures, a sparkling new L.A. studio complex that is home to a team of composers who are scoring big time throughout the entertainment industry. We met in Zimmer's personal music lab and munched some homemade natto-maki, a form of sushi rolled with fermented soybeans.

Bonzai: So what do we have here at Media Ventures?

Zimmer: We have two control rooms overlooking a studio, then we have my composition room, three Euphonix consoles, plus six other writing rooms for our composing friends. We have six composers, and each has an assistant, and then the people who

PHOTO: ED COLVER

THE ULTIMATE MUSIC RETAILER

KURZWEIL K2500



ALESIS ADAT



GODIN MULTITAC
MIDI GUITAR



KORG X5



KRK
SPEAKERS



MACKIE DESIGNS 24•4



ROLAND VG-8



TASCAM DA-88



E-MU EMULATOR IV



HELMAN U87



DIGIDESIGN
AUDIOMEDIA II



AUDIO TECHNICA 4050



SONY PCM800



PANASONIC SV3700



PLUS HUNDREDS OF OTHER PRODUCTS FROM GENELEC • AKG • JBL
TANNOY • LEXICON • SUMMIT • OPCODE • FOSTEX • AKAI
MARK OF THE UNICORN • KAT • APHEX • ART • DBX • FATAR
DIGITECH • SHURE • TOA • SOUNDCRAFT • TWELVE TONE
SENNHEISER • TAC/AMEK • CAD AND DOZENS MORE!



OUR EXCLUSIVE GUARANTEE:

"IF YOU DON'T LIKE IT, WE'LL TAKE IT BACK — WITH NO HASSLES!"

219•432•8176

5335 BASS ROAD, FT. WAYNE, IN 46808

FAX: 219•432•1758 / sales@sweetwater.com
http://www.sweetwater.com



ARE YOU KIDDING? Of course I want to receive a full year of Sweetwater Sound's **SWEET NOTES** newsletter absolutely free!

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE () _____

Mail coupon to address above or call for your free subscription 3

Sweetwater SOUND INC.

USE READER SERVICE CARD FOR MORE INFO

World Radio History

Millennia

Media®

**IT'S AES CONVENTION TIME AGAIN, AND
WE AT MILLENNIA WISH TO RECOGNIZE
AND THANK OUR CUSTOMERS.
YOU'RE THE BEST!**

Telarc Records, Jack Renner (20 ch)
Sony Classical, David Smith, "Our most
neutral mic preamp."
San Francisco Symphony, Jack Vad
The Cleveland Orchestra, (16 ch)
Israel Philharmonic Orchestra
Los Angeles Philharmonic (40 channels)
Bruce Swedien (Michael Jackson, etc.)
Walter Becker, Steely Dan
Bill Bottrell (Sheryl Crow, Toy Matinee)
Shawn Murphy (Apollo 13, Braveheart,
hundreds of other hit movies)
Bob Clearmountain, Personal Studio
Frank Serafine "Your preamp is brilliant!"
David Hewitt (28 ch, '94 TEC Award)
Chesky Records, David Chesky "It
doesn't sound solid state."
The Hollywood Bowl
The San Francisco Opera
Tuck and Patti (Epic Records)
Michael Hedges, Personal Studio
Bruce John Leek (Telarc, etc.)
Paramount Pictures, Foley Stages
Chad Wackerman, Personal Studio
John Leventhal (Shawn Colvin)
James Anderson, (Twice "Jazz
Engineer of the Year")

Tom Lazarus, Classic Sound, NYC
Celine Dion (Daniel Baron)
Sarah McLachlan, Live rack
John Cuniberti (Joe Satriani, etc.)
Koch International Records
Mike Pinder (Moody Blues, etc.)
Ed Mann (Frank Zappa, etc.)
Klavier Records, LA
Joseph Magee Audio Engineering
Bob Fernandez (100's of hit movies)
NHK, Japan Broadcasting Co.
The Audio Department, NYC
Sunset Sound, LA
Muscle Shoales Recording, Alabama
Triarios Studios, Moscow
Pauler Acoustics, Germany
The Time Machine, Vermont
Gary Baldassari (Disney Scoring, FOX)
National Geographic Film Stages
Sound One, NY (Lgst ADR in NYC)
The Three Tenors in LA, Decca (16 ch)
Streisand NY Concert live CD (14 ch)
Forrest Gump Soundtrack (D. Sands)
Dreamhire Rentals (NYC and Nashville)
The Toy Specialists Rentals (NYC)
Design FX Rentals (LA)
Stephen Jarvis Rentals (San Francisco)

And to the hundreds of other top engineers, producers, and artists who have made Millennia Media microphone preamplifiers a recognized standard in musically accurate recording. Stay tuned in 1996 as we begin shipping the 20-bit A/D preamp plug-in module and our new high purity Mixing Suite.

MILLENNIA MEDIA, INC. SACRAMENTO
T 916-363-1096 F 916-363-9506

true "word-of-mouth" approach. "No brochures, no listings, just equipment lists and reels," Mann says. "It's a direct-contact business at this level."

Audio Paint's Piazza is taking it a bit further. While he relies primarily on word of mouth, he is also preparing a CD-ROM whose interactive nature—i.e., audio clips and pictures—he believes will attract advertising agencies. And he did it in true sub-culture fashion: He swapped audio work for help from a programming

**I'm not afraid to put
something on the credit
card as long as there's
a project coming in soon
that will cover it.**

—Frank Piazza

friend who will do the authoring.

Finally, a word about billing. At a time when most project studios are billing clients on word processor-composed invoices, Foote uses a software package called "Mind Your Own Business," marketed by Best! Ware. "As the business expands, you wind up needing a lot of the same tools that other businesses use," he says. Piazza, who does his billings on word-processor invoices, counters that his system works just fine and that the size of his client base doesn't warrant anything more sophisticated than that. "But as the business expands, I expect I'll look into other options," he says.

So business matters are beginning to matter more in the projects, which means project studio owners are now adding green eyeshades to the collection of producer, engineer, composer, programmer and musician hats. If a professional audio manufacturer is casting about for yet another product line that appeals to this niche, it might consider samplers that double as hat racks. ■

Dan Daley is Mix's East Coast editor.

leged copyright infringements, which are not uncommon occurrences in the industry. "The project studio is really focused on content development," observes Foote. "It's not the services or the technology that counts in this situation; it's the content. And there's a lot of liability built into music composition, to the point where a lot of our clients require it now." The insurance premium for the coverage is based on a sliding scale determined by the studio's annual billings. "It's relatively expensive, but it still costs less than insuring a couple of cars in Manhattan," he says wryly.

BUDGETING

Commercial studios are under more severe budget pressures than project studios. They have to try to maintain as close to state-of-the-art technology as revenues allow, while at the same time accommodating technology trends that are both client-driven and imposed by the flavor-of-the-month mindset.

Project studios, on the other hand, have fewer fashion constraints when it comes to purchases, but they also have less capital leeway. The result is a fiscal conservatism that would warm the hearts of Republicans in Congress. Richard Chisum, of Chisum Music in Murfreesboro, Tenn., does primarily audio post-production for industrials and jingles. He simply makes out a wish list and then waits for larger projects to finance them.

Even so, as Foote points out, the choices usually remain those of the studio owner. "The equipment purchasing decisions have nothing to do with the allure of the technology to the client," he says. "Our clients are more interested in the content than how we achieved it." Marc Mann, who owns Music Production Services in Burbank, Calif., is pleased with his eclectic collection of an API console, DA-88 and ADATs, Pro Tools and an old MCI JH-24 analog 2-inch deck. "I go for bang-for-the-buck," he says. "The name of the game is to keep overhead down, and you do that by paying cash and not taking out leases on equipment. I know a lot of people who've gotten bit by the studio bug and turn to leasing to get more and more equipment, and it can turn into a vicious cycle." It can also turn a project studio commercial before the operator realizes it, as more and more revenue is needed to support purchases and the studio is

increasingly rented out to help defray the expenses. But more often, Mann says, the entire project studio can go down the drain.

Piazza budgets \$250 per month for repairs and miscellaneous purchases. However, he adds, "I'm not afraid to put something on the credit card as long as there's a project coming in soon that will cover it. I recently bought a third ADAT, based on a project I knew would provide the extra revenue to cover it."

Cliff Downes does mainly Christian music recording from his Amek Matchless/Otari MTR-90-equipped project studio, North Beach, in Nash-

ville. He uses a percentage of recording and production fee revenues to finance equipment purchases or upgrades. He also bills production and studio time separately, which helps him establish the studio as a stand-alone entity, which in turn helps him book it out when he's not in town. "That helps with the overhead," he says, "and it allows me to have an individual identity as a producer."

ADVERTISING

This is a real short category: There is virtually no advertising among project studios other than the tried-and-

CLEAN UP YOUR TIME CODE!

Please pass the Talkback™

Introducing the NEW SR-15+ DISTRIPLYZER
Analyzes, Cleans and Distributes Code—now with built-in status report!

SR-1 Time Code Refresher

SR-2 Refresher with Frame Rate Reader

SR-26 Time Code Distributor and Refresher

BRAINSTORM TIME

Intelligent Solutions

The new SR-15+ Distripolyzer is the latest problem solver from **Brainstorm**, the leader in practical time code gear and smart ideas for your everyday audio synchronization needs. Before your next crisis occurs, take time to **Brainstorm**.

Marketed exclusively by:
AUDIO INTERVISUAL DESIGN, USA
(213)845-1155 FAX (213)845-1170

BRAINSTORM ELECTRONICS, INC.

INTERNATIONAL DISTRIBUTORS: United Kingdom: HHB Communications Ltd., Tel: +44-181-962-5000
Germany & Benelux: AD Technologies b.v., Tel: +31-40-84 10 82 • Portugal: AudioPRO, Tel: +351-1-353-8331
Japan: Sanken Audio Systems, Tel: +81-3-5397-7092 • Korea: Best Logic Sound Co., Tel: +82-2-741 7385

Call for the name of a dealer near you!

USE READER SERVICE CARD FOR MORE INFO

by Dan Daley

PROJECTS GET DOWN TO BUSINESS

You tend to treat your third or fourth car a lot more tenderly and conscientiously than your first one. It was all right to have a beer can or two rolling around under the seat when you first started out, but as you got older, and the cars got more expensive, things changed.

The same applies to project studios. Owner/operators are thinking about things that many never had to consider before, from insurance to marketing to budgeting—the business aspects of business—and they're addressing these issues in ways both surprising and expected.

Take insurance. It was rarely a consideration for many I talked to a few years ago. A few would deal with their recording equipment as they did when they were musicians, listing items on a floater to their homeowners' or renters' policies, if they dealt with it at all. But insurance has become a significant issue lately. Frank Piazza, who owns Audio Paint in Manhattan, recently moved his project studio from his home to a space in a commercial building. The building's policy covers him for liability, but as most project people told me, liability is a low-priority consideration for them because they rarely interact with clients in their own facilities. Piazza shopped for the lowest-cost premium he could find that still gave him better-than-replacement-cost coverage for his equipment, which includes Alesis ADATs and a Mackie console. "The equipment just depreciates so quickly at project studio price points that it makes sense to shop cost rather than comprehensive coverage," he explains. What he did find, though, was

some difficulty locating a broker who understood his business. "She had trouble classifying me. I tried to explain that it was like office space, just audio office space. But you fall in between the categories of musician and full-blown recording studio."

Perhaps the most interesting insurance anecdote comes from Ray Foote, owner of Big Foote Produc-

Project studio owner/operators are thinking about things that many never had to consider before, from insurance to marketing to budgeting, and they're addressing these issues in ways both surprising and expected.

tions, a music and scoring facility in Manhattan. Foote, who co-owns the Mackie/DA-88/DA-80-equipped studio with his brother Sherman, incorporated in order to limit their personal liability. But the pair also took out what's known as "errors and omissions" insurance. It covers potential legal actions stemming from al-

Although ABC's audio-for-television broadcast engineers primarily handle in-house projects, they occasionally do work for clients who already have a relationship with the network. "The Indianapolis 500 Museum had us do a full Dolby Surround Sound mix for a laserdisc promoting the race," Mulliner recalls. "We prepared an audio highlight of all the races throughout the years. Although almost all of the sounds had to be created from our sound effects department in order to re-create the feeling of being at the race, we mixed in some of the feeds from actual broadcasts."

ALL DIGITAL STUDIO?

With DAWs, Digicarts and digital video-editing systems like the Avid becoming everyday broadcast production tools, and HDTV edging closer to consumer reality, is the advent of the all-digital television production studio close at hand for New York's audio for television broadcast studios?

"There's a good possibility that we may go to an all-digital plant," says NBC's Starzynski. "Right now, we're laying the groundwork, but the transition doesn't have to be that fast because we have a lot of state-of-the-art analog gear."

ABC's Mulliner is also cautious. "There are two concerns when looking at digital: What are the additional costs, and do these costs warrant what you receive in improved sound quality. The only additional things you get out of digital are an increased signal-to-noise ratio and no print-through when it comes to long-term tape archiving. But to pay extra for a little more dB is not really worth it for TV."

However, CBS's Lazecko says they will be looking at an all-digital video audio/video production system that encompasses a digital video switcher and an audio/video router.

"The technology has gotten to the point where digital sound and picture are broadcast-quality to us, and it's economical because of the time and cost it saves. We don't have multigeneration tape loss anymore, so clients are more satisfied, and it's gotten to the point where we know that whatever goes in is going to come out." ■

Evan Ambinder, who occasionally broadcasts for Mix magazine from New York, would like to thank Michael Descoteau for his help with this article.

New York is ready for another pro audio dealer and **Dale Pro Audio** is ready for New York.

We designed and built the **most modern demo rooms** in the city and packed them with products from the best names in the business. Imagine digital workstations, amps, recorders, consoles, and signal processors available for **hands-on demos** and direct comparisons.

But we didn't stop there.

Dale Pro Audio has a **staff** that knows their business...and your's too - whether your business is **recording, broadcast, post-production, or commercial sound**. Dale has been here for more than 30 years and we're the **leading dealer** for many of the lines we carry.

We ask the right questions. We listen. We keep it in stock. We ship promptly. And we sell it at the right price.

After all, this is New York

DALE Pro Audio Yeah!

Dale Pro Audio 7 East 20th St, NY, NY 10003
(212) 475-1124 FAX (212) 475-1963

run the studio, engineers, technicians. The whole thing is the '90s version of the hippie commune. It's a lonely job being a composer, so we all sort of club together. When I get stuck, it's nice wandering down the hall and seeing someone else being stuck. You feel you're not the only idiot.

Bonzai: And this room is just for you?

Zimmer: Yes, this is my main writing room. I work in such a peculiar way because I don't like doing overdubs.

Bonzai: Why is that?

Zimmer: It's a hangover from the '70s. I always hated the way I made things sound in the '70s—we'd get the bass drum up and EQ it to shit, and then we'd get the snare drum up and EQ it to shit. By the end of it, you'd have this track with all these dysfunctional elements. Now I just write with pretty much the faders in a straight line, and if I need something to be a little brighter, I write another line in a higher inversion. On this Euphonix [right now] I can see the EQ being switched on three channels out of 96. I'm forever trying to make it sound as human as possible.

Of course, I overdub in the sequencer all the time, but by the point it gets onto tape it should be in a straight line, all the volumes are written into the sequencer, etc., which is a great advantage when you go to mix. You put all the faders in a straight line, and you know that's how you liked it when you last left it. You don't go chasing that ephemeral quality—the magic of the demo. I've lost that so many times. There's so much equipment in here because I don't ever want to run out of voices. I never want to run out of polyphony. And then there's all the old gear.

Bonzai: I don't think I've ever seen so many knobs in one room...

Zimmer: Yes, this is pretty stupid, pretty outrageous. Over there is a real Moog, modular, but a very up-to-date one. Kevin Lightner, a technician friend of mine, literally replaced every part, every jack socket, so it's like new.

Bonzai: Are there new pieces of equipment you like?

Zimmer: Yeah, sure. I like these DMC1000s, and I love the Euphonix. The DMC1000 is a crazy story. It's an older Yamaha digital mixer. I run 20 Roland samplers in here, and they are my orchestra. I went to London and sampled the London Symphony Orchestra, and we thought, this will be easy; this'll fit into eight samplers. Well,

it doesn't fit into eight samplers. It fits into 20. And then we were listening to them and we suddenly noticed that the stereo image of the samplers had sort of narrowed considerably in the top end—something terrible had happened in the top end and the phase of the whole thing. A little project of sampling turned into this situation where we had to have sample rate converters built so that we could go into digital mixers, so that the whole fake orchestra could stay in the digital domain all the way through.

Bonzai: How many instruments were there?

Zimmer: A Beethoven-size orches-

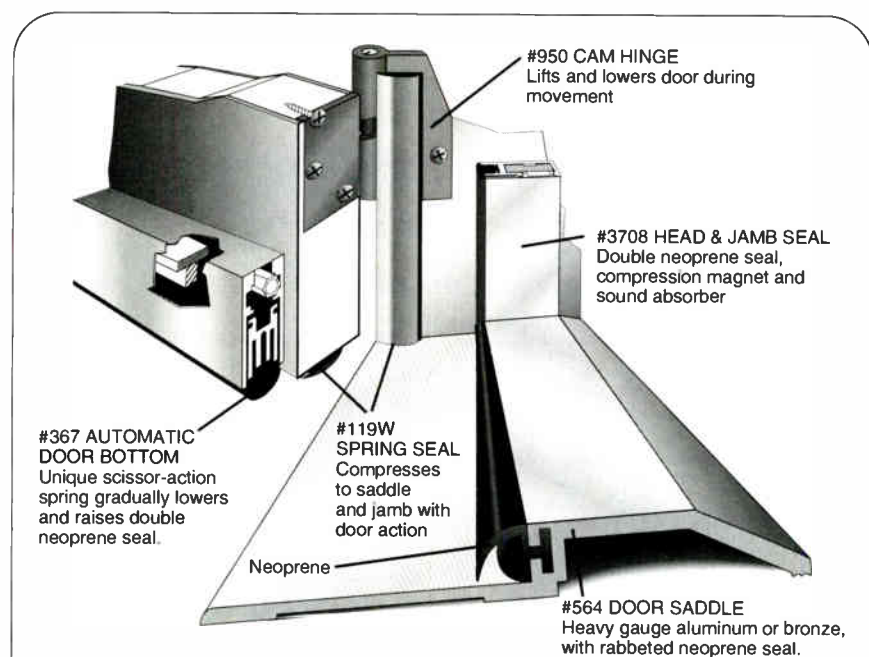
tra. Three days of recording—I wanted to capture them quickly.

Bonzai: Did you sample individual instruments?

Zimmer: Individual instruments and sections. For instance, I would have the 32 violins play in unison, different intensities.

Bonzai: Did you have them play any weird stuff?

Zimmer: No, I want to do the weird stuff. I can't get on with all these algorithmic composition programs. I want to do my own weird shit. And I never use the fake orchestra by itself. It's always a tool to inspire me. I think it was Verdi who every time he wrote



ZERO SoundTrap systems can help you reduce sound control problems to zero.

ZERO sound control systems for doors are designed to achieve up to a 53 Sound Transmission Class (STC) rating as tested to ASTM standards. And that is with a door that can open and close—not sealed shut. It would take more than 11 inches of concrete to achieve that kind of rating.

You have enough to worry about in the studio without having to worry about sound penetration. For 70 years ZERO has designed and built sealing systems that perform under conditions where most others will not—and are still working when most others are not. If you need to block sound, smoke, air, or fire, ZERO can help you reduce your door worries to zero. Just write or call for assistance and our 32 page catalog.

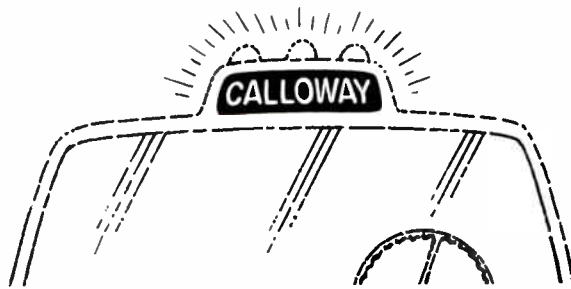


ZERO INTERNATIONAL, INC.
415 Concord Avenue, Bronx, NY 10455-4898
1-800-635-5335
In NYC, call 718-585-3230 FAX 718-292-2243
TELEX 239777 ZERO UR

GASKETING • THRESHOLDS • SADDLES
HINGES • ADA SURFACES • LIGHT/SOUND SEALS
FIRE/SMOKE SEALS • WEATHERSTRIPPING
STAIR NOSING • RAMPS

USE READER SERVICE CARD FOR MORE INFO

We Restore Cabs.



(Not big yellow ones—ones that go
“Hidee Hidee Hidee Ho!”)

When the curators of the Estate of Cab Calloway discovered a rare set of acetate transcription discs containing live performances of *Minnie The Moocher*, they called the audio restoration facility at QSI. Consequently, we at QSI are happy to report that “Hidee (*pop!*) Hidee (*crackle*) Hidee (*hiss*) Ho!” has been restored to its original, delightfully simpler integrity. Whether your project requires major archival transcription, or merely the rescue of a critical track of music or dialogue, call QSI—where quality never varies.

QSi

Quintessential Sound, Inc.
1600 Broadway/Suite 610
New York, New York 10019-7485
212 586 4200
FAX: 212 586 5339

Compact Disc Mastering • Historical Restoration • Emergency Audio Recovery • Audio Forensics

USE READER SERVICE CARD FOR MORE INFO

See us
at AES
Booth #1072

only from:
AP Audio
The “Best Connections”
in the Business!

“Master” QUALITY

For all levels of Audio Production!

Re'an 1/4" Patchbays

module from a #RPM48S

- Solid Nickel Silver Contacts
- 48 points in One Rack Space
- Re'an Nylon-Fiberglass Jacks made in England
- No solder set up
- Individually replaceable modules
- De-Normal any channel in seconds
- 1/4" to: 1/4", Hardwire and RCA available
- Balanced and Unbalanced models available

Re'an Patchbays are available at your local dealer

A.P. Audio • div of Ace Products Enterprises, Inc.
 1334C Ross St. • dept-795F • Petaluma, CA 94954 • USA
 Ph: 707-765-6597 • Fax: 707-765-6682 • Email: skahnace@aol.com
 In Canada contact: Cabletek Electronics at 604-942-1001

a few bars would get an orchestra in just to hear it and go, “No, this is crap.” I work in the same way. I find it very inspiring to have really good sounds. My background is as a synth programmer, not as a composer.

The other thing is that it's fun playing with all the toys. This Waldorf Wave thing over here—if I had to buy only one synthesizer, I think that would be it. It's fantastic.

Bonzai: Is it new?

Zimmer: It's not only new, but they don't sell it here. It's made in Germany—sort of a mixture between analog and digital. It's really well-thought-out and it sounds incredibly delicate, but it can sound like a monster.

Bonzai: You still work with live musicians, don't you?

Zimmer: All the time. The thing I'm mixing right now—there isn't a synth in sight. It's a rhythm section, four guitars, dobro, slide guitars, banjo, and one violin is the string section. It's for the Julia Roberts film called *Something to Talk About*.

Bonzai: Let's talk about some of your recent successful films—but all of your films seem to be successful.

Zimmer: That's because if you have a flop nobody knows about it. It just seems like that.

Bonzai: I just saw *Crimson Tide* at the Cinerama Dome in Hollywood...

Zimmer: Great—the only place to see it.

Bonzai: Sounded tremendous...

Zimmer: Not a little loud in places? See, I'm the one who always goes into the dub and says “Turn that bloody music down.” By the time I'm finished with it, I'm sort of bored with it.

Bonzai: What was the big challenge on *Crimson Tide*?

Zimmer: Trying to do an action picture and not making it like an action picture. Not going over the old ground that other people have done. That's the idea of the choirs, the idea of becoming very still without virtually any movement. And I was forever trying to create this muddled underwater sound. There are very few hard edges in the soundtrack of *Crimson Tide*. Everything seems to be muffled; nothing really seems to go above G, above Middle C. I was purposely trying to have the weight of the ocean above me.

Bonzai: In studying the score, I noticed at one point you took a big note and slowly bent it down. You've

got this heavy percussion, and then the sound goes down...what is that called?

Zimmer: Pitch bend? I don't know. I had two weeks of piano lessons, so don't ask about musical terms.

Bonzai: It just seemed like we were diving underwater.

Zimmer: Exactly. I was trying to create that. And having the choir sing very muffled, I never wanted them to enunciate their words properly. It always sounded like there was a screen in front of them.

Bonzai: There's a lot of music in the film, isn't there?

Zimmer: We never added it up, but when we originally spotted it, it was 85 minutes, and I know we grew considerably beyond that.

Bonzai: Was that your choice?

Zimmer: Yes, funny enough, because I like the idea that you create a world for a movie, and you try not to leave that world. I found that as soon as I would start pulling the music out, our world became more shallow. We

In film you need to
find instant solutions,
and you need to
really listen to people.

weren't underwater all the time. I was trying to be the exterior, very often. I was trying to keep you aware of the hugeness of the ocean outside.

Bonzai: Do you spend a lot of time on the dubbing stage when things come together?

Zimmer: No, on *Crimson Tide* I finished so late I left the morning after I was done. I have a problem with going to a dubbing stage anyway, because all I want to do is take the music out or make it quieter.

Bonzai: How do you deal with all the sound effects in a film like that?

Zimmer: I ask them to send me sound effects as soon as they do them. And I know the guys who do the sound effects, and they know what I do. *Backdraft* is the best example of how it works. We spotted music and sound effects together, so everybody knew emotionally in the story where they were important. The sound effects guys didn't even bother

to do the "whizzy" stuff when they knew I was going to make a big noise, and vice versa. We would talk on the phone. They would phone me up and say, "We've got this big sound, but it's in F Sharp. Do you mind?" I'd just ask them to send it over, and I'd be writing happily in F Sharp for a while. When we got to the dub stage, it was the easiest dub, because nobody was fighting anybody. I kept sending them DATs of what I had done, which they would lay up against their effects. And they would send me videos with just their effects. And *Crimson Tide* was very similar. I said I'm not going to start writing until

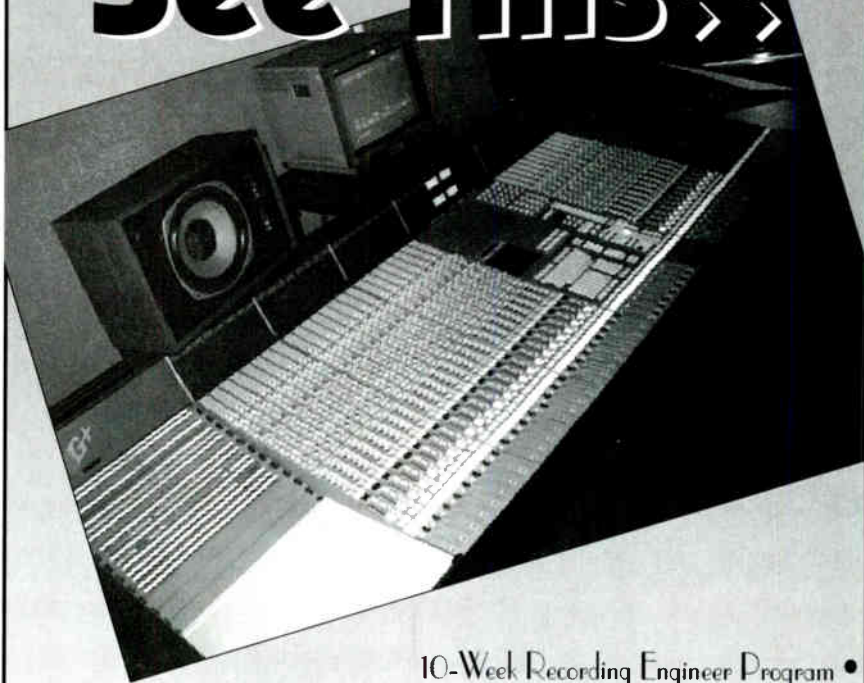
I have some of the room tones for the submarine in there on my videos, because I want to know what I'm writing around. Any other way is a blood-bath on the dubbing stage.

This room of mine is really over-the-top when you look at it, but it's very functional. When I send a demo out, it sounds 90 percent there when compared to the real thing.

Bonzai: How do you get such incredible presence in your scores?

Zimmer: The bummer of being a composer is you sit in the bathtub in the morning, where I do most of my writing, and you hear things in your head. They sound far more 3D and far

You Gotta See This!!



- Eleven Studios
- 48-Track SSL Room
- 12,000 Sq. Ft. Training Facility
- AVID, CMX and Grass Valley
- 10-Week Recording Engineer Program
- 10-Week Video Editor Program
- Financial Aid and Dorm Housing Available
- Outstanding Job Placement Assistance
- Nationally Accredited by ACCET



5278 Lankershim Blvd.
North Hollywood, CA 91601
818-763-7400

dynaudioacoustics®

At less than \$700/pr. there are no excuses not to own the DYNs!

BM5
2-way nearfield monitor

dynaudio

Welcome the no-nonsense monitors from the leader in serious monitoring. Dynaudio Acoustics. Introducing the new BM5 2-way nearfield monitors. The BM5s break new ground for low cost/high performance reference monitoring. Utilizing new materials, production methods, and driver designs - in short, all new technology - Dynaudio has created a new standard, again. Crafted in Denmark by people so devoted to advancing loudspeaker design, some call it fanatical. Compare the BM5s to other popular nearfield monitors, and you'll be a Dyn fanatic, too!

And at under \$700/pr.* there's no reason not to use the best anymore! Dash to your local dealer and demand the new Dyn BM5s.

-SEE US AT NEW YORK CITY AES BOOTH #1209

dynaudioacoustics®

Available through selected dealers, music stores and pro audio specialists.
*based on mfr's suggested retail price of \$699/pr.

U.S. Dist.: **AXI** Audio Exchange International
Tel. (617) 982-2626 • Fax (617) 982-2610

USE READER SERVICE CARD FOR MORE INFO

ROCKET The Future Unveiled

L A B

Mastering

Audio Restoration

Enhanced CD

San Francisco (415)495-2297

more wonderful than they ever sound in the real world. In my job, everything goes downhill. It sounds the best when it's in my head. Then I get an approximation into the sequencer. Then the orchestra plays it. And again it gets diluted by the time we mix it. And then it gets shoved onto the film, which isn't such a great medium anyway. And then it ends up on television. So, from the original conception it's one compromise after another.

Bonzai: Do you enjoy pulling the emotional strings in the audience? Do you like to scare people?

Zimmer: Oh, I love to scare people. I love to scare myself. I try to be very careful, though, because there's a Hollywood way of scoring pictures I notice more and more. Something happens, and as it happens the music will tell you everything that's happening. What I try to do most of the time is to have a reaction. I like to do a reaction to the scene as opposed to the music either signaling what is going to happen or simultaneously doing the same thing [as the scene]. I try to wait until the end of the cut and then do that other thing you can't describe in words or pictures, the emotional thing. I think that if you do it at the same time, it's like telling a joke twice. It's not as funny; it's meaningless.

Bonzai: Why did you get involved in film?

Zimmer: I can't think of anything else that's as close to magic. I'm totally useless in the real world. I don't drive a car; I don't play tennis or any of those things. I read books, and I love films. My whole life takes place in some sort of imaginary place, and I worked bloody hard to never have to grow up. I don't come into the studio until 1 o'clock in the afternoon simply because I know if I come in at 10 in the morning, all the phone calls are dealing with things I don't really want to deal with. I'm an extreme escapist.

Bonzai: In your formative years, were there any particular film composers who grabbed you?

Zimmer: Yes, Ennio Morricone. I could rattle off a list, but if I'm really honest it's just Ennio. He's done some really bad things and he's done some really great things, and I love that he has the courage to do those bad things and let them stand. I never do that. Nothing leaves this room unless

—CONTINUED ON PAGE 352

POWER TRIP



SR780 two channel FFT spectrum analyzer All this power for only \$9950 (U.S. list)

102.4 kHz frequency range on both channels

90 dB dynamic range (FFT mode)

140 dB dynamic range (swept sine mode)

102.4 kHz real-time bandwidth

Display two different frequency spans

Real-time ANSI standard octave analysis
(1/1, 1/3, and 1/12 octave)

Low distortion sine source (-90 dBc) plus
two-tone, chirp, noise, burst and arbitrary

2 Msample memory (8 M option) for time
capture, waterfall plots, arbitrary source

Postscript, PCX, GIF and HP-GL output

Order tracking upgrade

You simply can't buy an FFT spectrum analyzer with more measurement capability than the SR780. At any price.

If your application involves acoustics, audio research, control systems, vibration analysis, filter design or noise measurement, and you require a high performance FFT network analyzer, take a closer look at the SR780. For more information, or to arrange a demo, call SRS at **(408)744-9040**.

Power. Performance. Value.



Stanford Research Systems 1290-D Reamwood Avenue
Sunnyvale, CA 94089 Tel: (408)744-9040 Fax: (408)744-9049
Email: info@srsys.com World Wide Web: <http://www.srsys.com/srsys>

World Radio History

by Chris Patton

GERALD LEVERT & TONY NICHOLAS

NATURAL SOUL

Ten years and 160 songs later, Gerald Levert is still growing as a performing artist and producer. His second solo album, *Groove On*, was certified Gold less than two months after its release and is by far his most successful yet.

Levert, the son of original O'Jays member Eddie Levert, first made a name for himself in 1985 with the debut album of his first vocal group, LeVert. The release of *Casanova* in 1987 brought his first of two Grammy nominations. Since then, he has sold millions of albums, including three certified Gold and one Platinum. With his songwriting and production partner Edwin "Tony" Nicholas, Levert has scored with 14 Number One singles and has composed and/or produced music for Anita Baker, The O'Jays, Stephanie Mills, James Ingram, En Vogue, Teddy Pendergrass and The Winans. "Practice What You Preach," a song co-written and co-produced by Levert, was recorded by the incomparable Barry White in 1994 and became a mega-hit. Levert's first single from *Groove On*, "I'd Give Anything," teamed him up with another great producer/arranger, David Foster.

Mix met up with Levert and Nicholas last spring, when they were shooting a video in Los Angeles for Levert's single "How Many Times."

I've heard it said by other songwriter/producers that black music today has become soulless, mechanical and slave to the latest technology. What do you think?

Levert: I do agree that the majority of R&B today has become soulless. There are people trying to keep it alive, and I think we're doing our part. What you have today is a lot of

sampling, with nobody being creative, doing anything special or [writing] from the heart. I deal with emotions, man. I'm not the kind of person who can go to the studio and say, "I need 10 dB of this, and I need 10 dB less of that." I don't think that way. Just turn it up or turn it down! [Laughs] I'm a feeling person. Most people are the same way. The average person doesn't care what kind of keyboard was used in a particular song or what studio gear was used in the recording. They ask themselves, "Do I like this song?" We've used different equipment and different studios at different times and got hits out of every one!

Is this most recent album an attempt to recapture that "old school" R&B we were listening to in the '60s and '70s?



Levert (seated)
and Nicholas

FINALLY A PROFESSIONAL MULTI-CHANNEL AMPLIFIER...

The Bryston 8B ST Pro



8B ST Pro Amplifier, 5B ST Pro 3 channel - 120 watt version is also available

Bryston is pleased to announce our new 8B ST Pro four channel audio power amplifier. With today's studio demand for surround and multi-channel mixing, the 8B ST Pro provides state-of-the-art performance with the unquestioned value and reliability that only a Bryston delivers. The 8B ST Pro is an extremely versatile amplifier which can be instantly connected in 2, 3, or 4 channel configurations, or connected to run multiple sets of near field monitors from a single amplifier source. The 8B ST Pro is also available as a fully certified Lucasfilm THX amplifier. All of this along with Bryston's unlimited, transferable 20 year warranty. So what are you waiting for? Do yourself a favour and audition the Bryston 8B ST Pro today.



20 YEAR WARRANTY - A SOUND INVESTMENT

106 West Lime Avenue, Suite 207, Monrovia, CA 91016
Tel: (800) 673-7899 Fax: (818) 359-9672

8B ST PRO

WATTS	Four channels at 120 watts, 8 ohms Two channels at 400 watts, 8 ohms One channel at 400 watts, 2 channels at 120 watts, 8 ohms
DISTORTION	Less than 0.007% from 20 Hz to 20 kHz at 120 watts or 400 watts, 1M or THD
NOISE	>106dB below full output
SLEWING RATE	Greater than 60 volts per microsecond in 4 channel mode Greater than 120 volts per microsecond in 2 channel mode
POWER BANDWIDTH	Less than 1 Hz to over 100 kHz
DAMPING FACTOR	Over 500 at 20Hz, ref. 8 ohms
INPUT SENSITIVITY AND IMPEDANCE	1.0V in for full output, 50k unbalanced 2.0V in for full output, 20k balanced
FEATURES	Four independent power supplies Over 6,400 cm ² of heat-sinking, over 9,600 cm ² with chassis Regulated power supplies to all voltage gain stages Gold plated input and output connectors Switchable balanced XLR-1/4 inch and RCA unbalanced inputs Remote power turn-on 12V, AC/DC (optional) Warranty: 20 years parts labour, shipping one way
DIMENSIONS	19 x 5.25 x 15.5 inches, 48.25 x 13.33 x 39.4 cm, wt. 44lbs, 20kg



Nicholas: In some songs, that might have been a conscious effort. There are other songs where we just wrote what sounded good to us, and that happened to be influenced by the old-school sound we were familiar with.

Levert: This album basically started out as being even more old-school than the final product. There were people who didn't feel excited about the album when we first approached them with the concept. Some people really didn't understand where we were coming from. There were many things we had to change to be more contemporary. Some of that stuff will be out soon, on somebody's record! [Laughs]

Seeing how you had to spend so much time editing the album, was it hard to keep the feeling of continuity?

Levert: It was real hard. I had never spent so much time making an album. I personally don't think you should spend too much time on songs. So many people spend too much time trying to make something out of nothing. There are people who will spend a year or two on three songs. Stevie Wonder took eight years to do his newest album. I mean, I love Stevie and all that, but eight years? Man, I can't fathom that! If the song doesn't strike a chord while you're creating it, then *can* it, like we do! [Laughs]

Nicholas: And we do a lot!

There are songwriters who have song "templates," a set of rules and style they follow during the writing process. Do you guys use a similar form?

Nicholas: We don't do it that way. That's what keeps the records from sounding the same. That's why we were able to do so many songs without anybody realizing we were the same guys that did this or the same guys that did that.

Are there any favorite keyboard sounds or studio techniques that help your creative process?

Nicholas: We don't get caught up with using particular sounds or studio techniques. I'll use an MPC60 sometimes when I sequence. Sometimes I may use a Mac with Performer software if that's what's around. There are songs where I used a keyboard sequencer. I still have my MC500, and if that's the only thing around, I'll use that. Whatever is there, we'll vibe on it, and we take that and make a song with it. I

have three racks of gear at home, and when I'm there, I can utilize those things. But there are plenty of songs Gerald and I have composed sitting in a hotel room with a keyboard and a drum machine.

Have you used a programmer to help you get your sounds, since you spend so much of your creative energy on composing the song?

Nicholas: I don't use a programmer. I do all of the stuff myself. I do my own sampling and patch writing. I can see the need for a programmer, but it's a luxury. For the most part, the things we do are too spontaneous for that. If Gerald gets an idea, we'll hook up a keyboard, he's ready to cut. It's not about getting a programmer who might find a better Rhodes or string patch. I'll take the string that's there and find the best way to place that patch so that it sounds good, with whatever minor modification that's needed.

I deal with emotions, man.

I'm not the kind of person

who can go to the studio

and say, "I need 10 dB of this,

and I need 10 dB less of that."

I don't think that way.

—Gerald Levert

Do you guys like to go to the studio with the completed song idea?

Nicholas: We have, but mostly we just vibe on each other real quick and get it down. First we'll lay a sample track, record the song and get it done, overdubs and all. It's funny, when I first started working with Gerald, that used to make me really nervous because I wasn't used to working like that. I was used to getting everything down before I went to the studio. But now I can say that there are things we've done creatively that could have only been done in the studio environment.

What do you look for when choosing a studio for your productions?

Nicholas: Remember, the outboard gear from a musical standpoint with us is secondary; the song is what's first. The gear that mostly matters to

me in a studio is the mixing board. I think that sometimes we as musicians get too caught up in the technical side of recording. For example, programming keyboards could be a full-time job—you could totally forget that the objective of creating the sound was to use it in a song. It's not a matter of a flop vs. million-seller if I were to use this piano sound instead of that one. Of course, a lot of that is personal, because in R&B, I do understand that programmed sounds can make a big difference sometimes.

Once the song gets to the studio, you feel that technology shouldn't be a means to an end.

Levert: Yeah, too much production can make you lose a song.

Since you feel good song production shouldn't be based on technology, what should a good producer be listening for?

Levert: You have to take the record to the stage. If you produce a song with the thought of it being performed onstage, you'll listen for more dynamics. There are certain "buttons" that you press that can make people do things! Take Babyface—all his songs build to a climax. That's also what Jimmy Jam and Terry Lewis are great at. That's what it takes to be a good producer: being a good performer. You see, all these guys have performed, they've been on the stage. They know what a crowd likes, they know where a crowd will respond in a show. There are groups out there with hit records, but when they perform, they ain't nothin'. That's mainly because the song didn't go anywhere to begin with. Everybody might be able to dance to it, but that's all. Take a Gamble & Huff song like [The O'Jays'] "Love Train," for instance—check out all the highs and lows in it. Walt [Williams] would start it off low, then my father would sing his part [he demonstrates]. It then goes to another level. Or in "For the Love of Money"—man, these songs live will get you! [Laughs]

You worked with Barry White on the song "Practice What You Preach" on his last album. Many people feel that song put Barry White back on top. What was it like producing "The Maestro"?

Levert: I think he had a hard time dealing with other people, because he has produced himself for such a long time, but I hope he liked the

SONY®

PRO AUDIO
DIGITAL
RECORDERS



WHEN-

DAT • DASH • DTRS • MO • MINIDISC • MASTER DISC • DAT • DASH • DTRS • MO • MINIDISC

EVER



MASTER DISC • DAT • DASH • DTRS • MO • MINIDISC • MASTER DISC • DAT • DASH • DTRS • MO



YOU'RE

MINIDISC • MASTER DISC • DAT • DASH • DTRS • MO • MINIDISC • MASTER DISC • DAT

RECORDING

WHEN-
EVER
YOU'RE
RECORDING

MULTITRACK

SONY®

PRO AUDIO
DIGITAL
RECORDERS



DASH recording captures the musical moment for the digital age. In both its 48-track and 24-track configurations, Sony 1/2-inch Digital Audio Stationary Head (DASH) recorders are the standard of excellence for recording studios, live recording and post production houses worldwide. ■ The PCM-3348 defines today's high-end commercial recording studio. It is the industry-leading digital 48-track audio recorder and is responsible for more top-selling music recordings than any other digital multitrack. Grammy-award winning producer Phil Ramone calls it "the best musical tank known to man." It is acclaimed for its superb sound quality, flexible synchronization capabilities, and an ever-widening range of



"Sony's multitracks create an atmosphere where you can just let it all happen and have nothing get in the way. Everything I record sounds exactly the way it went in, no matter how long I work with the tape. The first time I ever used a 3348, I was addicted to it immediately."

Bob Clearmountain, Producer/Engineer



professional user conveniences. ■ The PCM-3324S 24-track has made DASH recording practical for a wide range of facilities including audio-for-video/film post studios.

Compatible with all DASH machines, the 3324S features 9-pin RS-422 serial transport control, internal time-code chase synchronization, and it allows sample accurate synchronization of up to three DASH recorders. The 3324S reflects Sony's continued commitment to the growth of DASH recording and it reflects Sony's expertise as the professional audio recording leader. ■ Advanced home and project recording studios are "going digital" as well. Sony's new PCM-800 DTRS format multitrack is ideal for creative music producers, TV/radio broadcasters, post production facilities and sound designers. Utilizing a professional-grade Hi8 video transport for quicker access and reliability, this cost-effective modular 8-track recorder includes standard AES/EBU digital I/O and XLR analog I/O connections. A superior new recording tool, the PCM-800 features functions such as precise auto punch in/out as well as optional external synchronization with SMPTE/EBU timecode.



**WHEN-
EVER
YOU'RE
RECORDING**

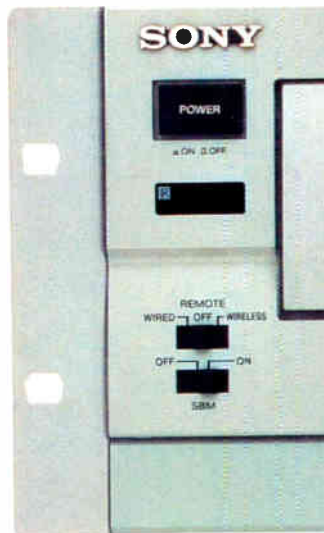
TWO-TRACK

SONY®

**PRO AUDIO
DIGITAL
RECORDERS**

DAT is the professional two-track standard and Sony offers a DAT machine for every budget and every application. Sony DAT machines have been widely accepted by recording engineers, broadcasters and post production professionals.

■ They are designed to work better, last longer and sound great. They also have the right features, particularly the dependable, precision 4 direct-drive motor DAT transport. Professional construction and measurably increased performance epitomize all Sony pro DAT machines — from the new DTC-A8 and PCM-2600 to the acclaimed PCM-7000 Series timecode editing decks. ■ Our new DTC-A8, PCM-2600 and PCM-2800 studio DAT recorders extend new possibilities of performance and sound quality to all professionals at a price they can all afford. With their fast and reliable 4-motor tape transports, they are destined to become recording stu-

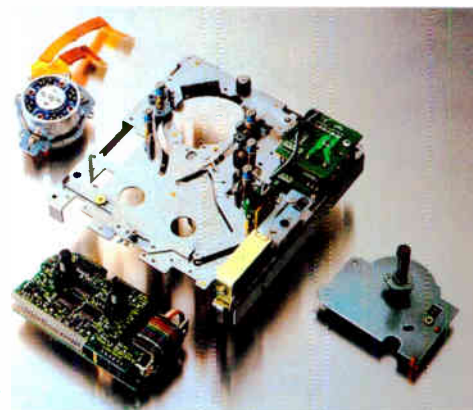


DAT RECORDERS						
	STUDIO				PORTABLE	
FEATURES/ MODELS	DTC-A7	DTC-A8 NEW!	PCM-2600 NEW!	PCM-2800 NEW!	TCF-D11 NEW!	TCF-D10 PRO II
NUMBER OF D.D. MOTORS	2	4	4	4	2	4
SBM PROCESSING	No	Yes	Yes	Yes	Yes <i>(optional)</i>	No
ANALOG I/O	RCA	RCA <i>(phono)</i>	XLR	XLR	RCA	XLR in/ RCA out
DIGITAL I/O	IEC-958 <i>(SPDIF)</i>	IEC-958 <i>(SPDIF)</i>	AES/EBU	AES/EBU	SPDIF <i>(remote)</i>	AES/EBU
SCMS COPY PROHIBIT	Yes	Yes	No	No	Yes	No
NUMBER OF HEADS	2	2	2	4	2	2
CONFIDENCE MONITORING	No	No	No	Yes	No	No



audio favorites. These units also incorporate 20-bit A/Ds and feature Super Bit Mapping (SBM) processing which converts the 20-bit signals to 16-bit signals with less quantization noise and higher sound resolution. ■ The compact TCD-D10Pro II weighs less than 4.5 lbs and was built for remote recording with all the features a recordist needs in a portable DAT machine. ■ Timecode DAT is the most universal audio-for-video two-track format and Sony's PCM-7000 Series is the world timecode DAT leader. With 9-pin serial interface to virtually any video editor and synchronizer, it provides a "plug and play" solution. Sony's highly-evolved software enhancements assure the PCM-7000 Series its preeminence as the most full-featured, flexible and cost-effective timecode DAT solution.

Professional studios demand professional features. Sony's new generation of DAT machines, like the PCM-2600 (top), all feature SBM processing and a 4 direct-drive motor transport (below).



THE PCM-E7700 Portable DATStation takes DAT editing everywhere. Combining a player and a recorder in a unique, ergonomic, laptop design, this innovative DAT editor automates two-track editing functions including EDL management, auto-assemble editing, double speed editing and dubbing, real-time jog functions and RAW (Read-After-Write) confidence monitoring. Its expansive electro-luminescent display makes all operations intuitive and easy to monitor.

WHEN-
EVER
YOU'RE
RECORDING

TWO-TRACK MO

SONY®

PRO AUDIO
DIGITAL
RECORDERS

OPTICAL recording is upon us and, once again, Sony leads the way. ■ This latest technology wave is epitomized by Sony's PCM-9000 Master Disc magneto-optical (MO) two-track recorder, which has elevated the art of digital audio mastering from the 16-bit up to the 20- and 24-bit domain. With the introduction of the PCM-9000, mastering engineers are equipped with a new level of digital audio mastering resolution, along with several notable operational advantages — including random access, non-linear editing, and confidence monitoring. Utilizing single-sided MO discs with a data capacity of 1.3 GBytes, engineers can master or record two channels of 20-bit digital audio for up to 80 continuous minutes. Because of the format's new level of fidelity, this mastering recorder is also gaining acceptance for studio mixdown — prior to the CD mastering phase — or wherever the ultimate in sonic quality is required. "The PCM-9000 puts us on the threshold of new technologies that make a difference in the sonic character of our CDs from this point forward", says Producer/Engineer Frank Filipetti. ■ The PCM-9000 has also accelerated the move to magneto-optical disc-based editing systems



*Anywhere there's a need for quick
access to high-quality audio,
there's MiniDisc.*



for CD pre-mastering. When interfaced with the new Sony DAE-D5000 digital audio editor, it delivers better sound and more control than ever before. The DAE-D5000's capabilities include non-linear editing, copy editing, and automated fader/crossfade/level controls. It also delivers features like signal processing (i.e., EQ and dynamics), integral PQ generator, and Error Rate Reporting. Digital audio resolution of up to 24-bits can now be maintained at every step of the music editing process.

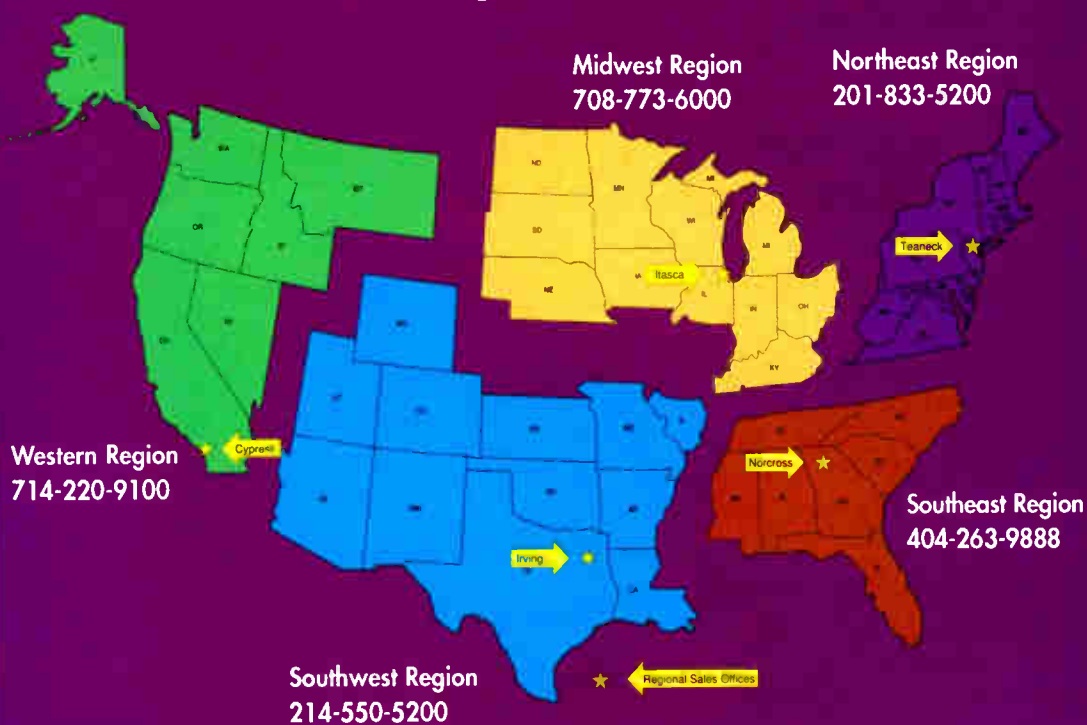


MINIDISC is being discovered for varied applications in radio & TV broadcasting, live sound/theater, and business and industry. There are unlimited uses for this small, affordable digital audio format that allows up to 74 minutes of stereo digital audio storage, instant random access, easy editing, and limitless re-recording. ■ Radio stations, TV broadcasters and cable networks are rapidly adopting MiniDisc as the digital successor to the NAB cart. The Sony MiniDisc MDS-B3 Recorder and MDS-B4P Player have the features that broadcasters need for on-air applications, including random access, instant start and cueing functions for rapid playback, single cut or continuous playback modes, auto cue and End-of-Message function. ■ MiniDisc is everywhere. TV and post houses use the format for fast production of sound effects and playback. Theater sound designers use MiniDisc for effects and house music playback. Airports, department stores and theme parks now play high quality digital audio (music and public address) throughout their environments via this cost-effective, high-fidelity, 2 1/2-inch MO format.

WHEN- EVER YOU'RE RECORDING

Sony is the world's leading manufacturer of digital audio recorders. Our engineers have been involved with virtually every professional audio format. The most prestigious facilities and creative users are our valued customers — as well as our partners in developing the recording technologies and tools of today and tomorrow.

**For Sony Pro Audio Sales and Service,
contact the Sony office nearest you.**



Or, for more information call:

1-800-635-SONY (Ext. Dig Rec)

©1995 Sony Electronics Inc. Sony Business and Professional Products Group
3 Paragon Drive, Montvale, NJ 07645-1735. Sony, DATStation, Hi8 and the MiniDisc
logo are trademarks of Sony. All rights reserved.

way the song was produced. *But the collaboration was very successful.*

Levert: Maybe so, but I see a lack of respect regarding the whole thing. It's cool. I'll let that go, but it sure makes me leery of collaborating with [another producer] again. Still, it's obvious with the success of "Practice What You Preach" that our coming together was a great thing.

What was his input in the production?

Levert: Everybody participated in the production of the song. Barry added the string parts and some vocal lines for himself. Some [background] female vocals were also his idea. But the song was completed and recorded before we started production for him.

Nicholas: We had presented the song to several artists before we presented it to him.

Levert: [Laughs] That's right! *I've heard that you're involved in a new album by New Edition.*

Levert: Oh yeah. It's a song called "How Do You Like Your Love Sake." It's a smash, mark my words. We sent them three songs we had written. They picked "How Do You Like Your Love Sake." It came out great.

We recorded here in L.A.

Nicholas: It was another example of how we work. We had a couple of keyboards, came up with a vibe, sang on it, and there it was.

Is there a favorite engineer you two have that can help get those ideas recorded in a manner in which you guys like to work?

Nicholas: Mixing the songs matters, but cutting the tracks isn't that deep. You just get the song tracks recorded as clean as possible. An intern can do that.

Levert: There is a guy we do use more than others, and his name is Ron Schaffer. He has a vibe with what we do and the sounds we like. Mike Teischer and Ron Schaffer have been hooking us up for the last few years.

Gerald, as a producer yourself, was it strange to be produced on one cut of your new album by David Foster?

Levert: No. When [former Warner Bros. executive] Doug Morris offered me the opportunity to work with David Foster on the song "I'd Do Anything," I jumped on it. To work with David Foster was a real pleasure. I really like him. He's a very good producer and person.

If I agree to work with someone, then I'm there to work. It's like when I'm working with my dad. When he gets behind the mic and I'm the producer on the session, I'm the producer; he doesn't give me any problems. *One thing that separates this album from the last are the "real" string arrangements.*

Levert: Dennis Williams composed and arranged all the strings. He has been my dad's music director since 1974. It was interesting to be working with him, because I can remember going to The O'Jays' recording sessions at Philly International, and to be there again with some of the same guys who played on my father's records was just a lot of fun. To hear live strings makes you never want to use a keyboard again!

You mentioned the New Edition song you worked on—what other artists are you working with?

Levert: Regina Belle is doing an album of Philly International songs. We're producing "Love TKO" and "The Whole Town Is Laughing at Me." We're also doing cuts for Guess, Silk, 4.0 and a duets album with my dad. *Gerald, you mentioned to me earli-*

NO MORE MOUSE MIXING

Adjust faders 'plural' not just one at a time. The Niche Automation Station (AS) from RJMG is a MIDI fader box that gives *real tactile mixing to computer based audio environments.*

LOADED WITH PROFESSIONAL AUTOMATION FEATURES:



- ✓ 16 faders
- ✓ 4 effect knobs
- ✓ nested groups
- ✓ cross fades
- ✓ cross fades between snapshots
- ✓ 16 mute buttons
- ✓ groups
- ✓ 32 snapshots
- ✓ Niche Null™

The automation station is an integral tool in your automation solution! Automate tracks on your Alesis ADAT™ or your Tascam D-88™ have tactile faders for your Digidesign ProTools III. Or, all of the above!

The exclusive Niche Null™ technology keeps fader values relative even if the physical position is different eliminating unintentional volume changes.

RJMG niche

17700
Raymer Street
Suite 1001
Northridge
California
91325

Fax on Demand dial: 1 800 779 0202
Enter Doc. Code 135001
Ph. 818 993-4091

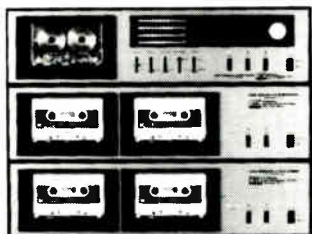
Automation Station MSRP \$699, Audio Control Module MSRP \$499. Sequencer compatibility: Cubase, Logic, Cakewalk, Performer, Vision, Master Tracks Pro, essentially any sequencer that has a mixer page.

USE READER SERVICE CARD FOR MORE INFO

OCTOBER 1995, MIX 113

If Your Standards Demand the *Ultimate* in
Real Time Quality,

whether you need 10 or 10,000 cassettes a week,
 a KABA 4-Track Real Time &
 2x Duplication System is your most versatile,
 trouble-free, cost-effective duplicator.



**CALL
 1-800-231-8273**

for free specifications, prices and a
 research report relating system size,
 production capacities and profit
 potential to system cost and
 financing rates.



KABA
RESEARCH & DEVELOPMENT
 24 COMMERCIAL BLVD., NOVATO, CA 94949 415/ 883-5041
 1-800/ 231-TAPE FAX 415/ 883-5222

USE READER SERVICE CARD FOR MORE INFO

er you were not a great keyboardist,
 yet without theory or training,
 you've recorded some pretty imagi-
 native melodies. Where do you come
 up with these?

Levert: I like to use a piano if there's
 one around. You get good melodies
 off the piano. If you write from the
 piano, you'll write melodies that peo-
 ple can sing along with. I usually
 come up with the melodies of the
 songs, and Tony then comes up with
 the chords to that melody. He takes
 my ideas to the next level. Some-
 times he comes up with something,
 and I just sing. We have a good
 working relationship.

Nicholas: That's one place I feel to
 some extent theory can hamper you.
 The other day we were working on a
 song we wanted to do for the Isley
 Brothers. There was a chord progres-
 sion that I was toying around with,
 and Gerald says, "That's nice." And I
 asked, "What's nice?" The chord pro-
 gression was unorthodox from a the-
 oretical point of view, and it really
 wouldn't have made it into a song of
 mine, but Gerald didn't look at it like
 that and heard a melody in it. We used
 it, and it turned out well.

*Does that also apply to production
 techniques?*

Levert: It's the same thing. I think
 what happens is that people get lazy.
 If they have had a level of success
 with a particular technique or sound,
 they'll keep wanting to use it. For us,
 we have to try different things.

*What can you impart to our readers
 that can help them write and chart
 160 songs?*

Nicholas: If you're a songwriter, you
 practice your craft every day by writ-
 ing, and don't use your gear or lack
 thereof as an excuse.

Levert: Whether in songwriting or
 producing, you have to have a good
 imagination. If you don't have imagi-
 nation, then you shouldn't be doing
 it. It's all a part of the creative
 process. If you can make someone
 understand what it is you are doing
 or saying, which is also part of selling
 a song, then you're onto something.
 This works especially well on collab-
 orative efforts.

Nicholas: Listen to him. He's made a
 believer too many times! [Laughs] ■

*Chris Patton is owner/operator of
 Ars Nova Productions, a MIDI pre-
 production studio in Oakland, Calif.*

**Great Prices.
 Rave Reviews.
 Oktava!**

*"The MK 012 is clean,
 quiet and, like all the
 Oktavas, remarkable value
 for money. The MK 219 is
 a legitimate and wonder-
 ful vocal mic that stands
 up on its own merits and
 currently occupies the
 slot of mic bargain of the
 decade. If you have not
 heard it, you need to. It is
 stunning."*

-Zenon Schoepe
Studio Sound, April 1995



**MK 012
 \$549**



**MK 219
 \$499**

Oktava MK 219 and MK 012 high quality studio condenser microphones,
 manufactured in Russia and now available in the U.S. from Harris Allied.
 Select dealer inquiries are welcome.

800-690-2828 Southern CA 800-622-0022 Nationwide



See us at AES
 Booth #1109

©1995 HARRIS CORP.

MOD-100™

DIRECT TO DISK VIDEO
F E D R O R K E D A T A



*Editing
experience
required,
Computer
experience
optional!*

The Technology Leader Stands Alone

The *VMOD-100* is the first true standalone digital video disk recorder (VDR).

The *VMOD-100* is a drop-in replacement for analog VTRs and does not require a computer interface.

Editors can use the front panel controls immediately,
and enjoy the immediate benefits of random access video.

Random Access

- Keep your DAW digital, no rewind time and no degradation

Seamless Looping

- Unique looping feature eliminates the need for a 2nd VTR

Industry Standards

- LTC/VITC & RS422 serial control for broadcast
- Bi-Phase & Steenbeck™ style remote for film
- NTSC or PAL

See us at AES Booth #826

Optical for S-VHS



Removable Disk for Broadcast



Dealer Inquiries Welcome



Exclusive wholesaler for
North & South America

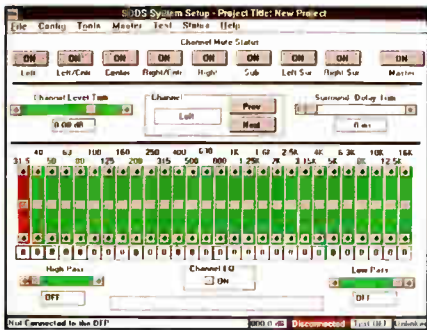
DIGITAL SOUND IN THE CINEMA

by Larry Blake

Two years after our first report, the competition heats up, with no winner in sight.

Before the summer of 1993, digital sound in movie theaters—at that time only represented by Dolby Stereo Digital—was still reserved for showcase films, much like the 70mm mag format that 35mm digital was destined to replace. The past two years, however, have seen the birth and acceptance of two new formats, Digital Theater Systems (DTS) and Sony Dynamic Digital Sound (SDDS), along with the steady growth of Dolby's format, which is now formally called Dolby Digital. Today, virtually all major studio films have some form of a digital release, if not two or three. This article will trace the progress of the three formats and take a peek at the growth of 5.1 discrete mixes in home video. (*Editor's Note: For complete background on the digital formats, please see "Digital Sound in the Cinema: Opening Salvos in the Format Wars," by Larry Blake in the November 1993 issue of Mix. Also see the "Sound for Film" column on page 132 of this issue for some of the author's comments on the future of digital sound in theaters.*)

One of the buzz-phrases in film sound these days is "5.1," which is used to describe a film format with five full-range (left, center, right, left-surround, right surround) channels and one low-frequency enhancement track requiring approximately one-tenth of the bandwidth afforded a full-range 20-20k Hz track. (The term "5.1" originally was used in a



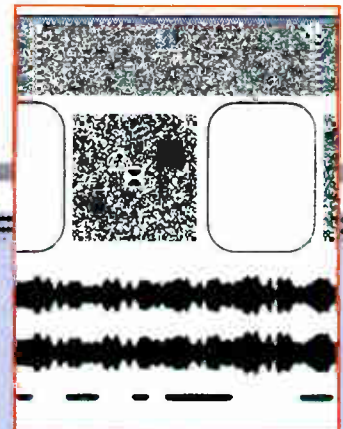
1987 SMPTE subcommittee report defining optimum digital release formats for HDTV.)

Although the 5.1 designation has entered the industry vernacular only in the past few years, the format has existed in some variant since the earliest days of stereo sound in films. Cinerama had seven channels back in 1952—five behind the screen and two surrounds. The IMAX special-venue format has used 6.1 channels since the '70s, although the sub-wwoofer channel is not separately recorded but is derived from the other full-range channels.

Below: the Dolby DA20 digital processor decodes the digitally encoded soundtrack that is placed between the film's sprocket holes.



Below: the three digital formats on a single piece of film; from top: the Sony SDDS data on the outer edge of the film strip; the Dolby Digital information between the sprocket holes; the analog stereo optical track; the DTS timecode stripe, which feeds the external CD-ROM drive



Above left: the setup screen for Sony's SDDS digital 1/3-octave room EQ; above: Sony's SDDS logo; below: the second-generation DTS Tower for film re-recording



DIGITAL AUDIO TRAFFIC CONTROLLER.



Control Room A
SSL Axiom

Control Room B
Yamaha ProMix01

Edit Suites
ADAT & DATS

Lighthouse introduces its DCA digital audio matrix switcher. The AES digital audio routing capacities start at 8x8(DCA8) and are expandable to 16x16(DCA16M). Larger configurations are available. *Easy-Patch™* software allows for remote RS232 control over signal routing and effects loop configurations. Centralize your effects modules and share them among multiple control rooms. Signal switching is non-protocol dependent with bandwidth to 50Mbit/s. For \$995 the Lighthouse DCA8 can solve your digital traffic jams.

Lighthouse

A SUNDANCE SYSTEMS COMPANY

13451 Colfax Hwy. P.O. Box 1802 Grass Valley, CA 95945 Ph 916-272-8240 Fax 916-272-8248

HEAR NO EVIL.

RECORD DIRECT-TO-DIGITAL AND BYPASS CONSOLE NOISE



Fibox *Totally Transparent* mic preamps deliver unrivaled 20-bit sound straight into your digital audio recorder or workstation. Put a Fibox digital fiber-optic transmission system between your microphone and recorder, bypassing all of the problems inherent with copper cable and console mic preamps. We guarantee you'll hear the difference. Output your signal in any of the standard sample rates or connection formats. The future is digital. And Fibox speaks the language.

Lightwave

A SUNDANCE SYSTEMS COMPANY

900 Jackson St. Suite 700, Dallas, Texas 75202 Ph 800-525-3443 Fax 214-741-5145

World Radio History
USE READER SERVICE CARD FOR MORE INFO

See us at AES Booth #576

closest to today's 5.1 digital formats is Dolby 70mm split-surrounds, which was first used for *Superman* in 1978, although the film was never really exhibited in that manner. The first, and best-known, wide release of the format was in 1979 for *Apocalypse Now*. Since then, approximately 30 Dolby 70mm films have contained stereo surround information in addition to the standard 20-200 Hz "baby boom" bass extension found on virtually all post-*Star Wars* Dolby 70mm prints.

The past three years (even dating before the wide use of digital sound in theaters) have seen the virtual extinction of all 70mm mag prints; the last films to have wide release in 70mm were all back in 1992—*Far and Away*, *The Last of the Mohicans* and *Hoffa*.

DOLBY DIGITAL

The installed base of Dolby Laboratories digital processors grew greatly in 1995. As a result of a special offer made in conjunction with the releases of *Pocahontas* and *Batman Forever*, 320 digital processor units were sold in the U.S. in a two-month period. But the growth of Dolby's installed base had started in early 1994, with the introduction of the DA20 digital processor for \$3,000 less than the earlier DA10. (The price reduction was primarily due to the use of Zoran Corporation's powerful DSP IC and a resulting lower component count in manufacturing. This is *not* a dedicated AC-3 IC—it runs external code like any general-purpose DSP. The film code is not built in, and the chip is sold on the open market without any license from Dolby.) The total number of theaters with Dolby Digital capability in the U.S. is now 800, with 1,200 installed internationally. The June release of *Batman Forever* was heard in over 400 Dolby Digital-equipped theaters, and in July the number of films produced for the format reached 130 domestic and 94 foreign. The current list price for the DA20 processor is \$6,675, with the "penthouse" Cat. No. 700 reader on top of the projector listing for \$3,275. The street price for both units is about \$8,250. The licensing cost never exceeds \$9,500 per picture.

Another factor lowering the cost of Dolby Digital installation has been the introduction of "basement" readers that fit below the projector gate and are used both for digital and

standard analog SVA tracks. (These readers are not manufactured by Dolby but are instead sold by projector manufacturers for about half the "penthouse" reader cost.) In addition to simplifying the film threading procedure (and thus reducing the chance of film damage), the LED/photo-cell reader for the standard stereo optical tracks is said to produce much less distortion, better channel separation and simpler alignment than a standard optical system. (Projectionists also will appreciate the opening up of real estate above the gate, the required mounting place for SDDS and DTS readers, not to mention mag pent-

houses. Dolby Digital was designed from the beginning to be mounted anywhere from 132 frames above to 14 frames below the "hole.")

Since 1993, the magneto-optical (MO) discs that carry Dolby Digital mixes have also hosted the 2-track, SR-encoded printmasters. (With Dolby Digital, SR encoding of the SVA tracks is part of the format requirement, whereas DTS or SDDS standards show no preference regarding the noise reduction used for the stereo optical track.)

The software for the DS-10 Dolby Digital MO recorder has recently been revised to allow basic editorial

—CONTINUED ON PAGE 121

THE FORMATS IN BRIEF

The three digital formats discussed in this article were described in detail in the November 1993 issue of *Mix*. Here are brief summaries of their design and operational fundamentals:

All systems: The standard matrixed analog stereo optical track (a.k.a. SVA for Stereo Variable Area) is on the print both as a backup in the event of failure of the digital system and to allow prints to be played in nondigital theaters. All digital formats use the standard 5.1-channel (left, center, right, left surround, right surround, subwoofer) format, except as noted below for SDDS.

Dolby Digital: Dolby Laboratories' 5.1-channel digital film format is recorded optically between perforations on the soundtrack side of the film in 76x76-pixel block arrays. Masters are recorded on a custom magneto-optical recorder, utilizing Dolby AC-3 perceptual coding in a composite datastream at a rate of 320 kbits/second. The resulting data compression ratio is approximately 10:1.

DTS: This format, owned by DTS Corp., Steven Spielberg and MCA Universal, uses a CD-ROM disc synchronized to film print. Timecode is recorded while shooting the standard analog stereo optical soundtrack and contains both a film serial number

and a reel number that corresponds to matching code on the CD-ROM disc. The timecode track is 5 mm wide and is between the picture and the SVA track.

Five channels of sound are recorded on the CD-ROM using apt-x 100 perceptual coding at an effective ratio of 4:1. The subwoofer track and the 20Hz-80Hz information from the stereo surround channels is summed and recorded on that region of both surround tracks; thus, the surround tracks are full-range while the surround speakers reproduce only 80 Hz and above. The DTS-6 theater unit contains two CD-ROM players, with each disc having a playing time of up to 100 minutes. DTS uses existing cinema processors for system equalization, fader control and backup optical track reproduction.

SDDS: The Sony Dynamic Digital Sound System contains eight tracks of information, adding full-range left-center and right-center channels to the standard 5.1 format. (Not every SDDS film uses the additional tracks, though.) Data is recorded optically outside the perforations on both sides of the film using Sony Pro ATRAC-2 compression at a 5:1 ratio. The Sony digital film decoder provides system EQ (½-octave, plus high-pass and lowpass), level trims and surround delay trims in the digital domain, all set up via a Windows-based computer.

—Larry Blake

BRINGING 5.1 CHANNELS HOME

The first formal use of 5.1 channels in a home video format was the February 1, 1995, release of *Clear and Present Danger* on Dolby AC-3 encoded laserdiscs. There are currently 10 AC-3 laserdiscs available, with 35 titles expected by the end of the year.

To decode the discs properly, the consumer needs either a new or modified laserdisc player with a

separate RF output, along with a new Dolby Surround decoder with RF demodulator and Dolby Surround AC-3 processing. The Dolby/Pioneer AC-3 format uses only the space previously occupied by the right FM "analog" track, leaving the stereo PCM digital tracks untouched and the left analog track open for supplementary program or a mono sum. The AC-3 output from the laserdisc is called RF because the digital AC-3 data is picked up before the FM demodulator circuit, and thus needs to be demodulated before AC-3 decod-

ing. In all other formats the AC-3 bitstream will be delivered through a common S/PDIF digital output, already demodulated and error-corrected. This will be the case when decoding AC-3 either from DVD discs (see below), PrimeStar digital satellite or General Instrument Digi-Cable transmissions, or from future HDTV broadcasts. Any of these can deliver a 5.1-channel program from the digital connector while decoding and downmixing it into 2-channel audio in the receiver itself.

Mastering for AC-3 laserdisc release uses Dolby's DP-561 encoder, which, in addition to the basic AC-3 encoding, has a user interface that allows producers to set (or preset and forget, as is the case now) the BSI data (BitStream Information). BSI is carried in a separate area of the AC-3 bitstream and conveys details on the channel format, the reference loudness levels, the dynamic range of the program and many other possible details useful to the decoding and reproduction of the audio. In addition, 5.1-channel material can be "downmixed" into conventional stereo or Dolby Surround, as desired. The encoded AC-3 program with BSI is formatted into an AES/EBU bitstream and is recorded onto track 2 of the D-2 digital video master.

Films that were not Dolby-licensed for theatrical release can employ AC-3 coding on laserdiscs for a nominal engineering service fee.

However nice it seems to have the 5.1 available in any home video format, much of the talk in 1995 concerns the *next* leap in consumer video technology: Digital Video Discs (DVD). As of this writing, there are two proposed formats: one from Toshiba/Time Warner and the other from Sony/Philips. What they have in common are size (5-inch), maximum contiguous running time (135 minutes), MPEG-2 video compression and the potential for multiple audio formats. However, because they record data differently—the Toshiba SD (Super Density) format has two 4.8GB sides, each capable of holding a full 135-minute feature; Sony/Philips has a double-layer 3.7GB disc, thus the potential for a total of 7.4 GB—the formats are incompatible, and

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 • Jeff Porcaro • Leland Sklar • REO Speedwagon • Universal Studios



SIMON SYSTEMS® ENGINEERING, INC.

707 Clear Haven Drive, Agoura Hills, California 91301 (818) 707-9980

USE READER SERVICE CARD FOR MORE INFO

everyone is fearing another Beta/VHS war if neither side compromises before the expected summer 1996 DVD debut.

In a letter dated August 19, 1995, the SD alliance reaffirmed its selection of AC-3 for its mandatory, primary SD audio datastream for NTSC DVD. (It also noted its selection of MPEG for PAL.) The SD format has "private streams," which could be used for higher data-rate coding schemes with or without picture, depending upon the length of the program. The current design of the format allows for three 5.1 mixes to accompany a typical full-length feature. Losing one or two of the 5.1 mixes would open up space for mono supplementary audio tracks, 2-track surround-encoded mixes or multiple-language subtitles. There has been no indication from Sony what perceptual coding format will be used for their format, although common wis-

dom at this point assumes that Sony would use some variant of the ATRAC encoding used for MiniDisc and the SDDS film format.

DTS has demonstrated its system of coding using a new 32-band adaptive/predictive-encoded design by Steven Smyth and Mike Smyth of AlgoRhythmic Technology. Although current demonstrations have been at 1.4 mbits/sec rate, Terry Beard of DTS says the system can operate from 64 kbits/sec on up. It is currently under consideration for use in the SD-format private PCM streams.

(Late-breaking news: The industry's fears of such a war have been temporarily soothed by the announcement on August 24 that both DVD sides were in discussions about creating a single DVD format. Whether or not a joint effort will result in a re-thinking of the chosen audio coding scheme remains to be seen.) ■

—FROM PAGE 119, DIGITAL SOUND

functions such as making A/B reel joins, cutting pull-ups, and deleting scenes without having to re-print-master a reel. It also allows for additional distributor logos (primarily helpful for foreign release) to be added to the head of the first reel instead of making a splice on the track negative.

As of this writing, eight Westrex optical cameras in the U.S. have been modified to shoot Dolby Digital track negatives, with another six expected by the end of the year; there are 17 Dolby Digital cameras in the rest of the world.

DTS

In the two years following the introduction of DTS for *Jurassic Park*, its installed base has continued to grow at a steady rate and has maintained a lead over Dolby Digital and SDDS. As of July 1995, more than 2,400 theaters in North America and 1,800 in the rest of the world have installed DTS-6 processors, which have a retail price of \$5,950 and a street price of less than \$4,250. The major-studio average is 600 theaters for a DTS release, but this past summer, three films were released in approximately 1,000 DTS-equipped screens on

opening weekend: *Die Hard With a Vengeance*, *Casper* and *Apollo 13*. So far, more than 100 films have been released in DTS.

DTS is currently the only "double-system" format on the market (the audio is shipped on a CD-ROM disc) since an "amicable resolution" was signed with LC Concept of Paris regarding patent disputes over similarities to their timecode-read design. (LC's now-defunct system used timecode on the outside edge of the film to interlock a magneto-optical drive.) As a result of the agreement between the two companies, DTS is free to sell units inside France and has sold more than 200 units there since last September.

One of the more controversial aspects of DTS (the most controversial aspect, according to their competitors) is the extra distribution cost of the CD-ROM discs. The cost per disc (most features require two, although running times of less than 100 minutes can be accommodated by one) is \$50. While this price is still in effect, DTS recently began offering a one-price-fits-all offer. For approximately \$45,000, they will include all licensing and engineering fees, plus as many discs as desired. This would bring the cost per screen for discs

THE Art **DIFFUSOR**™

"The Ultimate
Mix of
Technology
with Art"

Performance
Tested

Quality
Materials

Superior
Value

Sound Architecture

INTERNATIONAL SALES

The Sound Network
London, U.K. 44-181-372-3170
FAX 44-122-574-2155

sdg

For Free Application Assistance
Call 1-800-221-8975

For Sales Please Call
1-800-321-8975

USE READER SERVICE CARD FOR MORE INFO

alone to \$37, if one assumes a wide digital release on 1,000 screens and licensing fees usually running about \$8,000 per feature.

In the summer of 1994, DTS introduced a second-generation "Tower" for the encoding and monitoring of both 2-track SVA and 6-track mixes. A third-generation unit, to be unveiled soon, will have simultaneous metering and outputs for both formats, a feature that will simplify printmastering of multiple formats. While the 6-track mixes of many DTS films are frequently made to SR-encoded mag film, it is possible to go directly from stems to a

DTS "P8" hard disk recorder. This unit, although originally designed by DTS for use in special venues, is also used as the source when making one-off, write-once CD-ROM answer discs. When printmastering to the P8 hard drive, it is not possible to punch-in, although monitoring is E-E through A/D, D/A conversion and apt-x encoding/decoding.

There have been no basic changes in the DTS-6 theater processor since its introduction for *Jurassic Park*, although software updates are included with each film's discs. (By mid-1994, all of the original "DTS-S" 2-track units had been upgraded,

and production of 2-track discs ceased.) Later this year, DTS will begin shipping units with a digital output that will allow direct digital connection to the new generation of DSP-based cinema processors by Peavey, Ultra-Stereo and Sony (see below). A digital output upgrade to existing units will be available for approximately \$300.

SDDS

In its first year of existence, after the June 1993 release of *Last Action Hero*, there were only six prototype SDDS theater decoder units in the field (four in Los Angeles and two in Tokyo), and work was continuing on format design. Beginning with *City Slickers II: The Legend of Curly's Gold*, released in June 1994, the optical recording format was finalized, and the manufacture of production units began. The first film to be exhibited with the new DFP-D2000 Digital Film Sound Decoders and DFP-R2000 Digital Film Sound readers was *Blankman*, which premiered on 15 SDDS-equipped screens on August 19, 1994.

Three weeks earlier, SDDS made the landmark announcement that AMC Entertainment Inc., one of the largest theater chains in the U.S., had contracted to install SDDS equipment in all of its then-existing 1,618 theaters, in addition to all new screens. As of this writing, over 682 AMC theaters had installed SDDS equipment, including all 172 in the Southern California region. In addition, as to be expected, there is a chain-wide commitment to equip the approximately 1,000 theaters in the Sony (for the most part *nee* Loews) theater circuit.

Since its introduction, more than 1,100 theaters in the U.S. and 200 in the rest of the world have installed SDDS equipment. The suggested list price of a standard DFP-2000 unit is \$11,100, with street prices in the area of \$8,500. Sony also sells an SSU-1000 Setup Storage Unit (list price: \$2,095) to allow a DFP-D2000 to be moved within up to eight theaters in a multiplex while remembering correct setup data. The total of SDDS-encoded films is 42, with *First Knight* being the first to have all prints (2,500) containing an SDDS track. The largest SDDS engagement for a film so far was for *Batman Forever*, which played on 260 SDDS screens.

CHOOSE A **SLICK** MOVE.... "PURDIE" EASY WITH A **KARTMASTER® HD 500**



BERNARD "PRETTY" PURDIE, THE MOST RECORDED DRUMMER IN THE WORLD AND RICHARD "DICK" GAIL, THE FOREMOST DRUMMER IN THE ELECTRONIC FIELD BOTH AGREE THAT THE KARTMASTER HD 500 IS **SLICK**:

- S**trong, sturdy stainless steel and extruded aluminum construction using hand welds are basic to the design
- L**eaving a case behind is no longer necessary: One trip takes 500 lbs. of cases and equipment in and out of a gig on either the 2 wheel, upright hand truck or on the 4 wheel flatbed mode.
- I**nnovative design: Patented push button opening and closing of the telescoping cart is easy to do. Two new folding shelves give the user an upper level working space holding 200 lbs.
- C**ompactness: When not in use, the Kartmaster stores neatly next to other gear. The two shelves fold to fit the cart storage size.
- K**artmaster HD 500 is definitely the answer to less stress from moving in and out of a gig and for more energy to create your sound.

Call St. Louis Music, (800) 727-4512 Or Call

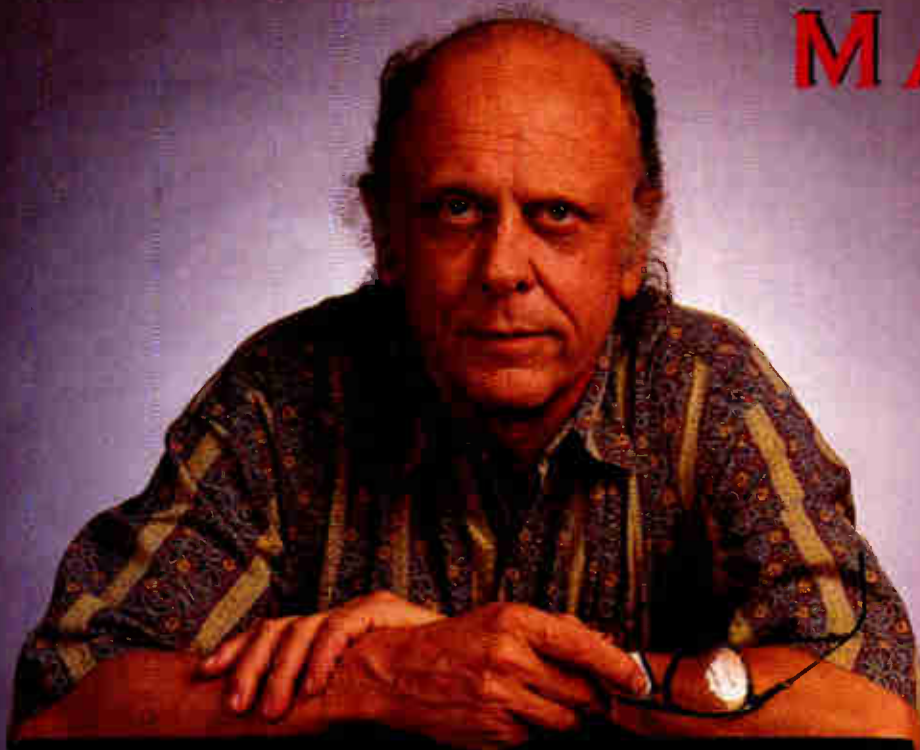
800-423-9328 or 815-723-1940 M-F, 8-4, CST or FAX 815-723-2495 At Any Time

KART-BAG, Division of Remin, 510 Manhattan Rd., Joliet, IL 60433

USE READER SERVICE CARD FOR MORE INFO

THE MAN BEHIND

MANLEY



In audiophile circles, David Manley is known as the man most responsible for the great modern resurgence of the vacuum tube and as the designer of the KT-90 output tube. 35 years of recording industry experience began in the late 1950's with EMI, where he studied design and engineering before moving on to recording and mastering in their famed studios worldwide. He later created his own sound and film studio empire. Experience. Know-how. David has built over 200 studios worldwide.

Controversial, outspoken, and brutally honest, David embodies his personality in each new design. This rack shows only part of his vast array of pro studio equipment which also includes microphones, power amplifiers and other specialized electronics. Both the legendary all-discrete Langevin brand and the premium all-tube equipment which proudly bears the Manley family name are entirely manufactured to exacting standards at the Manley Laboratories factory located just 40 minutes east of Los Angeles.

Meet the man at AES
booth #172.

MANLEY LABORATORIES, INC.
13880 MAGNOLIA AVE.
CHINO, CA. 91710 USA
TEL: (909) 627-4256
FAX: (909) 628-2482
email: emanley@netcom.com

It Takes Guts to Make Your Own Sound



Call 800/992-5013 for a free copy of
The LA Story: From the Concert Stage to the Next Stage.

World Radio History



Welcome to LA

Linear Activation: The Next Stage In Sound Reinforcement

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

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



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

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



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

See us at AES Booth #444 and #450



Performance Audio Redefined

Eastern Acoustic Works • One Main Street • Whitinsville, MA 01588
T 800/992-5013 • T 508/234-6158 • F 508/234-8251 • BBS 800/889-2540

fourth, units will be field-upgradable via software; and fifth, and most important, the settings cannot be changed manually, thus inhibiting the creativity of assistant theater managers who think they increase the popcorn sales by raising the subwoofers and the surrounds. Another anticipated feature would be tying into computer-based real-time analyzers to align the room equalization quickly and automatically. (Or perhaps that should be regarded as the *first* pass at the EQ before listening to familiar program material!)

Sony has had beta units of a DSP cinema processor in the field in 1995 and, as of this writing, plans to be in full production by September. The processor is designed to function as a stand-alone unit or in conjunction with the DFP-2000 playback system. The only overlap between the two Sony units is room equalization; the Sony digital system only provides for SDDS playback and still needs a standard processor for optical and magnetic analog preamplification, noise reduction, 2:4 matrix decoding, and fader control—all of which will be provided by the new Sony

digital cinema processor.

Up to 16 slots are available in the unit, each handling up to 8 analog or digital inputs or outputs. All processing is done in the digital domain, including noise reduction for A-Type or SR optical tracks. While A-Type noise reduction has fallen out of patent protection, SR has not, and Sony says that its unit is "obviously not full, true Dolby SR, as it is not manufactured by Dolby." The horsepower needed to digitally decode two channels of noise reduction accounts for over 50% of the processing power of the unit.

The digital outputs can be used as recorder outputs, and the unit will be able to be configured as a studio encoding/monitoring unit. Sony has said that they will be offering matrix encoding for feature films, thus putting them on equal footing with Dolby and DTS in providing all formats to its licensees.

Peavey Electronics Corp. of Mississippi, best known for its musical instruments and recording equipment, has just introduced its CinemAcoustics line of amplifiers, speakers and digital cinema processors. The

line has been designed in collaboration with Clyde McKinney and Michael Karagosian of Cinema Group Ltd. McKinney was in charge of theater marketing for Dolby in the 1970s, and later was the director of technical services for Lucasfilm's Theatre Operations Division. Karagosian previously worked as a senior design engineer at Dolby and was a major contributor to the design of the CP-200 cinema processor.

The flagship cinema processor of the CinemAcoustics line will be the CA-DP500 unit, which will be based on the Peavey MediaMatrix DSP engine. The unit will not only be able to play back 5.1 and stereo optical formats, but, like the Sony unit, will also provide 4:2 matrix encoding. This will allow re-recording studios to offer encoding to customers exclusive of licensing or trademark fees.

There is no official word from Dolby Laboratories—which invented the concept of cinema processors with its CP-100 back in 1975—regarding its possible involvement in this next generation of units. However, it seems unlikely that the company will be left behind when other

NOW A CONVERTER THAT WON'T BE OBSOLETE BEFORE YOU GET IT OUT OF THE BOX!



- UPGRADE AT ANY TIME WITH LATEST PLUG-IN CONVERSION MODULES
- SCALABLE FROM 16 TO 24 BITS
- SUPERIOR ANALOG DESIGN
- RECORD AT 44.1k AND 48k OR LOCK TO EXTERNAL CLOCK
- SIMULTANEOUS DIGITAL INTERFACE TO AES, SPDIF, AND OPTICAL (NO FLAKY ADAPTORS)

TROISI Digital Companion A/D AND D/A CONVERTERS

FOR INFO & PRICING & A DEALER NEAR YOU

CALL 508-481-9322

manufacturers exhibit their on-sale wares this month at Sho-East, the theater equipment trade show. DTS has confirmed that it has designed a DSP-based processor but is waiting to see how the market shapes up before jumping in.

MASTERING FOR DIGITAL FORMATS

Because of the increasing number of films that have been released in the 5.1 format in both Dolby Digital and DTS, it is common practice on re-recording stages to printmaster both formats simultaneously (and in all three formats if the SDDS mix will not be in its full-blown 7.1 format, which obviously requires a separate printmastering step). As procedures have evolved in Hollywood, the most common method is to record the Dolby Digital mix directly to its proprietary magneto-optical drives, while also recording an archival master 35mm 6-track mag (or sometimes 44.1kHz digital multitrack or DTRS-format modular digital multitrack) with unencoded, separate surround and subwoofer tracks. The DTS staff will then use this to create their 5-track master, which sums the subwoofer and surround tracks. Two passes need to be made on a reel on the re-recording stage, the initial one listening to the playback head of the mag master, and the second one from the Dolby MO drive.

The DTS format does not have a delay for the surround tracks built in; a delay of approximately 50 ms is often placed on the surround tracks during printmastering, as was standard in the days of 70mm release. This delay means that the Haas precedence effect ensures that material which is both in the front and the surrounds is not perceived as coming from the surrounds only. In Dolby Digital and SDDS, like the matrixed stereo optical and home video formats, the surround delay is set for each playback venue, with the Dolby DA20 having a 20ms to 80ms range and the SDDS DFD-D2000 at 0ms to 100ms.

In the case of a digital master for DTS release, it is recommended that the sub/surround bandpass encoding take place prior to recording so that three AES/EBU digital outputs (left/left surround plus subwoofer, center/right surround plus subwoofer, and right only) can be sent digitally to the apt-x 100 data compression unit, bypassing the normal

Apogee AD-500 units used by DTS. The discrete left-surround, right surround, and subwoofer tracks—either on a digital multitrack or on the mag archival master—should be recorded with no delay, because it's easy to add at a later date but very tough to take away!

One of the differences among the three formats is the subwoofer level and exact frequencies covered: Dolby Digital is 3 Hz to 125 Hz, DTS 20 Hz to 80 Hz, and SDDS 4 Hz to 500 Hz. (The SDDS sub track is not technically a mixer-limited, full-range channel in disguise, as has been reported elsewhere.) The level

also varies among the systems, with DTS using an 85 dB/c wideband sub level, and 7 dB of in-band gain relative to the center channel; Dolby and SDDS use 91 dB, with 10 dB of in-band gain.

After printmastering, there are other issues involved in creating a multiformat release: Dolby Digital's track is recorded in the green layer of the track negative, while SDDS is in the red layer. (DTS can go either way.) Since the standard track negative stocks are green-sensitive, it is not possible today to shoot all three formats simultaneously. SDDS currently uses a red-layer-sensitive

Ever Wonder Why Genelec Active Monitors Are Becoming So Popular?

Perhaps it's because you don't have to worry about choosing the "right" system yourself. The right amplifier to go with the



speakers...the right cables to connect them...the crossover and EQ to get around those small prob-

lems in your control room. Or the big ones in that converted office, bedroom, den or basement.

Consider the *comprehensive* design of Genelec monitors. *Real world*, not just "anechoic chamber" design and features. The Genelec Waveguide minimizes cabinet and room boundary problems and *improves* stereo imaging for multiple listeners. Low distortion, line-level crossover with equalization that works *with* your control room characteristics. Power amplifiers and speakers *matched* electrically and acoustically.

We could go on and on about the technical achievements of the entire line of Genelec Active Monitors, but here's the real story. Genelec performance adds value to your bottom line.



The Genelec 1030A.
It's all you need.

GENELEC®

Your business is audio...
Don't play with toys.



See us at AES Booth #1E0Z / 1110

DISTRIBUTED EXCLUSIVELY IN THE USA BY QMI 25 South Street Hopkinton, MA 01748 Tel 508-435-3666 Fax 508-435-4243

USE READER SERVICE CARD FOR MORE INFO

stock originally custom made by Eastman Kodak for the Cinema Digital Sound format. According to Howard Flemming, chief engineer for SDDS, the red-sensitive stock was chosen for greater contrast and grain structure on the negative.

The first film to use a three-format track negative, *Die Hard With a Vengeance*, had its SDDS track shot at the SDDS facility, and then each roll was laboriously rewound (in the dark!) to a punch start. The Dolby Digital and the SR-encoded SVA tracks, along with the DTS timecode, were shot at NT Audio on its half-speed camera, which made possible the recording of the Dolby Digital and DTS tracks at the correct density. In the future, the process of shooting tri-format negatives will be made much easier with the release of a panchromatic track negative stock by Eastman Kodak.

Another aspect of SDDS that currently requires special handling is the fact that edge codes outside the perforations on the print stock interfere with the SDDS tracks. The current solution is to use custom batches of stock without edge codes, al-

though stock manufacturers are working on modifications to print the edge codes on specific layers of the film with solid-state monochromatic sources, rather than in black on all layers.

As one might imagine, it is necessary to screen and check the whole film for all formats supported by each track negative. For example, the first answer print off of a Dolby Digital/DTS negative would be played three times: once to check the SR-encoded stereo optical mix, and once each for the two digital formats. The DTS screening would be with one of the two answer discs, which would then be approved for CD-ROM replication. A screening would later be held to check a random production disc sample before approving discs to be shipped to film distribution exchanges and theaters. Turnaround to final discs, without overtime charges, is normally five working days.

All digital formats are checked by running with the optical exciter lamp turned off to make sure that any dropout of the digital format under inspection is clearly audible. In ad-

dition, Dolby and SDDS have designed QC machines to inspect prints; the SDDS machine also handles negatives.

The timecode integrity of a DTS track negative can be checked by connecting an RS-232 serial print to the D connector on a standard DTS-6 player through a translator box. The printout will indicate the number of accumulated timecode dropouts and the position of each dropout longer than 20 frames, which is considered the limit of the unit to flywheel past bad code.

And, of course, the whole procedure must be duplicated when a new track negative is shot, although once a DTS production disc is checked, you only have to ensure the timecode integrity of each new negative and not the discs themselves. ■

Larry Blake is a sound editor/recording mixer who lives in New Orleans, His most recent film, The Underneath, will be released on home video in November. Each month, his "Sound for Film" column appears in Mix.

"...AS GOOD AS IT GETS."

JOHN GIBSON OF EAR PROFESSIONAL AUDIO/VIDEO
ON THE SYSTEM ANALYSIS SOUND ABSORPTION PRODUCT LINE

"The attention to detail on the manufacturing process and the versatility for an acoustical product are as good as it gets!"

Studio Wavelength Absorbing Linear Structure (S.W.A.L.S.) The S.W.A.L.S. superior performance is achieved by nine different layers of sound absorbing materials providing high levels of linear absorption. The flexible S.W.A.L.S. are a useful tool for sound recording environments — one side provides absorption at all frequency levels while the other side provides absorption at low frequencies with less mids and highs.

In the photo the S.W.A.L.S. are located behind the piano and against the brick wall.

- Linear gobo absorption acoustics for cross-talk control
- Independent tests report sound levels reduced by a factor of 20 db
- Real room resonance control using mass and diaphragmatic action

The Wavelength Absorption Bag (W.A. Bag) consists of an inner layer of 3.5 inches of mineral fiber encased in a perforated vinyl bag. This combination of mass and diaphragmatic surfaces offers a near linear absorption rate in low, mid and high frequency ranges. The W.A. Bags are very effective in controlling reverberation times and unwanted surface reflections.

In the photo the W.A. Bags are hanging from the wood rafters.

- Absorption by factor of 10 db
- Can be joined on an individual basis or can be connected together to cover larger surfaces
- Flexible linear absorption, reverberation and reflection control



OCEAN STUDIOS/BURBANK
435 SOUTH SAN FERNANDO BLVD
BURBANK, CA 91502

"System Analysis products give engineers like Stan Katayama total control in getting a huge drum sound, or producer/engineers like Brown Bannister total flexibility to achieve airy yet controlled vocal sounds."

— OCEAN STUDIOS

AVAILABLE THROUGH EAR PROFESSIONAL AUDIO/VIDEO



P.O. Box 2246 • Tempe Arizona 85280 • Tel (602)940-0129 • Fax (602)940-0179

USE READER SERVICE CARD FOR MORE INFO

now you can have a DP, too

DP/2 Features

2 24-Bit ESP Chips

2 Inputs/2 Outputs
(balanced TRS)

65 Algorithms

600 Presets

DP/4+ Features

4 24-Bit ESP Chips

4 Inputs/4 Outputs
(balanced TRS)

Process up to 4 Signals

54 Algorithms

400 Presets



have a DP/2!

With the resounding success of the DP/4+, you're probably wondering, "why doesn't ENSONIQ make a smaller DP for the home studio user (*like me*) on a budget?"

Well, enough of you asked, and we're happy to oblige – with the DP/2. A two-processor version of the DP/4+, for about half the price. (*Now you're talking!*)

The DP/2 can process one true stereo or two discrete mono sources, through two of the same custom DSP chips we use in its big brother. It offers the same unequalled range and quality of algorithms as the DP/4+, plus new combinations designed specifically for the home/project studio. And we've built them into a whopping 600 Presets, ready for any challenge.

Both DP's feature balanced I/O, total programmability, advanced MIDI control, and even a headphone jack.

ENSONIQ's digital effects deserve the reputation they've gained – from studios, musicians, and the music press. For those who need the ultimate parallel effects processor, the DP/4+ is your best choice. But if you want that power in a smaller package, there's now a DP for you, too. (*Thanks!*)

You can reach us at:
800-553-5151 phone, 610-647-8908 fax
800-257-1439 documents to your fax
GO MIENSONIQ on CompuServe
<http://www.ensoniq.com> on the Web

ENSONIQ

LEADING THE WORLD IN SOUND INNOVATION

Let me have more information on the DP/2!

Also send info on:

DP/4+ parallel effects processor

KT Series 64-voice weighted action synths

TS Series synths

ASR Series samplers

SQ Series synths

KS-32 weighted action synth

I'd also like to have your *make music think ENSONIQ* demo CD (*here's \$5; ship it, handle it, whatever!*).

Name _____

Address _____

City _____ State _____ Zip _____

Phone (_____) _____

Mail to: ENSONIQ Corp., Dept. X-57, 155 Great Valley Parkway
P.O. Box 3035, Malvern, PA 19355-0735

SOUND FOR FILM

Toward a Digital Neutral Field

by Larry Blake

No subject in our small pond of film sound prompts more fun disagreements than the issue of digital sound in theaters. Let me cut to the chase and sum up my feelings on the issue.

In the long run, there are only two people who

company personnel, theater chain district managers, theater projectionists, etc., come with too much personal and political baggage.

For example, I have heard many reasons why Disney has only released films digitally in Dolby Digital (with the single exception of *Judge Dredd* as of this writing). Whatever the *real* reason (and I'm sure that part of it is allegiance to the good folks at Dolby Laboratories), the

share, with people trying to poke holes—real or imagined—in its design.

In essence, DTS and Dolby did the same thing: created a digital film format that would mate onto existing Dolby cinema processors. The difference boiled down to a question of *how* and *how expensive*. DTS's decision to make the digital tracks foolproof to duplicate (using standard CD-ROM replicating plants) and read (using inexpensive CD-ROM play-

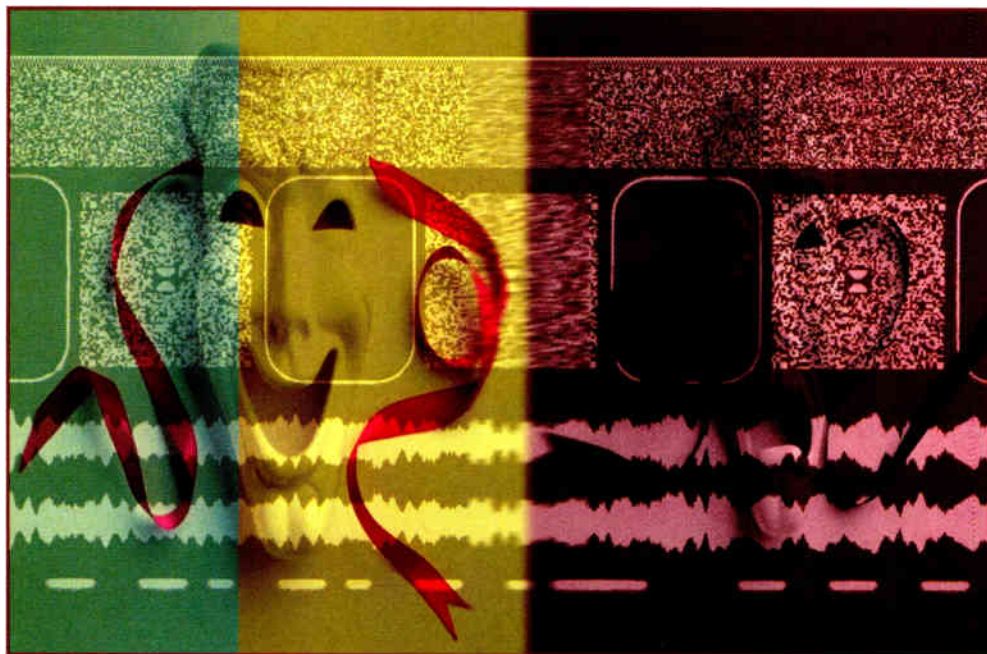


ILLUSTRATION: TIM GEASON

matter in this whole equation: the director and the moviegoer who pays \$\$ at the box office. Or, stated more clearly, the only issue is ensuring that what the director approved on the mix stage is heard by the largest number/highest percentage of moviegoers. The opinions and wishes of everyone else—sound editors and re-recording mixers, studio post-production and distribution personnel, producers' boyfriends, digital sound

end result is that the superb mix of *The Lion King*, for example, was heard properly by far fewer viewers than would be the case in multi-digital-format release.

Much of the format discussion has disintegrated into rumor-slinging and name-calling among representatives and proponents of the various systems. Digital Theater Systems (DTS), being the new kid on the block, has had to endure more than its

ers), and make lab printing requirements fall within existing standards, was fiendishly clever. (A top engineer at a competing company praised the system's "haiku-like simplicity.") Whatever its potential before DTS, digital sound on film—at that point only represented by Dolby Digital—was still a premier format for large theaters in big cities. DTS changed all that in June 1993, with the opening of *Jurassic Park*

—CONTINUED ON PAGE 138

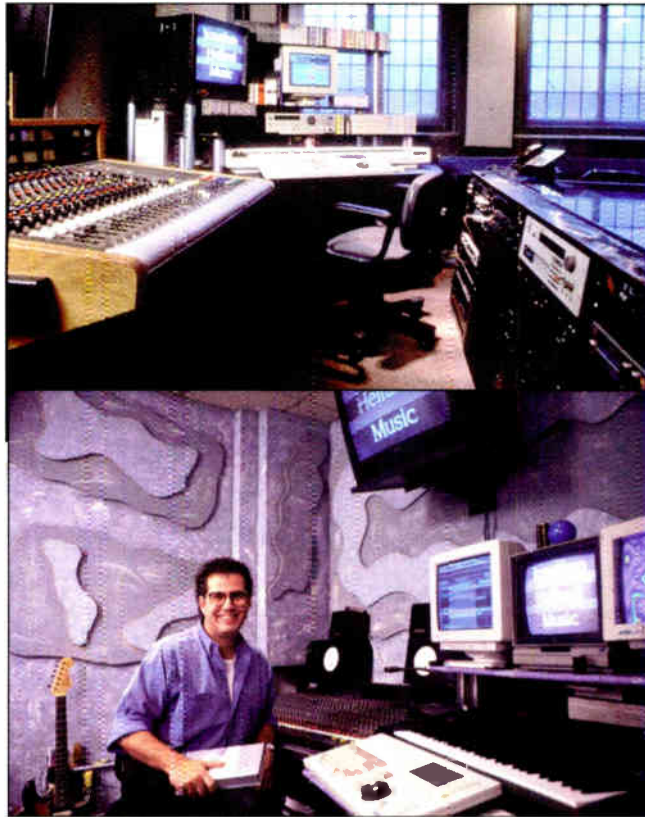
Jonathan Helfand

DESIGN, EDIT, MIX

by David John Farinella

Few occupations in the world can take you from a presidential campaign one day to a video game the next. Reporter, perhaps, or filmmaker. Yet day in, day out, sound designers and audio post engineers are asked to accomplish top-quality work in widely divergent styles—and make it all seem routine.

Today, Jonathan Helfand is composing music for a virtual reality game out of



Top: Studio D at

Jonathan Helfand Music.

Below: Helfand in Studio C, the design suite.

his personal studio in New York. He has designed spots for award-winning public service announcements and composed music for an American Express commercial that featured Paul Newman's first advertising appearance in the United States. "I'm told that over a billion people saw that particular ad, so I guess I should say that I did it," he says with a laugh. He also worked on what he calls one of the first all-digital presidential campaigns, in 1988 for Democratic candidate Michael Dukakis. "I have every word in the English language spoken by Governor Dukakis. We can now make him say anything we want." And he worked on President Clinton's election campaign and on an Earth Day public ser-

—CONTINUED ON PAGE 144

"When Night Is Falling"

DIGITAL FILM SOUND ON A BUDGET

by Tom Kenny

According to Hollywood's need to categorize films, the latest project from Canadian writer/director Patricia Rozema, *When Night Is Falling* (Crucial Pictures), would be termed a lesbian romance. It's the story of a Christian woman who is enticed by another woman to run off with the circus. But woven into the script, Rozema explores the larger conflict of homosexuality within the tenets of a Christian college and the Catholic faith.

Like all independent filmmakers, Rozema faced budget dilemmas, particu-

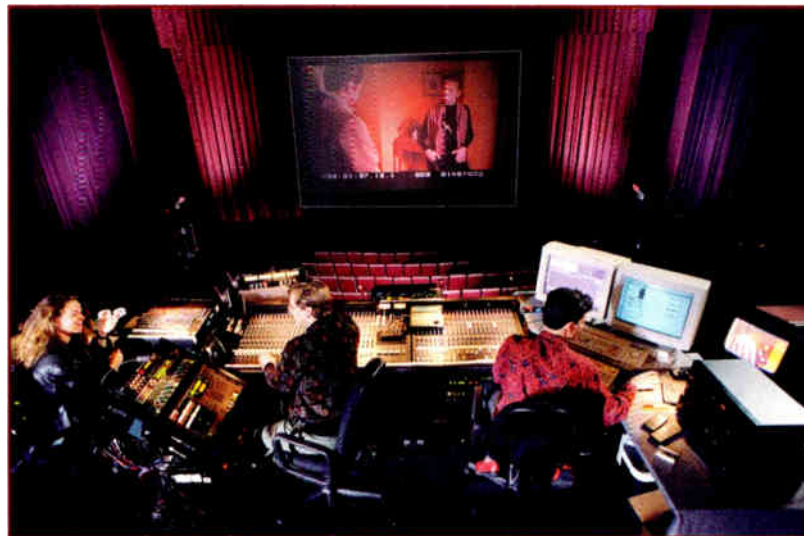


PHOTO: MARK MAINGUY

The mix crew for When Night Is Falling in the balcony of Toronto's Regent Theatre. From left to right: Director Patricia Rozema, post-production supervisor John Hazen and sound designer Alan Geldart.

larly in audio post. Her vision for the film's mix of often whisper-quiet dialog, Foley, effects and music didn't fit in with the film's overall \$1.5-million budget. Using conventional mag technology was financially

out of the question, but "going digital" also would have presented problems, mainly that renting sufficient time at a digital film sound editing stage would have forced the crew to watch the clock.

Meanwhile, post-production supervisor John Hazen had been looking to try out a brainstorm he had for rendering top-notch film audio using affordable, modular and mostly digital

—CONTINUED ON PAGE 148

Purchase In '95 And
Receive 6-Year Warranty!

Totally Cool.

PowerLight Amplifiers from QSC are cool to the core.

They're possibly the best sounding amps that QSC makes. *Exactly what you want from your power source:* wide, dynamic range with crystalline highs, full, round mid-range and a very fat but clean low end. PowerLight amps are extremely efficient. They'll drive your speakers better than they've been driven before. Even at 2 ohm loads.

PowerLight Amps also sound great because of *what you won't hear*—rattle and hum. These amps have remarkably low distortion due to improved output circuitry. And the noise typically associated with transformers is completely absent.

These are the only light amps that won't interfere with your wireless mics. *No static and no loss*

of radio signal. PowerLight Amps meet all RFI and FCC requirements in the U.S. and EMC requirements in Europe.

PowerLight Amps run very cool, even when the performance is very hot...even in the middle of summer. The high aspect ratio aluminum heat sink was designed with the maximum possible surface area to absorb and dissipate heat aggressively. Variable speed fans blow it away on demand. (And signal muting kicks in when things get extreme to prevent shutdown.)

PowerLight Amplifiers from QSC—the best sounding, most advanced package of power technology available. And, at a cool 18 pounds, you can put them wherever you need them without sweat. And that's cool. So, pick some up from your QSC Dealer. When you purchase throughout 1995, you'll receive QSC's extended warranty at no additional cost, for a total of six years coverage.* Call QSC for more information at 714-754-6175.

LOAD IMPEDENCE	PowerLight 1.0	PowerLight 1.4	PowerLight 1.8
2 OHM*	500 Watts	700 Watts	900 Watts
4 OHM**	300 Watts	500 Watts	700 Watts

* 1 kHz, 1% THD, TYPICAL. ** 20 Hz to 20 kHz, 0.1% THD

QSC[®]
A U D I O

*If you purchase PowerLight Amplifiers by 12/31/95 you will receive QSC's 3-Year Extended Warranty in addition to the 3-Year Standard Warranty.

PowerLight is a trademark and QSC is a registered trademark of QSC Audio Products, Inc. 1675 MacArthur Blvd., Costa Mesa, CA 92626-1468 (714) 754-6175 FAX (714) 754-6174

See us at AES Booth #151, Demo Room 3D03



Workstations In Everyday Use

by Loren Alldrin

Digital audio workstations (DAWs) have forever changed the face of audio production. DAWs offer speed, flexibility, editing power and convenience that traditional analog tools just can't touch. Sound for film and television, radio production, audio for interactive programs—all have felt the magic touch of the digital audio workstation.

What follows is a spotlight of four popular systems and the people who use them. [Editor's Note: we will continue to spotlight four workstations in post-production applications each month in the "Post-Script" section of Mix.] Forget the marketing hype and the slick ads for a minute—we'll let the users themselves tell you what makes a particular system work for them.

SADiE KRAKATOA ENTERTAINMENT

One of the newest entries into the Windows-based DAW market, SADiE is an 8-track hardware/software system suitable for radio, mastering and audio-for-video applications. Already quite popular in Europe (the BBC has more than 200 systems), the SADiE workstation has been available in the States for less than three years. On-



SADiE System



MTU Microsound

Manufacturer Info

SADiE

1808 West End Avenue
Nashville, TN 37203
615/327-1140

Fairlight USA

3855 Hughes Ave, 2nd Floor
Culver City, CA 90232
310/287-1400

Micro Technology Unlimited

PO Box 21061
Raleigh, NC 27619
919/870-0344

Avid Technology

One Park West
Tewksbury, MA 01876
508/640-6789

board DSP allows SADiE to perform edits, fades, compression, equalization, noise reduction, constant-pitch time stretch and sample rate conversion at up to 24-bit resolution. A turnkey, 2-input/4-output SADiE system starts at around \$10,000.

Scott Whited, owner of Krakatoa Entertainment, recently installed the SADiE system in his Burbank, Calif., facility. Krakatoa Entertainment does audio production and post-production for corporate and educational videos, and just finished what Whited described as "one of the first feature films posted on SADiE in the States," *Intimate Deception*.

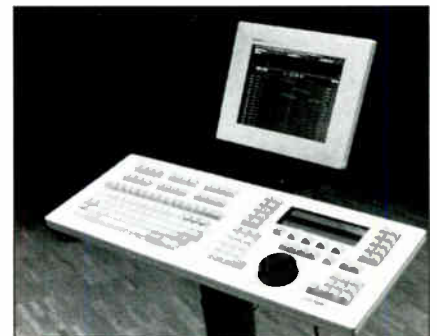
Combining SADiE with a DDivision offline video-editing system, Whited offers his clients a complete post-production package. "We often coordinate through a telecine house, do a DDivision offline, and go to a film matchback or online edit," he says. "The end result is a locked picture that we then post in the SADiE. For ADR on *Intimate Deception*, we took audio from the online Beta master, laid it off to DAT and imported it into the SADiE system directly. Then we worked off a 1/2-inch window burn dub of the locked picture. Posting the whole movie took just three weeks—an aggressive three weeks.

"One of the nicest things about SADiE is its ability to do timecode snaps," Whited adds. "You can mark a hot spot in an audio clip, give it a timecode designation, and SADiE will snap the clip to that timecode and match it right up with the locked picture. It's really handy for placing elements quickly. I like the fact that you're getting a full range of audio manipulation capabilities with SADiE—EQ, noise reduction, mixing, crossfading and time compression/expansion. I also like the cost benefit. SADiE gives you finishing-quality sound at a low cost."

Down sides? "For our purposes, SADiE could definitely use more tracks," Whited replies. "Eight worked okay, but it would be nice to have more. SADiE is also very timecode-intensive—being able to just lay in sound or ambience to a visual cue,



Avid AudioVision



Fairlight MF3



YES, MUSIC!



**Sound Ideas is much
more than the worlds
greatest
Sound Effects
Library!**

**Call Today for your
FREE
Music Demo**

See us at AES Booth #843

US:800-387-3030

CANADA:800-665-3000

905-886-5000 FAX: 905-886-6800

INTERNET: mdemo@sound-ideas.com

SOUND IDEAS

105 West Beaver Creek Road, Suite 4
Richmond Hill, Ontario
Canada L4B 1C6

TM & © All Rights Reserved

with a mouse click, would be nice."

The next-generation SADiE system will be a significant upgrade, the company says, offering hardware expandability up to 80 tracks and a high-speed network capable of transferring 280 simultaneous tracks of digital audio between workstations. A new software version will boast enhanced DSP functions, streamlined user interface and more record/playback tracks.

"SADiE took a little learning," Whited says, "but it really produces what we want from it. The quality is good, the price is right, and the support is there."

FAIRLIGHT MFX3 WAVES SOUND INC.

The MFX3, Fairlight's eighth-generation DAW, differs from most in that it forgoes a familiar computer platform in favor of a true multitasking, high-performance operating system (OS9). This allows the MFX3 to offer true object-based sound editing, with up to 24 tracks playing from a single hard disk. The MFX3 offers machine control of two different audio or video devices; disk-based video playback is optional. Making a break from the traditional mouse/keyboard interface, the MFX3 offers a dedicated controller that includes a shuttle knob, LCDs and computer-style monitor. Complete MFX3 systems start at around \$35,000.

Waves Sound, a five-room post-production facility in Hollywood, Calif., specializes in sound design and voice-over for radio and TV commercials. Several commercials posted by Waves have been nominated for Mercury Radio Awards, including spots for Clothestime and Pepsi. Last December, the facility scrapped its previous DAW system and made a move to the Fairlight MFX3.

According to engineer Jay Shilliday, it was time for Waves to either commit entirely to their existing DAW manufacturer or make a clean break. Though Waves' previous DAWs were all the same platform, they suffered hardware and software incompatibilities. "We needed to look at the future," Shilliday says, "and we needed three compatible systems. On a recent session, a client needed more time to accommodate a late voice-over talent. I was booked on another session, so I bumped the audio to an MO disk, handed it over to another engineer in an open studio, and they were up and running in about two

minutes. It's also made scheduling remixes much easier, as a project can be transferred between rooms. We never could have done that before."

When shopping for new hardware, Waves picked speed as its number one criterion. "Speed is everything," Shilliday says. "Advertising people need stuff done yesterday. Having a box that can keep up with us was a big priority. The Fairlight's screen is so fast, you're never waiting for the graphics to change. It's instantaneous. I was just blown away when I did my first sweetening job on the Fairlight."

For TV commercial work, Waves Sound records most dialog in-house. Producers normally bring a completed music track, with a finished (or near-finished) picture on D2 or 1-inch. Music, dialog and sound effects are then assembled in the Fairlight and mixed back to D2. "The Fairlight has a great grasp on machine control for video sweetening. It has some features for locking to picture—such as record-enabling and -disabling audio tracks and the ability to lock up two machines (audio/video) with the Fairlight keyboard, eliminating the need for an external synchronizing system—that I consider a necessity, especially for sweetening clients," Shilliday says. "The Fairlight is an awesome box for video sweetening."

Though impressed with the MFX3's lock-to-picture capabilities, Shilliday has some reservations about the Fairlight's suitability for radio work. "Fairlight is now looking to us for guidance and direction as they develop parts of the software more conducive to radio production," he says.

MTU MICRO SOUND RICHARD LEPAGE AND ASSOCIATES

The MicroSound workstation is a PC-based DAW from Micro Technology Unlimited, one of the pioneering companies of direct-to-disk recording. A fourth-generation product, MicroSound offers a true random-access approach to digital audio. Each audio event "floats" in a project bin; projects can layer up to 50 or 60 of these events on the timeline for playback from a single hard disk. MicroSound is available with two or four hardware outputs in an external tabletop or rackmount unit. The MicroSound workstation can be purchased in peripheral card/software form, a rackmount turnkey system or traditional tower computer. Complete Mi-

croSound systems start at around \$12,000.

Richard LePage, owner of LePage and Associates in Suffern, N.Y., uses three MicroSound DAWs to service clients in the New York area. LePage uses the systems for audio production for video, radio commercials, and audio post for long-form corporate and training videos. He's been an MTU user since 1991.

"I compared the MicroSound to several other popular DAWs. In one case, in terms of speed and ease-of-use, the MTU was many times faster than other systems," says LePage. "Some workstations are more suited to CD mastering, where a few edits per song is a lot. MicroSound is geared for audio post-production, where editing is everything. You may have thousands of edits in a long program, and you need the ability to quickly change or modify any of them."

For most of his audio post work, LePage first imports a full-length guide track from the workprint into MicroSound. He then uses MicroSound's "on the fly" flagging capabilities to mark rough cue points and problem sections during this initial recording. He then locks the MTU to a 1/2-inch or Beta workprint, building up a soundtrack with music, effects and dialog. For final layback to picture, LePage often takes his portable MicroSound system to one of the larger New York facilities.

Though sound-for-picture continues to make up the bulk of LePage's business, he's seeing more work in interactive (CD-ROM) programs. "MTU helped us get a beachhead in audio for interactive," LePage says. "One nice feature of MicroSound, and I think it's kind of exclusive to them, is that it supports numerous sampling rates down to 8 kHz. We've had linear programs that clients have wanted to be converted to interactive for CD-ROM, and the MTU's handling of lower sample rates is a boon for that. Interactive is a market I never really saw coming, but the pro audio business has made a turn in that direction. The MTU is a terrific unit for that application.

"One of the things I like best about the MicroSound system is its 'toolbox' approach," he adds. "The system gives you the tools and doesn't force you to work in a certain way. It supports an eclectic style of work—it's a completely open landscape. I also appreciate the Mi-

croSound's cost-effectiveness. It's more powerful than anything else I've seen in this price range."

AVID AUDIOVISION SERAFINE STUDIOS

Avid's AudioVision system is a Macintosh Quadra-based workstation with integrated random-access digital picture playback. Available in 4-, 8- or 16-output versions, the AudioVision system offers up to 24 virtual, digital audio tracks, 9-pin machine control and full control over Yamaha DMC-1000 and ProMix 01 digital mixers. The base 4-output AudioVision system starts at \$27,500. AudioVision's ability to interchange files with Avid's Media Composer and Film Composer digital nonlinear video and film editors have made it the choice of many high-profile film and TV productions, including *Clear and Present Danger*, *Waterworld*, *Chicago Hope* and *The Simpsons*.

Frank Serafine of Serafine Studios (Venice, Calif.) recently put a five-member sound design team to work on a new 16-output AudioVision system. Their mission: to handle the unusual or "big" sound effects for Paramount's latest cyber-villain thriller,

Virtuosity. Separate sound teams from Paramount covered the dialog and Foley effects. *Virtuosity* was a milestone movie on several accounts, all of which involve Avid systems. This was the first Paramount movie edited completely digitally, thanks to four editors working on Film Composer. It was also Paramount's first foray into a soundtrack edited entirely in the digital realm, from dialog to effects. Integration between Film Composer, Media Composer and AudioVision systems was key to the success of the movie—especially in light of the accelerated post schedule.

"This movie is breaking all traditional boundaries," Serafine says. "With most movies, you have about ten weeks to cut all your sound effects after a locked print. With *Virtuosity*, we'll never see a locked print—the picture's changing every single day. By importing the OMF (Open Media Framework) file from the film editors working on Film Composer, AudioVision will automatically conform our tracks to what they've done. We're using Media Composer for our digital video source, so the OMF files move our video around as well.

"We build all of our sound effects

Turn Your Multimedia PC into a Powerful Real-Time Spectrum Analyzer

Features

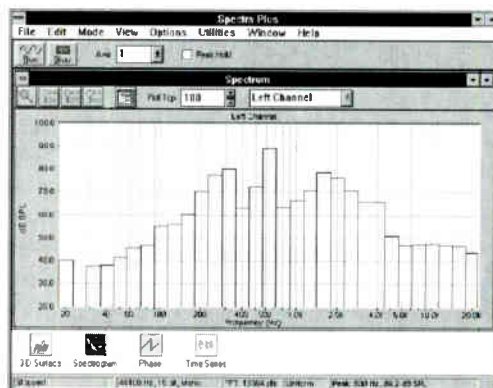
- Dual channel FFT Analyzer
- Narrowband and 1/3 Octave
- Real-Time, Record, Playback, or Post Process
- Time Series, Spectrum, Phase, 256 Color Spectrogram and 3-D Surface plots
- FFT sizes through 16,384 pts
- ANSI-A, B, C spectral weighting
- Signal Generation
- Microphone Compensation
- Triggering

Applications

- Room Acoustics (EQ, RT60)
- Total Harmonic Distortion (THD)
- Transfer Function Measurements
- Frequency Response Testing
- Loudspeaker Timing
- Crossover Testing

System Requirements

- 386/486/Pentium and Windows 3.1
- Windows compatible sound card
- 4 MB RAM minimum
- Mouse and Math coprocessor
- 256 Color VGA (for spectrogram)



\$395 Software only

\$629 Software plus pro quality* sound card

*DC-19kHz flat to 0.2 dB, THD < 0.005%, S/N - 90 dB
2 channel, 16 bit, 44.1 kHz sampling.

PCMCIA sound cards also available

Call Now for Free Demo Disk! 1-800-401-3472

PHS

Pioneer Hill Software
24460 Mason Rd. NW
Poulsbo, WA 98370

Affordable Signal
Processing Software

Spectra Plus
Professional Edition

Tech Info: 360-697-7733

Fax: 360-697-7730

BBS: 360-697-7717

USE READER SERVICE CARD FOR MORE INFO

OCTOBER 1995, MIX 137

Rocket Science L.L.C.

623 East 73rd Terrace • KC • MO 64131
TEL: 816.523.0926 • FAX: 816.523.0829



- Custom Fixture Fabrication
(Lights, Integrated Production and Technical Furniture, Control Panels, HVAC Diffusers)
- Ergonomic Architecture
- Acoustical Treatments
- Noise and Vibration Control
- Quiet Air Handling Systems
- Electrical (Power Distribution, Grounding, Audio/Video Wiring, Lighting)
- Architectural Millwork

Studio Design Construction

- Turnkey Audio/Video Projects
- Design • Build • Training
- Maintenance
- Consultation

The Constellation 220
Floating Glass Console by *Rocket Science*

*If it's not us,
It's not Rocket Science!*

nals should take the same amount of time. The only addition I can see is another day to make an 8-track printmaster (in addition to the time it would take to make a 5.1 discrete and a 2-track A-Type or SR matrixed) and another day to make the five-behind-the-screen music and effects. And maybe you might want to tack on another day because the 5.1 and stereo optical mixes might take longer to do because of finding the optimum 5-to-3 reduction for the M&E stems. So...three days, big deal. Of course, not every fill requires five behind the screen, and smaller movies might not be able to afford the extra days.

Let's be clear about something: None of these systems is perfect. I have heard each of them mute and revert to stereo optical. I have seen all formats projected out of sync (because the reader-projector gate offset was incorrectly set). DTS, especially, had problems in the beginning.

Furthermore, each company has engaged in some form of improper advertising regarding its format, but again, things are improving. DTS jumped out to an early lead in its first year when its promoters didn't distinguish between 6-track and 2-track digital theaters. They saw the light and completely discontinued the 2-track format, and their ads today clearly delineate DTS 6-track digital from standard analog stereo. In 1994, Dolby introduced a new logo that included Dolby Stereo, SR and digital formats in one confusing Rorschach-ish blob. This could be found on the "billing block" (where the credits appear on ads) for Dolby films that had no SR or digital theaters, and maybe even had no SR or digital mixes to begin with. Totally confusing, but they have corrected the situation with an elegant logo that simply has the word "Dolby" along with the double-d trademark. SDDS is still occasionally somewhat misleading, with "Eight Digital Channels" not accurately representing many SDDS films which were pre- and final-mixed in the standard 5.1, three-behind-the-screen configuration. Forgetting the mix itself, not every SDDS theater has five screen channels, so I can only ask that SDDS see to it that theater ads indicate "Eight" only if both the mix and the theater meet specs.

The issue of sound quality of the

various audio coding schemes has been raised by many, and indeed with the *frou-frou* audiophile press, it's the *only* issue. As much as the anal fool inside of me would love to do a critical bake-off with all three formats, I think there are bigger fish to fry: The systems are out there, in theaters, and the ship has really left the dock. (However, in the home, until DVD and HDTV units go into production, I hope that all options are explored in seeking out the best-sounding system.)

I assume that one of the reasons that companies such as Buena Vista (Disney's distribution wing) have stuck behind Dolby is that Dolby has an unparalleled reputation for support—and the good folks working at DTS and SDDS are quite respectful of this fact. Still, it remains to be seen if they will attain the level of support that everyone is used to from Dolby. I've used these same words before, but I'll dust them off one more time: Dolby Labs single-handedly dragged the film sound community of Hollywood out of the dark ages in the mid-'70s. Not only with their stereo optical and 70mm processes themselves, but the less glamorous parts of the whole system, including test films and support to distributors long after a film has been mixed. But while we owe them a great deal of gratitude for this, I don't think that means to the exclusion of new kids on the block. Again, what's best for the director and the film?

So, what's the solution? (And don't change this question to "Which one will win?" because I don't see a single victor emerging anytime soon.) At this point in the game, all three systems are firmly established with exhibitors. More accurately, each system has a theater chain or two that favors it to the virtual exclusion of one or both of the others. Therefore, if you release a film in only one format, you are *de facto* limiting the breadth of your digital release. And since I don't think that we can in our right minds expect all theaters to have all formats, the solution seems to be for us to have as many formats on each print as possible. (Or, at the very least, if track negative shooting/printing problems prevent this, have one SDDS/DTS track negative and another Dolby Digital/DTS negative, DTS being by far the "easiest" of the three to shoot

"The best sound effects library is The Hollywood Edge — without a doubt!"

Oliver Stone, Director

(J.F.K., Born on the Fourth of July, Platoon)

"Excellent!"

Martin Scorsese, Director

(Cape Fear, GoodFella's, Raging Bull, Taxi Driver)

"Nothing else even comes close!"

Shadoe Stevens

(American Top Forty)

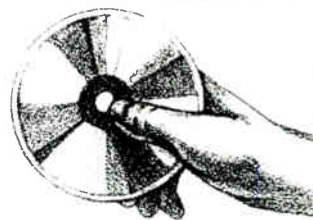
Hot off the press!!!

Background Trax

Listen for yourself-

If you buy sound effects for your company, call us for a

FREE DEMO DISC!



Call Toll Free

800-292-3755

In CA Call

213-466-6723

In Canada Call

1-800-663-4757

The HOLLYWOOD Edge

7060 Hollywood Blvd. • Hollywood, CA 90028

USE READER SERVICE CARD FOR MORE INFO

OCTOBER 1995, MIX 143

PUT YOUR HEAD WHERE
YOUR HEART IS...



Come to
New York City

the center of the
recording industry.
Learn recording
engineering at the

INSTITUTE OF AUDIO RESEARCH

Our 9 month
Recording Engineering
and Production Program
includes:

Multitrack Recording,
Mixdown Techniques,
MIDI, Digital Audio
& more. + a diploma
from a world
renowned school.

Call 800-544-2501
212-777-8550
(NY, CT & NJ)

Your focus is music,
our focus is you.



INSTITUTE OF AUDIO
RESEARCH
64 University Place
New York, NY 10003

USE READER SERVICE CARD FOR MORE INFO

and print.)

In addition, all three companies need to come together to a certain degree to help educate the industry as to what is going on; there is just too much confusion. First, there should be three-day training sessions for the installation of *all* digital formats, like those that Dolby has put on for 15 years, that allow theater service technicians to get a thorough schooling in the correct installation, alignment and maintenance of cinema processors. It would be great if all three companies could get together (along with other companies introducing their own DSP-based cinema processors, see page 116) so that as many service technicians as possible will smoothly make the leap to this third-generation cinema stereo.

Another inter-company effort that would be a big help to the industry is a common list of digitally equipped theaters, broken down by state and city. Anything that can help the distributors, their theater bookers, and those responsible for the "co-op" ads that list the theaters where a given film is playing, will benefit all three companies, plus their professional and lay consumers. For each digital-equipped theater, the list would indicate the screen number, theater chain, number of seats, cinema processor, type of projector(s), digital format(s) supported (plus changeover abilities, if applicable), number of speakers behind screen (helpful for SDDS bookings), speaker system, plus a notes field for special comments. That way, you could look up, say, the new Sony Lincoln Square theaters in New York and see that #1 seats 900 and has all three digital formats, while the other 11 theaters have varying combinations of formats. Separate listings for professional installations and screening rooms would also be essential.

This is one column that I know will generate divergent opinions. Prove me right and communicate to: P.O. Box 24609, New Orleans, LA 70184, fax (504) 488-5139, or via the Internet to swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although having great composers like Randy Newman write songs describing "trash cans floating down Canal Street" is definitely one of them.

—FROM PAGE 133, JONATHAN HELFAND

vice announcement (for which he collaborated with composer Tom Griffith and sound designer Paul Maraio) that aired on The Mall in Washington, D.C., earlier this year.

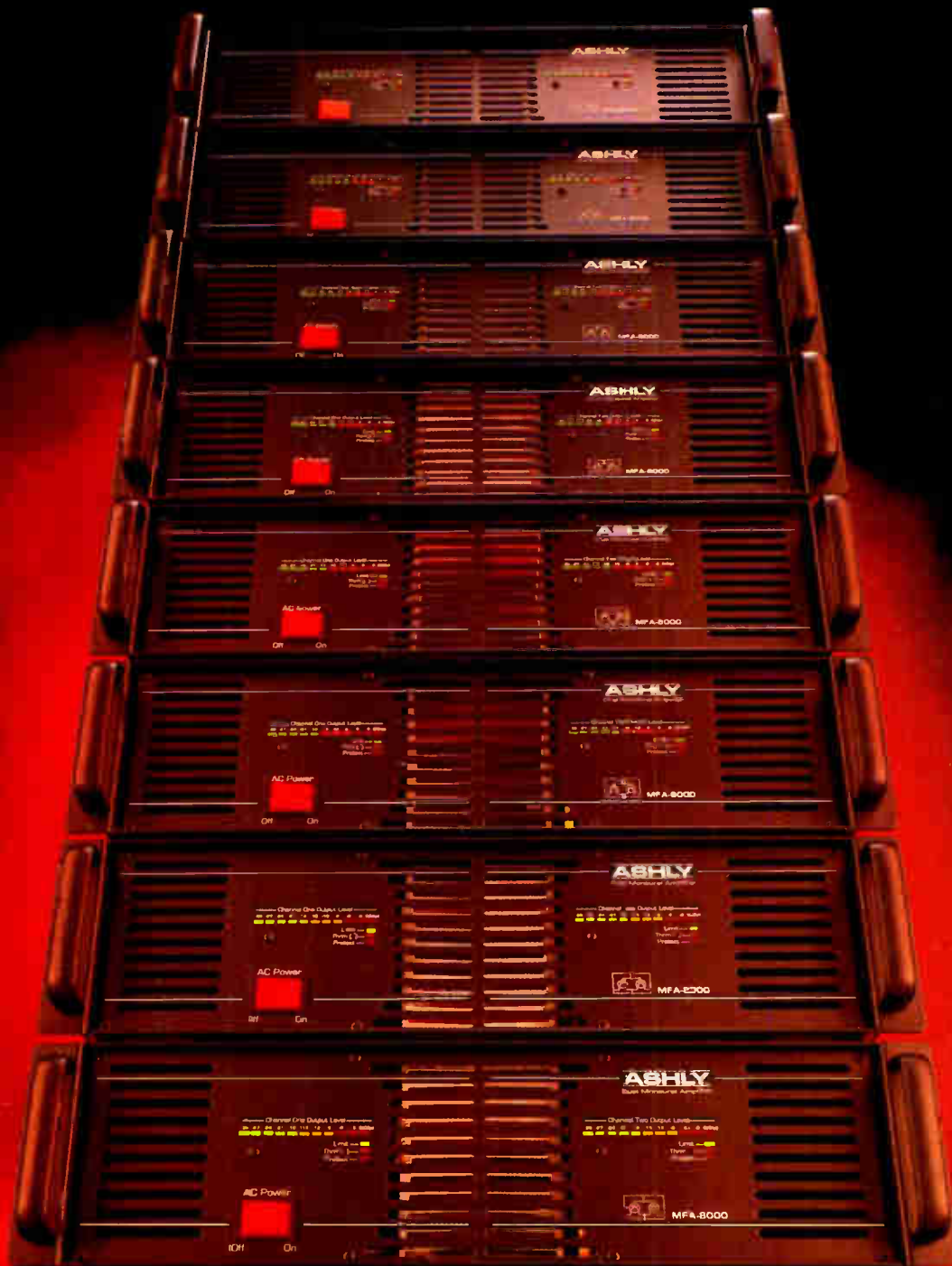
Helfand's recent success is the fruit of many long years of toil. In the early '80s, a brand-new instrument called a programmable synthesizer was hitting the streets at the same time that a younger Helfand was losing money trying to record an album with a band he wasn't paying. "Someone said to me, 'You know, there's this new system out, and it's just a matter of your programming.' At that time, you programmed in MCL [Music Composition Language], and it was all masks and delimiters and all this crazy stuff. It was great, I loved it." For the next couple of years, Helfand hopped around New York City, programming, designing patches and performing sequencing for a variety of clients.

"I started to build a little home studio, figuring that I would get back to my own music," he says. "The home studio got totally out of hand, as they so often do, because we tend to spend money on the next synthesizer rather than bigger rent. So, we have small places with big equipment." Luckily, his first break was not far behind, and he was soon packing up for a midtown Manhattan location and a gig as a sound effects librarian, cutter and editor at Trackworks, a new facility at the time.

That move led him to start to look at the business of sound design, mixing and composition as a way to make a living, rather than a way to pay for the next album. In fact, this realization netted him a number of discoveries. The first was that he had the ability to hit frame-accurate music without the benefit of timecode. "What I did was, I took Performer and told it that the time signature was thirty 32nd notes, and I told it that the tempo was 60 beats per minute," he says. At the same time, he had the ability to deliver the sound effects in one of eight pitches, or he could double or triple it. People started to notice, and as Helfand came up with more creative solutions, more people started to look his way.

In 1987, Helfand purchased a Fairlight CMI system, which gave him the ability to design sound segments, mix effects, compose music, and record and edit full spots. "It really improved me as a musician because of

If You Need More Power Than This...



Maybe You Should Run For President

Our new MFA Series of amplifiers deliver the power that digital audio sources demand. Whether used for motion picture sound tracks or live contemporary music, these models faithfully reproduce the extended dynamic range of today's technology. High power, great sound, and a full Five Year Worry Free Warranty. Why buy anything else?

* 24,000 watts as illustrated: Eight MFA-8000 amplifiers combined, each putting out 1500 watts per channel into a 2 ohm load. Also available: the MFA-6000, with up to 900 watts per channel.

POWER AMPLIFIERS BY **ASHLY**

Ashly Audio Inc., 100 Fernwood Ave. Rochester, NY 14621 • Toll Free: 800-828-6308 • FAX: 716-266-4589 • Canada: Gerraudio Dist. Inc. 416-696-2779
International Agent: E and E Exports Inc. 714-440-0760 • Internet: <http://www.ashly.com>

USE READER SERVICE CARD FOR MORE INFO
World Radio History

K•ROK'n WITH POWER



Sweeter!

Powered by
Beyston

KRK engineering has done it again. This time they've integrated a proprietary power amplifier designed by one of the most respected names in studio reference amplification with the K•RoK monitor. The K•RoKs are the same bizarre looking, great sounding speakers that are rapidly becoming the near-field monitors of choice for home recording and production studios.

The new perfectly matched 150 watt amplifier is designed specially for

K•RoK's smooth response and high power handling. The K•RoKs are now sweeter than ever. Their unique design produces better linearity and low-end punch than anything in their class. And with the optional amplifier, not only do you save rack space, you'll also save some serious dough over purchasing separate components.

Contact your local KRK dealer for a K•RoK'n With Power demonstration. K•RoK, fanatical by design.

Powered
versions of the KRK
6000, 7000B & 9000B
also available

KRK
SYSTEMS, INC.

Distributed by Group One East Coast Office: (516) 249-1399 • FAX (516) 753-1020
West Coast Office: (310) 306-8823 • FAX (310) 577-8407

KRK Systems, Inc. 16612 Burke Lane
Huntington Beach, CA 92647 • (714) 841-1600 • FAX (714) 375-6496

See us at AES Booth Demo Room #1E04

USE READER SERVICE CARD FOR MORE INFO

ing an original sound that can be slowed down or reversed or processed or whatever to maintain the rhythm and beat."

All of the raw material, Pro Tools sessions and edited multitracks (on ADAT cassettes) were then brought to the mix. "This is happening at the big mixing studios now, so it's not really an exclusive way of working," Geldart says. "The big advantage is that I can work in my edit suite and dump to ADAT and that's the product. I don't have to rent a 24-track or a 48-track digital machine anymore. We don't really have to do 35mm three-stripe any more. The savings in stock alone—everybody is starting to recognize that."

The mix took place in Toronto's historic, 300-seat Regent Theatre. Three rows of seats were removed from the balcony and replaced with a Mackie 32x8 console with 24-channel expander, 48 tracks worth of ADATs, a Pro Tools III system, Avid AudioVision, which included output of digitized picture, and a selection of outboard gear. By accessing the console's "split" design, total channels were doubled during mixdown to 112.

"We took over the theater's balcony and worked from morning until just before theater patrons were admitted," re-recording mixer Hazen explains. "Rental cost of the space was only a fraction of what a cinema mixing suite would have charged us."

System setup inside the theater took three days, including time for a rep from Dolby Laboratories to tune the room to Dolby Digital specifications. The audio playback system included Crown power amps driving JBL Cinema Series left, right and center monitors, in addition to the theater's Dolby surround JBLs. Besides routing all the audio between six 8-track digital recorders with premixed source audio, Pro Tools and AudioVision workstations, and two more digital 8-tracks for recording, the Mackie console handled all the playback routing as well.

Picture appeared on the theater's screen during the mix. The image was projected by a Sony RGB projector with line doubler playing a Beta SP dub. The film also was digitized and stored on a 9-gigabyte Barracuda hard drive so that Hazen could view scenes on his Macintosh monitor in

the AudioVision window and when using Pro Tools. Master sync and transport control for the Beta SP deck, ADATs, and audio workstations was by a TimeLine MicroLynx Controller.

"We assembled things in layers, usually premixing down to eight tracks at a time," Hazen explains. "Dialog, music and effects were premixed to timecode this way, with some Foley added during the final mix. Up to six 8-track digital recorders locked to timecode served as the audio transports."

"A lot of people and facilities are financially and emotionally invested in what has become outmoded technology," Hazen says. "Using mag dubbers instead of ADATs is akin to driving a single-speed car that one must crank to get started. It's a pain to use, takes longer, and is replete with a lot of huffing and puffing."

"We carried the entire location sound and film score to the mixing session in a small bag full of DAT cassettes. If we'd used mag the location sound alone would have weighed hundreds of pounds. Frankly, we couldn't see spending money on renting forklifts!"

The Magic is in the Air



"...I can't live without the EQ3 and I bring it to every session."

Bob Whyley, Audio Director, "The Tonight Show"

"Simply put, I love to record using the new NightPro preamps and the EQ3."

David Reitzas

"The cleanest, most transparent equalizer I've ever used..."

Ed Seay, Producer/Engineer, Money Pit, Nashville

"...I just keep coming back to this box...The NTI EQ3 let's the music be heard."

David Schwartz, Composer for the TV hit series, "Northern Exposure"

"...Engineers are going to have a field day with the freedom this device brings them."

Steve Albini, Owner, Electrical Audio Recording, Chicago

What will they say about the PreQ3?

The only Air Band, mic/line preamp in the world.

Night Technologies International
Home of **NightPro** Products



1880 West 820 North
Provo, Utah 84601
800-375-9289
fax 801-375-9286

Night Technologies International—recipient of the Radio World "Cool Stuff" award, and 1995 TEC Award nominee.



See and hear the EQ3 and PreQ3 at NTI's A.E.S. booth 678!



 **crown** Reference ^{STUDIO} I



DEADLY ACCURATE. BRUTALLY HONEST. THE BEST STUDIO AMPLIFIERS YOU'VE EVER HEARD

What you hear is what you get. A rule to live and die by in the studio. A rule too many other amplifiers tend to forget. That's why we're introducing the new Reference Studio Series.

Our Studio Reference 1 and 2 are simply the most sonically accurate amplifiers you've ever heard. No added coloration to skew your mix. Excessive

headroom to handle even the most dramatic transients. Incredible damping for a tight, defined low-end. And noise that's so low, it's hard to measure and impossible to hear.

In short, the Studio References are the best amplifiers for super-critical evaluation in the studio or home. And, they're backed with Crown's exclusive

Three Year Full No-Fault Warranty.

If you're ready to audition the most accurate studio amp you've ever heard, contact your Crown representative or call us at 1-800-342-6939 ext. 31.

 **CROWN**
Guaranteed Excellence

USE READER SERVICE CARD FOR MORE INFO
World Radio History

RUSSIAN COMPOSER EDWARD ARTEMYEV

Edward Composerhands

BY ANNELEISE VARALDIEV

PHOTOS BY ANNELEISE VARA_DIEV

In a company town like Hollywood, which produces hype as systematically and prolifically as it produces movies, television, music, et cetera, even the most genuine enthusiasm for an artist or his work is usually met with a certain degree of skepticism—people connected with the entertainment industry are used to its PR machine barreling along in perpetual overdrive.

That being the case, perhaps the only thing one really needs to say about Edward Artyemyev is that he is a fine composer and a very interesting man. His richly evocative score contributed in no small measure to the success of Rus-



sian director Nikita Mikhalkov's *Burnt by the Sun*, which won this year's Academy Award for Best Foreign Language Film. But Oscar glory is only the tip of the iceberg: Artyemyev's musical career spans several decades and includes longtime collaborations with both Mikhalkov (their first film together was *At Home Among Strangers* in 1974, followed by the hauntingly beautiful *Slave of Love* a year later) and his brother, Andrei Konchalovsky, for whom Artyemyev scored the Russian epic *Siberiada*, as well as two Hollywood productions (*Homer and Eddie* and *The Inner Circle*).

For certain cinephiles, however, it is Artyemyev's collaboration with the great Andrei Tarkovsky that will ultimately assure him a place in film history. Although the prodigious talents of both men were clearly evident in their early work (Artyemyev's experimental compositions for synthesizer; Tarkovsky's magnificent *Andrei Rublev*—and, of course, *Solaris*, their first film together, in 1972), it was with *Mirror* (1974) and *Stalker* (1979) that they attained a level of mastery seen only a few times in a generation, the kind of virtuosity that is not only dazzling from a technical standpoint, but emotionally overwhelming for the viewer, as well. There are sequences in these two films, particularly *Stalker*, in which the exquisite union of Artyemyev's music and Tarkovsky's images constitute some of the most perfectly realized applications of sound, musical or otherwise, in all cinema.

Even removed from their cinematic context, all three Tarkovsky scores are tremendously innovative and compelling. The main title of *Stalker*, for example, whose theme recurs several times throughout the film, is an intricate fusion of electronic and acoustic elements, but its dense, almost spooky sonorities seem to transcend the limitations of either process. This music possesses a kind of hallucinatory resonance and clarity. In terms of pure aesthetic intention, it is perhaps closer to something like *Allegri Miserere* (Artyemyev's solo flute line is reminiscent of that composition's sublime soprano solo) or to the Japanese "shinobue" pieces that Tarkovsky would use as source music in his last film, *The Sacrifice*, than to any conventional notion of what a motion picture soundtrack should be. (It is also interesting to note that in the late '70s, when *Stalker* was made—a time when post-production sound in Hollywood was becoming increasingly departmentalized and fragmented—Artyemyev was eradicating the boundaries between music and sound with his work on this film. Many of *Stalker's* otherworldly effects, which give the impression of subtly manipulated production sound, were created on the synthesizer, and therefore serve as both extension and counterpoint to the purely musical ideas.)

In addition to his film scores,

Artyemyev has produced several orchestral and vocal works, two concertos, and numerous electronic compositions. But even with such a lofty artistic pedigree—which began with classical training at the Moscow Conservatory—the man is far from a musical snob. Heavily influenced by rock, he cites, for example, bands like King Crimson and Pink Floyd as sources of inspiration, right up there alongside Shostakovich and Stravinsky.

He is not a cinematic snob, either. Recently, he played for me a beautifully crafted minuet that would have seemed quite at home in some lovely, upscale European art film. But when I asked what it was, he told me it was from the score of *Burial of the Rats*, a low-budget Roger Corman thriller.

Electronic music began as an alternative to academic music, and in so doing created its own technology and its own language.

Dividing his time between Los Angeles and Moscow, between film scores and what some people refer to as "serious" music, Artyemyev is currently hard at work on his most ambitious project to date, an opera based on the classic novel *Crime and Punishment*, with a libretto by his friend Konchalovsky. Like much of his film music, this piece will combine symphonic, electronic and folk idioms, not to mention—roll over, Dostoyevsky—elements of rock 'n' roll.

Surprisingly down-to-earth and approachable, Artyemyev describes himself simply as "a Russian composer," without a trace of self-aggrandizement, Hollywood ego—or hype. The description would not be complete, however, without this footnote: That any artist who can not only survive, but in fact thrive, under both Soviet

communism and Hollywood capitalism has to be a remarkable human being, and that any film composer who can do justice to both Tarkovsky and Roger Corman is indeed a talent to be reckoned with.

For you, are electronic music and music played acoustically two radically different modes of thinking, or do you view them simply as different tools used to express similar musical ideas?

First, we have to agree on what the term "electronic music" means. If we think of it only in terms of the equipment involved—synthesizers, processors and so on—then it's merely a new means of doing old things. So in that sense, yes, you could say that acoustic and electronic instruments are different tools which can be used to express similar ideas. On the other hand, electronic music began, to a great extent, as an alternative to academic music, and in so doing created its own technology, and therefore its own language. It is in this context that a composer encounters an unknown world, one in which his experiences in traditional music have no bearing. Many people do, in fact, consider acoustic and electronic music as two separate modes of thinking, which have developed along parallel lines that will never actually converge. I feel, though, that in the not-too-distant future, these two parallel lines will very definitely come together, and out of this confrontation, an entirely new musical form will emerge. *Have these ideas had any direct impact on your film composing?*

In my experience as a film composer, electronic music—in its purest form—has never been requested by a filmmaker, because the true identity, or meaning, of this kind of music seems to be connected to the fact that it is beyond, or above, emotional content. It belongs to the realm of pure reason. And since cinema is a medium that usually appeals directly to the emotions, electronic music would seem to go against the intended purpose of a film score—which is to intensify the emotions of the viewer.

How did this apply to your work with Tarkovsky?

Even with *Solaris*, the only film I've ever done in which electronic music was the basis for the entire soundtrack, the main task that Tarkovsky

I know that you took on the role of sound designer in other films—a number of years, in fact, before this term was officially coined...

Tarkovsky often said to me that, for him, it was more important for the composer to create an overall conceptual idea for all the sound used in a film, rather than to simply write themes or melodies that accompany the images. In *Mirror*, for example, I had to create orchestral textures that were added to the natural, nonmusical elements of the soundtrack, in order to give them a certain spiritual dimension that he wanted. The orchestra's purpose here was to play

the role of "living water" [a term in Russian folklore having to do with spiritual regeneration and renewal]. In the entire picture, there is only one actual music cue, in the usual sense of that term, and even then I used variations on only a single chord—an E-minor chord, with constantly changing instrumentation—and this sequence is ten minutes long!

I think your score for Stalker is a perfect illustration of what you spoke about earlier—the idea that something completely new and unique can come about when the parallel lines of acoustic and electronic sound finally connect. Not just merge or col-

lide, but truly connect ...

There were actually two versions of the score for *Stalker*. The first one was done with an orchestra alone—no synthesizer—but Tarkovsky rejected it, which surprised me, because he loved the idea of live music-making. The second version, which he accepted, was basically created on the Synti-100 synthesizer, along with solo acoustic instruments that were extensively manipulated using various sound processors. At that time, Tarkovsky was very interested in Zen Buddhism and wanted the music to reflect certain contemplative elements that are part of Eastern religion and philosophy. To achieve this quality, I borrowed from the Indian classical tradition of using a single basic tonality, whose rhythmic patterns are slowly and constantly changing, creating a background over which the melody of a solo instrument can soar.

*Most of the films you've done in Russia, including *Burnt by the Sun*, were made at Mosfilm Studios. Today, from a technical standpoint, are the facilities at Mosfilm comparable to studios in Europe or America, or could they still use a little infusion of Perestroika?*

Mosfilm currently has three recording studios—one which is designed for rock and pop music recording, and two which can accommodate large symphonic orchestras. Each of the three studios is equipped with state-of-the-art Western technology—Solid State Logic mixers, a pair of 24-track tape recorders, different kinds of DSP, and so forth—and the technicians are also very highly skilled. I recorded the music for three of my six American films at Mosfilm, and as far as I know, the Americans I worked with on these productions were very happy with the quality of the recordings.

How is your own studio currently set up?

I have a DX7, a Korg-ex M1R, X5DR, DVP-1, Roland JX-10, JD-800 and R-8 drum machine, and the following samplers: a Kurzweil-250, an E-mu 2+HD, an Ensoniq EPS16+ Turbo, and SampleCell II. I have quite a few sound processors as well: reverb machines (Ensoniq DP/4, Yamaha REV-5, Lexicon LXP-1 and LXP-5, Alesis QuadraVerb, ART MultiVerb and SGE), several compressors, Aural Exciter, BBE Sonic Maximizer, Hughes Sound Retrieval System, and

 **Vestax**

NOW YOU REALLY CAN HAVE IT ALL.

- ✘ 8-track digital recording
- ✘ Digital mixing
- ✘ Digital parametric EQ
- ✘ Full MIDI control/automation
- ✘ And more...



The **HDR-8** goes well beyond the norm of digital recorders: it has a built-in digital mixer with level, pan, digital parametric EQ and two aux sends for each track, so recording, mixing, and processing stays in the digital domain. You can merge (bounce) tracks with no loss of quality or build up of noise; recall 128 mixer settings either manually or via MIDI program change; control all mix parameters from a sequencer for fully automated MIDI mixing; enjoy total editing control over your recorded material (copy, move, delete functions), and sync any number of **HDR-8**s with only an optical cable—the same cable that sends the full digital master from one unit to the next, allowing all-digital mixing between units.

The **HDR-8** is controllable via MMC, has auto punch in/out; 8 locate points per song; takes two internal hard drives, and is the most complete, stand-alone 8-track recording system you will find.

You might also find the price surprising: just \$2495⁰⁰

Also available in similar 6-track version—the HDR-6—call for details.

 **Vestax**

VESTAX CORPORATION
2870 Cordelia Road, Ste. 100,
Fairfield, CA 94585
Phone: (707) 427-1920
Fax: (707) 427-2023

MANUFACTURED IN THE USA

USE READER SERVICE CARD FOR MORE INFO

THE BEST DYNAMIC MICROPHONES IN THE WORLD

...just got affordable

And that's *not* just our opinion.
Why do 70% of world tours
specify the M 88 TG in their
equipment schedules?
Pure quality of sound and
dependable performance.

The M 88 TG's stunning
performance together with a
construction tough enough to
cope with the road make it a
favourite with artists
and sound engineers.

On vocals, the M 88 TG's
low proximity effect and
hypercardioid response
combine to give outstanding
performance with fantastic
feedback rejection while the
high SPL capability provides
a clean, clear signal with a
unique sound.

For instrument use on stage, check out the
M 69 TG. Its low proximity effect, high sensitivity,
and extended frequency response give excellent
results in almost every environment.

See your dealer today and check out the legendary
M 88 TG and M 69 TG. The choice of the professionals.

Now priced within everyone's reach!

See us at AES Booth #447

For more information or a brochure call 1-800-293-4463



beyerdynamic

Don't be a Tape-based googlehumper.

In 1856, Charles Darwin determined that the *Tape-based googlehumper* species died off because of its failure to evolve with the times. 150 years later, E-mu's DARWIN 8-track Digital Hard Disk Recorder is proving to be the salvation of the digital recording species, with its highly evolved functionality and streamlined cost.

It's true: DARWIN delivers the power of digital audio workstation-style recording and editing at a price every *Homo erectus* can afford.

Play music? Doing some recording? You won't believe what DARWIN will do for your creative process! That's because DARWIN's heart pumps with the power of non-destructive random access recording technology. Consider the benefits of that over taped-based beasts:

- Effortlessly cut and paste that perfect chorus throughout a tune
- Completely rearrange a composition without screwing up the original
- Instantly resurrect that insane guitar riff you accidentally wiped out
- Create a virtually unlimited number of tracks from a single unit
- Avoid time wasted waiting for tape rewind
- Operation so easy and evolved, even a dinosaur can run it

Any question about who will be picking who's teeth with who's bones in the recording food chain? Face it, you need this thing.

Don't make the mistake of the googlehumpers before you. Spit that tape out of your mouth and sail to your nearest E-mu dealer to learn about the DARWIN Digital Audio Disk Recorder in the flesh. After all, DARWIN is... the natural selection.

E-MU
E-mu Systems

To find your local E-mu dealer, contact: PO Box 660015, Scotts Valley, CA 95067-0015 • 408.438.1921
UK Office: Suite 6, Adam Ferguson House, Eskmills Industrial Park, Musselburgh, EH21 7PG • 44.131.653.6556

USE READER SERVICE CARD FOR MORE INFO



GOOGLEHUMPERUS
TAPEZOIC PERIOD

Extinct due to its diet of magnetic tape, limited brain power and its redibly slow speed



Symetrix noise reduction. The whole system is run on a Mac PowerPC 8100/100, with the following programs: Digital Performer (Version 1.6), Unisyn, Max, Finale, Pro Tools III, Sound Designer II. I think of all these tools as musical instruments, and for me, any kind of musical instrument is like a living creature, so I never get rid of my old equipment—I just add to it.

How many tracks do you prepare for a mix?

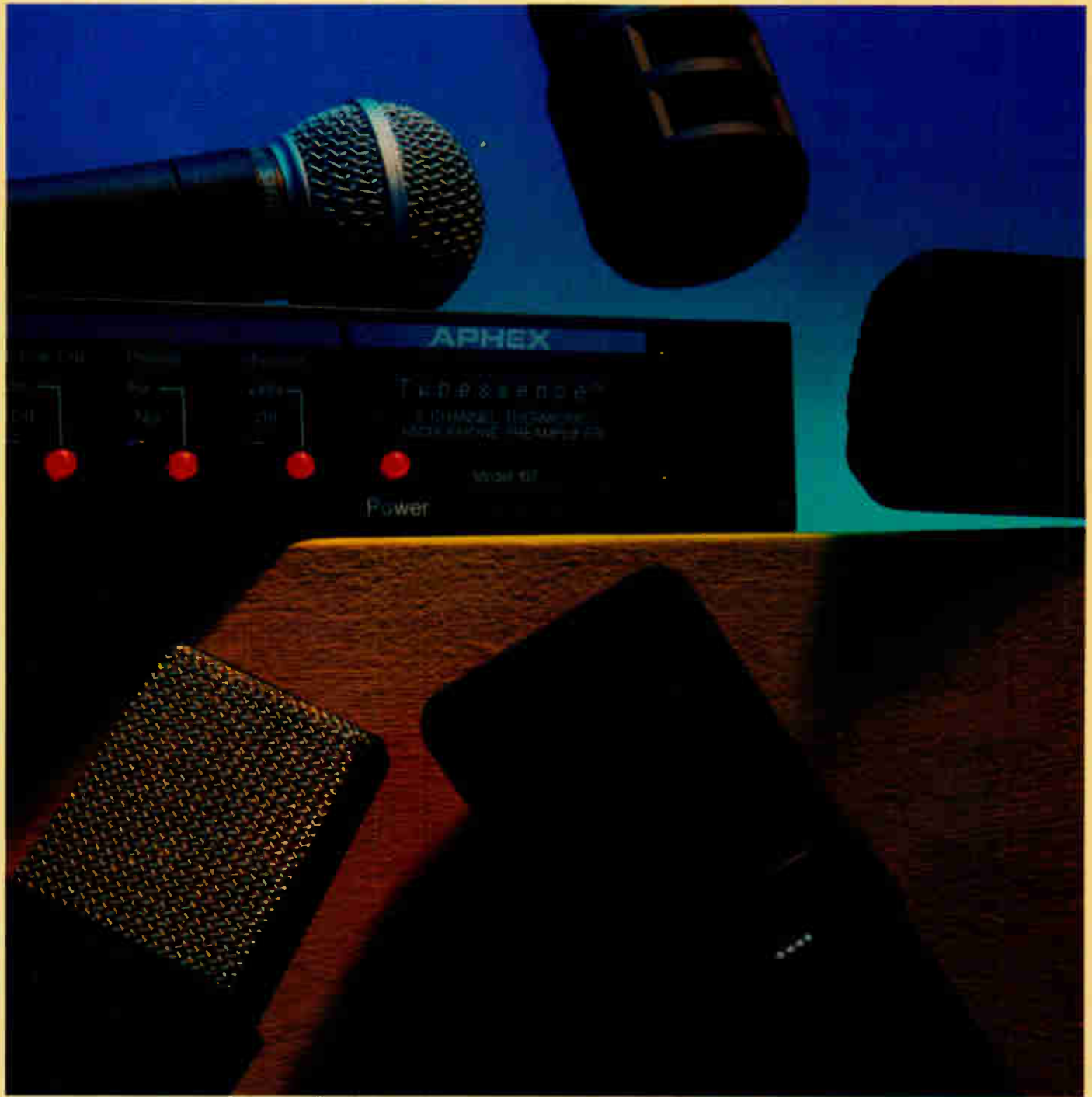
I usually find 32 tracks to be sufficient, but it all depends on the configuration of the orchestra—or, if the film's budget doesn't allow for an orchestra, the number of parts for synthesizer. In that event, I prefer mixing directly on DAT, using the Performer program, without making a preliminary recording on the multitrack. I've been using this program since its second version for the Mac 512.

Using effects processing—adding reverb, etc.—what type of acoustic space do you create for your music?

I prefer artificially created space, using various processors, but I like to leave the natural acoustics as a kind of background. I think that a composer should create space, as well as music, since space is a powerful element in building the atmosphere of a film. The creation and manipulation of space is a totally new phenomenon in musical composition and has become possible only with the advent of contemporary technology. In the past, music theory has delved deeply into polyphony, harmony, rhythm, form and so forth, but it has never paid much attention to space as a physical medium—the place, in fact, where music exists. I recently gave a course on this subject at the Moscow Conservatory, and in my lectures I tried to show how space can function as an active, transformational element in music, either in the most rudimentary components of musical construction, such as timbre, rhythm and harmony, or in the more complex framework of an actual composition. ■

Anneliese Varaldiev is a video artist whose work has been shown in Europe, America and Japan. She has collaborated with Edward Artyemyev on several projects, including his composition Zero Gravity/One, which is premiering at Russia's first Festival of Electronic Music, held in Moscow this month.

Upgrade all your microphones



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

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

See us at AES Booth #918

APHEX
SYSTEMS

Improving the way the world soundsSM

11068 Randall Street, Sun Valley, CA 91352 • Tel: 818-767-2929, Fax: 818-767-2641

USE READER SERVICE CARD FOR MORE INFO



WHEN IT COMES TO RECORDING, YOU WILL PUT YOURSELF IN A CLASS

Balanced mic and unbalanced line inputs with phantom power and 20dB pad accommodate the widest range of input signals.

The only console in this price range with true Split EQ, each assignable to monitor or channel. High-frequency shelving control at 12 kHz, low frequency at 80 Hz for smoother, more musical EQ results.

Dual sweepable mids on each channel let you apply 16dB of boost or cut at critical frequencies.

Setting up two independent stereo cue mixes is no problem. Try this with other mixers in this price range, it just won't happen or you'll have to compromise something.

The most versatile AUX section in its class; rivaling expensive high-end consoles. 8 sends total, 2 in stereo. Send signal in stereo or mono, pre- or post-fader. Available all at once. Return signal through any of 6 stereo paths.

Direct channel input switching. Assign to one of eight busses, or direct to tape or disk, or to the master stereo bus. Because the group and direct-out jacks are one and the same, you can select either without repatching. You won't find this kind of speed or flexibility in a "one-size-fits-all" board.

Feel those 100mm faders! Turn those smooth and responsive knobs! They feel and work better than any other in its class. The M-2600's physical design takes the aggravation out of recording and lets you focus on the process of creating music. Everything is 'right where it ought to be'. Try it for yourself.

Each M-2600 channel features advanced-design mic pre-amps with incredibly low-distortion specs. Plus you get phantom power on each channel. Feed anything into the M-2600 from condenser microphones to line input from synths and sound modules.

For your personal or project studio, don't settle for anything less than a dedicated recording console. Some may try to convince you that a "multi-purpose mixer" works fine for multitrack recording. But don't take their word for it. The compromises, hassles and workarounds just aren't worth it.

Want proof? Ask your salesman how a multipurpose mixer handles these common recording situations. But listen carefully for workarounds, repatching schemes and other compromises. Then compare it to how easily the M-2600, a true recording console, sets up and does things.

SITUATION Separate headphone mixes for the talent and the producer. The talent wants a reverb-wet mix, but the producer wants it dry. Everyone wants it in stereo.

Compromise: Multi-purpose mixers require you to sacrifice 4 AUX sends and tape returns to get 2 stereo headphone mixes; but you need those sends/returns for outboard effects! What a dilemma.

M-2600 Solution: With a few buttons, assign up to two, independent stereo AUXs to be used as headphone mixes. Everyone hears the mix they want — and you've still got four AUX sends and returns free for signal processing gear.

SITUATION You're EQing tape tracks to get just the right sound. You're using the shelving EQ for the monitor mix, and the sweepable mids for the channel buss. Still, the drummer wants a certain frequency out of his mix — a job for the sweepable mids.

Compromise: Few multi-purpose mixers have EQ assignment. You're stuck with the shelving EQ on the monitor mix, and the sweepable EQ on the channels (if they even have split EQ). You've got no choice. Good luck trying to explain this to the drummer.

M-2600 Solution: Assign the shelving EQ, the sweepable EQ, or both to either the monitor or channel buss as necessary. The entire EQ section is splittable and assignable and can work in tandem.

SITUATION Mixdown. You're sending tracks to effects units for added studio polish. You want to take advantage of true stereo effects. How do you do it?

Compromise: Most multi-purpose mixers have fewer AUX sends than the M-2600's eight. Usually only in mono. And, some sends are linked, so you can't send them to different signal paths. So you settle for only a few effects, or forego stereo effects altogether.

M-2600 Solution: Pick one: 8 mono sends or 1 stereo and 6 mono sends or 2 stereo and 4 mono sends. Each with its own level control and separate output jack. So you can use true stereo effects and still have sends left over for effects. Send the effects signals back via 6 stereo returns.

That's not all! The M-2600 doesn't compromise sound, either. You'll appreciate the new TASCAM sound — low-noise circuitry and Absolute Sound Transparency™. It all adds up to the perfect console for any personal or project studio — combining great sound with recording-specific features you'll need when recording, overdubbing and mixing down. Features you can get your hands on for as little as \$2,999 (suggested retail price for the 16-input model).

So forget compromises. Invest in a true recording console. The TASCAM M-2600.

See us at AES Booth #400

USE READER SERVICE CARD FOR MORE INFO



Available with 16, 24 or 32 inputs, the M-2600 is optimized for digital recording. Don't wait till your first session to discover the compromises and hassles other boards will put you through.



World Radio History

DING, MOST OTHER CONSOLES OMPROMISING SITUATION.

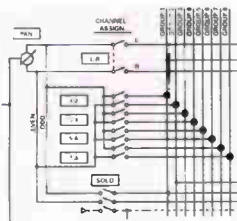


Only the M-2600 provides two independent stereo cue systems. Demanding performers can hear the submix or scratch tracks the way they want, so they'll perform better. Meanwhile, the control room or producer's mix is unaffected. You can accommodate everyone involved in the production — without interrupting the creative flow. Best of all, using the cue mixes doesn't involve tying up your valuable AUX sends.



Use more effects/signal processing gear on more tracks with the M-2600. Use two (count 'em) true stereo send/returns to support stereo effects units. Plus, you still have 4 fully-assignable AUX sends left over for other gear. A total of 8 AUX sends — more than nearly any other console — anywhere. Better yet, you can use them all at once. No compromises. At mixdown, you can actually double your inputs so you can mix in all those virtual tracks. Just press the "Flip" switch. No repatching. No need to buy expensive and space-eating expansion modules.

The incredibly flexible design of the M-2600 means signal routing is versatile and accomplished by the touch of a button, instead of a tangle of wire. Our decades of mixer experience has resulted in an ergonomic design that's exactly what you need: a board that speeds and facilitates recording and mixdown. Everything is where you intuitively think it should be. Dedicated solo and mute indicator lights on every channel, on master AUX sends, stereo returns, and each of the 8 busses so you always know exactly what you're monitoring. Plus, SmartSwitches™ protect you against redundant or canceling operations.



TASCAM M-2600: THE CONSOLE DESIGNED SPECIFICALLY FOR RECORDING.

Of course, the M-2600 sounds great. It's got totally redesigned low-noise circuitry, Absolute Sound Transparency™ and tremendous headroom. No coloration and virtually no noise. You will hear the difference. So, even during long mixdown marathons, you'll hear an accurate representation of what's been recorded.



TASCAM®

Take advantage of our experience.

7743 Telegraph Road, Montebello, CA 90640 (213) 726-0303

NEW YORK

Sound Editing/Mixing Tales From The Streets (and Suites) of Manhattan

[Editor's Note:

Rather than ask New York audio post engineers what workstation they were using this year, we decided that we'd like to hear a few New York stories—events that couldn't possibly have taken place anywhere other than the working trench of Manhattan. The names have been removed to protect the guilty. Special thanks to Heidi Jon Jagoda, Esq., of Sound One, for rounding up the suspects.]

TECHS BAMBOOZLE BOBBY D. !

"We were half-finished mixing *A Bronx Tale* when Michael Alden, post-production supervisor, said that he had to get Robert DeNiro [who directed the film] out of the mix early, on a Wednesday, I think, so that he would be at the Tribeca Grill by 8:00 p.m. for his surprise 50th birthday celebration.

"We had been mixing for weeks and working until 10 or 11 p.m. for the last seven days. If we ended early on the day of his birthday, Bob would know something was up. We had to come up with a plan to get him out without raising suspicion.

"On the day of Bob's birthday, at a little past 7 p.m., one of the machine room operators pulled the master power switch, shutting off all power to the studio. All of us went in to the machine room to assess the damage. We paged Pat, in the maintenance department, who came promptly to investigate and evaluate the situation. Pat came in with a flashlight and tools, crawled into the power supply booth and spent about 20 minutes analyzing the cause of our apparent predicament. Bob, Chazz Palminteri and the editors were all looking over his shoulder to lend assistance. Everyone agreed that it looked bad.

"Finally, Pat emerged, covered in soot, and stated that it would take at least three hours to bring us back to speed. Bob was dejected by the obvious outcome that we were not going to be able to get anything more accomplished that evening, and resigned himself to calling it a day.

"A car was called, and Bob was taken away for his surprise party, which apparently was a huge success! The next day, Bob came in for the usual session with a knowing

smile, acknowledging what all of us had pulled off. He thanked us and said we were one of the greatest acting ensembles he had ever seen."

THE \$100,000 BLINTZ!

"It was unbearably hot the morning the apprentice editor arrived at the cutting room bragging about a blintz he had purchased from a landmark bakery in Little Italy. He told us that he would have bought some for everybody, but this bakery was notoriously expensive.

"It was also the first morning of a remix on a film that no amount of recutting would improve. We had worked into the wee hot hours conforming masters, were tired and somewhat nervous, and wished the apprentice would stop rattling off facts about the famous bakery.

"At this particular facility, the cutting rooms were on one side of a busy cross-town street and the dubbing stage on the other. The apprentice and I proceeded with the arduous, odious feat of moving a rickety film cart to the dubbing stage across 54th Street. The cart—filled to capacity with all of our masters, easily representing \$100,000 worth of material—was designed for rolling down nice, smooth linoleum hallways, not bouncing up and down curbs and over potholes, weighted down with 1,000 pounds of film.

"It began to rain as we waited for a break in the clogged, rush hour vein of cross-town traffic on 54th. Not a hard rain, but a gray spit that exacerbates the wretchedness of a hot New York day. The apprentice opened an umbrella over his blintz. The traffic was exceptionally heavy and slow-moving, in what was becoming a downpour. Cabs and cartage trucks blasted their horns as they inched along the wet street be-

POST



PHOTO: MICHAEL GARFF/IMAGE BANK

tween Broadway and Eighth Avenue. Finally, a gap in the crawl; we made our break for the other side of the street with our rickety film cart.

"The apprentice guarded his precious pastry as we moved quickly against a pending wave of angry traffic. I believe a beer truck was heading toward us when a wheel on the cart snapped off and our precious cargo suddenly shifted precariously. The apprentice quickly moved to save his pastry from peril. Another wheel snapped off the other end of the cart, and our masters began to plunge from the rack onto the wet street. The blintz slid toward the pavement, and the apprentice dove to rescue it.

"At that moment, I began to utter every epithet I'd learned since I'd moved to New York. Predubs, stems and print masters were spilling off the cart left and right. Boxes opened up and reels went rolling toward the gutter. The impatient beer truck driver began blaring his horn and incited a chorus behind him. Reels unspooled in the wet street. Pedestrians gawked and guffawed as we scrambled to save our masters and our careers.

"After a few shouting matches with the traffic and some adrenaline overdrive, we managed to get the material safely to the curbside. The beer truck throttled forward, and a lovely gush of raspberry and cream filling burst out of the baker's bag as the impatient tire made road kill out of the blintz.

"The material arrived to the stage on time, albeit nearly as damp as we were. I apprised the supervising sound editor of the disaster on 54th Street, and the entire dubbing stage exploded in a seemingly perpetual gale of laughter. People laugh at the strangest things. The film went on to make millions of dollars at the box office. The bakery has since closed."

MIXUS INTERRUPTUS

"It was the first day of the dub on a film I had too little time to prepare for. The re-recording mixer was notoriously irascible, rumored to scream things at the sound editors like, 'I can't mix this crap!' and 'Who's the jerk that cut this?' He had a particular hatred for Foley, and I was the Foley editor. Even so, he was a legendary mixer, had hundreds of films and a couple of Oscars under his belt, and had been imported from California at the director's request.

"Also, the director had been divorced recently. His nuptial history was allegedly similar to Liz Taylor's, and none of us could understand it, because he was the nicest guy. We couldn't believe he was a director—that's how nice he was.

"Our re-recording mixer turned out to be not only amazing at the panel, but quite amiable. He was empathetic about our rushed tracks, had a genuinely positive bedside manner, and kept the atmosphere on stage congenial by recounting Hollywood war sto-

ries, all of which were fascinating. Our anxieties had been quickly replaced by respect and friendship.

"We were dubbing along at a good clip, ahead of schedule and under budget. We were about 400 feet into a thick reel; everything was in sync and the director was thrilled. Then a process server walked through the door onto the dubbing stage and confronted our friendly director with some legal paperwork. All hell broke loose.

"The director raised his mammoth, six-foot-seven-inch frame from the couch, lifted the process server up by his shirt, slammed him against the wall, began shouting in a fashion no dramatic moment on his film could've compared with, and tossed the guy out, locking the stage door behind him. 'I can't even mix my goddamn movie without that bitch hounding me,' he said, wiping the sweat from his brow and reseating himself.

"After the stage door was shut and locked, we all glanced at each other with one thought in mind: the *other* door. Seconds later, the process server arrived through the other door—his shirt ripped open—and began

moving undeterred toward our director. This time the director burst up from the couch like a small atomic explosion and rammed the process server like a truck, tackling him to the carpet. He then proceeded to drag the process server from the stage by his feet and closed the other door and locked it. 'Sorry, guys,' the director said, 'let's move on...'"

EDITOR'S REVENGE

"As an apprentice sound editor on a rather hellish job, I had the misfortune of working with a prima donna sound editor who was a definitive nut job, and an equipment repairman who was lazy, incompetent and full of excuses.

The sound editor would sometimes call me late on Sunday nights and ask me to go to the cutting room because he thought he might have left his door unlocked. As I was low on the totem pole, I'd take the subway down from the Upper West Side and check his door. It was always locked.

"He regaled me with tales of his unrivaled expertise, unabashedly backmouthed his colleagues and told me

that if I listened to his advice, I had a remote shot of ascending to his king-of-the-hill status. The maintenance man's main output was an ongoing litany of excuses about why things were broken, were never fixed, or remained functional for only a few hours after he'd jerry-rigged something back to an operational status.

"We had a sad fleet of Moviolas that devoured picture and track, slipped sync, had sporadically accurate footage counters, and at other times literally jolted us with electricity. We had Steenbecks that scratched work picture and buzzed like Con Ed substations. As one of my responsibilities was to make sure everybody's equipment was running properly, the maintenance man made me look like a slacker.

"One night, I was watching a Capra film while it rained cats and dogs outside. The phone rang, and the sound editor once again had doubts about whether he had locked his cutting-room door. Could I go check it? How convenient that it was raining buckets. Soaked and angry, I checked his door; it was locked. Not wanting to make the 70-block trip for

OPTIFILE Tetra

Optifile makes *you* master of the mix

"Whether you are looking for a new console or looking to put new life into an older board, Optifile Tetra offers a powerful, affordable alternative to moving fader systems."

George Petersen - Editor, Mix

"It's not just the speed with which (Optifile Tetra) allows you to work, but the way the system's requirements no longer dictate the way in which you work. Mixing via Tetra with Move status, really is every bit as intuitive as using a moving fader system."

Dave Lockwood - Editor, Audio Media

MANUFACTURED BY



For international sales call: AD Systems
UK +44 (0181) 943 4949 fax:+44 (0181) 943 5155

nothing, a small hole in the wall was drilled and a small wire attached to the editor's monitoring rig. The stage had been set.

"Monday morning, the sound editor complained to me about a hum he was getting through his headphones. Could I call the maintenance man? But, of course, on the double. From my remote location, I turned off the manufactured hum for the audience of the maintenance man. 'I hear no hum,' he said. 'There's a hum,' said the editor. 'just listen.' 'There's no hum,' said the maintenance man.

"Over the duration of the job, I piped sounds of chickens squawking, pigs squealing and a variety of other racket through the sound editor's headphones. It turned into an absurdity: 'I hear horses braying in my monitoring setup: call maintenance!' 'I hear no horses,' the *non compos mentis* fellow would say upon examining the 'problem.'

"I would pipe in bowling-lane backgrounds. 'There are people bowling in my headphones...' 'How horrible. How can you work?' 'Call maintenance!' 'But of course, strike or spare?'

"Eventually the sound editor quit

bothering me for fear I'd have him committed."

REEL SAVED FROM HIGHRISE PLUNGE

"While working in Sound One's transfer room with the editor present, I had stacked four 2,000-foot mag tracks on the window sill, near the open window. In an attempt to retrieve the track on the bottom of the pile, the editor tilted the pile, causing the top track to slide toward the window. Being eight stories high and in midtown Manhattan, I feared for the lives of the pedestrians below. I lunged for the mag track, and was barely able to grab it and keep it from sliding out the window. I looked at the editor and said, 'That was a close one,' to which the editor calmly replied, 'It's no big deal, it's only the M&E track.'"

MOUSE IN THE HOUSE

"The project was *Airport 1975*, and the talent was Gloria Swanson. Yes, Gloria Swanson. The Grande Dame of film. Norma Desmond personified, pushing the outer limits of her dotage, attended by her chauffeur/at-

tendant/bodyguard, whose job was to continually infuse her with a 'special' tea blend from the thermos bottle that never left his hands.

"She had about 40 lines to dub, normally about three-and-a-half hours of work. So the producers booked the day. It was a wise choice. It was obvious by take three that the hours were going to pass at a glacial pace. Ms. Swanson required constant sips from the thermos to maintain the condition of her elderly apparatus, and as the sips and takes accumulated, other parts of her system began to slow down.

"By noon, the tea had taken its toll, and it was agreed that Ms. Swanson should avail herself of some rest. She was shown to an unused waiting room, where she draped herself in elegant repose on a large and rather ornate sofa. Soon, the corridor outside Studio D echoed with the easy, sonorous vibrations emanating from her well-lubricated nasal-pharyngeal process, and the entire floor was warned that the star was at rest.

"At around one, the chauffeur appeared in the employee lounge. He

—CONTINUED ON PAGE 34—

Round up those mixing runaways!

Are you a soft target for those "mixing rustlers"? Clients who love the sound quality of your all-time classic console and recording room for tracking and over-dubbing, suddenly head for some grey and souless, automated console, when it's time to mix.

Optifile Tetra can halt this mixing stampede! In less than three days, virtually any make or model of console can be transformed into an

easy-to-learn, automated, high performance mixing tool, that will entice your clients to stay put in your studio until their project is in the can.

A recent survey among our 600 clients has proved Optifile Tetra pays for itself in less than a year, simply by keeping the mix business in house.

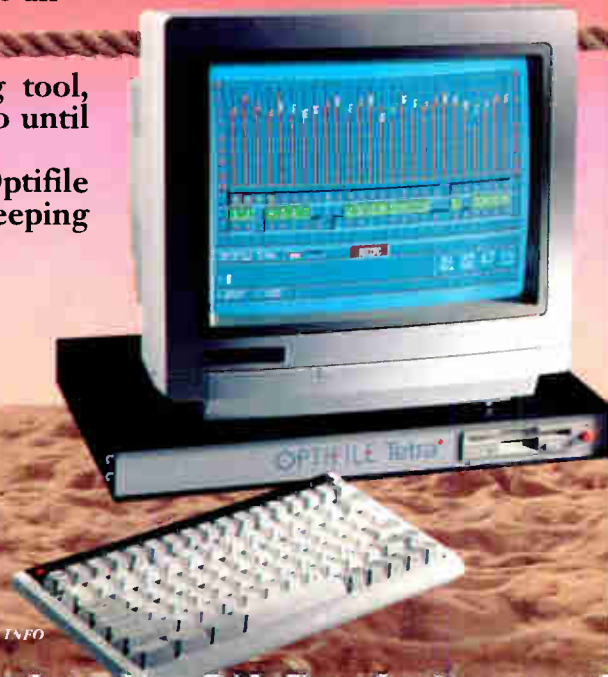
Optifile Tetra will allow you to offer clients a highly competitive one-stop recording/mixing deal in their favourite studio.

AES 95 BOOTH #1118

**SASCOM
MARKETING
GROUP**

1 800 300 4756

USE READER SERVICE CARD FOR MORE INFO
World Radio History



by Mark Frink

SOUND CHECK



QSC PowerLight

FIVE FOR THE ROAD: CAPSULE REVIEWS OF NOTEWORTHY LIVE SOUND PRODUCTS

After spending the first half of this year touring, I returned to devote my time to the evaluation of new live sound products. A worthy product review takes longer than many publishers are willing to admit. Hundreds of hours are logged, using the equipment in real-world situations. Bench tests are performed using scopes, RTAs and computer measurement software to verify the manufacturer's specs. Listening comparisons are made between popular competitive alternatives, both in the field and at the shop. Though listening tests are hardly a scientific evaluation, comparative listening in controlled environments can be both illuminating and convincing. Enlightened end-users often do this. Dealers, reps and manufacturers should take more time to listen as well. No evidence is quite as convincing as "kicking the tires."

Furman X-324 crossover



Many live sound professionals will spend this winter carefully considering what changes the new year will bring. In the hope that it will be of some help, here are some interesting new products I've encountered recently. You are also encouraged to kick some tires yourself.

MACKIE SR 24•4

Last January, Mackie Designs moved to its fifth new building to keep up with demand, which shows no sign of letting up.

Introduced at last winter's NAMM show, the first hundred SR 24•4 "4-bus," live mixers were rolled out at the beginning of June. Through minor Mackie miracles of motherboard construction, miniaturization through automation, and careful monitoring of manufacturing tolerances, this console represents a price/performance breakthrough. Listing for \$1,599, the SR 24•4 falls between the 24-channel, 8-bus costing more than twice as much, and the 1604, which is \$500 less.

The 24•4 was used for seven shows a week, for two months, for three different series of outdoor shows in Seattle. The bottom line is that it sounds great.

Mackie has done for users of budget 4-bus mixers what they did for the rackmount and 8-bus markets. Best described as a 1604 on steroids, this is the club or rehearsal mixer many have been waiting for. Weighing 35 pounds and measuring 31 inches wide by 19 inches deep by 6 inches tall, this pup can be tucked under your arm comfortably.

It has a built-in power supply with an IEC-style, detachable power connection on the rear panel. Next to this are switches for power and phantom power, which is applied to all channels. Left, right and mono are available on male XLR connectors.



Mackie SR 24•4

but all outputs are balanced, except the TRS inserts. There are inserts on the four subs and the L, R bus, as well as the mic channels.

It has 20 (not 24) of those great Mackie mic inputs, and each of these also has a 1/2-inch line input. Beside the 60mm faders are three switches to assign, in pairs, to the subs or to "mix," as well as a "solo" switch. Above the solo switch is a large "mute" switch. A red LED indica-

—CONTINUED ON PAGE 179

TOUR PROFILE

Tom Petty's "DOG WITH WINGS" TOUR

by Jeff Forlenza

Tom Petty and The Heartbreakers toured throughout the summer to support their recent Warner Bros. album *Wildflowers*, with a P.A. system supplied by Electrotec of Westlake Village, Calif. TEC-Award-winning sound reinforcement engineer Robert Scovill mixed FOH from a modified Gamble EX56 console, while Brian Hendry mixed monitors on a 56-input Midas XL3 board. We got a chance to speak with these engineers as they prepared the Shoreline Amphitheater in Mountain View, Calif., for another sell-out Petty performance.

Petty's concerts rely more on a performance vibe than on special effects and technical wizardry. On this tour, Petty eschewed massive production values, and his stage setup was dominated by vintage Vox AC30 and Fender Bassman amps. "He's not a real high-tech guy, but he makes up for it extremely

well," says monitor mixer Brian Hendry. "I've worked with lots of people over the years—Van Halen, Bon Jovi, Motley Crue—but Tom is certainly one of the best."

Hendry uses a 56-input Midas XL3 stretch console to provide 13 monitor mixes onstage. In-ear monitors are worn by Petty and drummer Steve Ferrone, but Hendry also uses Electrotec wedges, putting them in and taking them out for different songs. In-ear monitors are new to Petty on this tour. He wanted the same in-ear monitors The Eagles had used on their *Hell Freezes Over* tour,

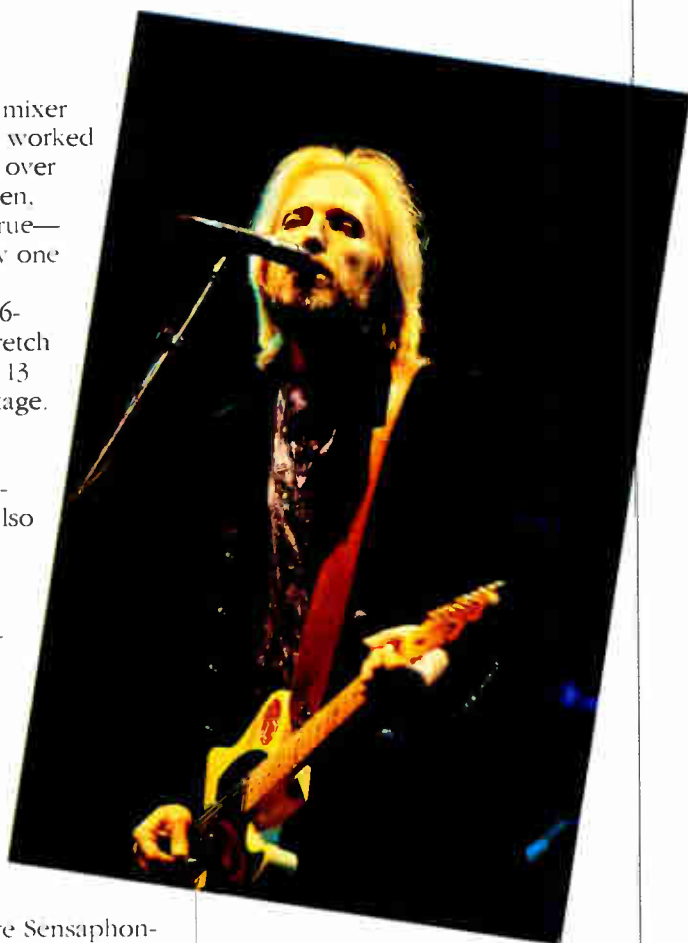
which were Sensaphonics ear molds and personal Radio Station PRS transmitters. But Petty didn't like the feel of the Sensaphonics molds because they go deep into the ear canal. Hendry suggested using Future Sonics ear molds, and Petty was much happier when he tried them. Not wanting to be cut off from the stage ambience, Petty wears only one ear monitor, in his left ear.

"With Tom, he tends

to think [that] with them on completely, you'll be kind of isolated," Hendry explains. "He wants to be able to hear all these old AC30s [amps] onstage to get the stage vibe. So Tom has a support monitor in one ear. What I normally do is tweak the monitors as normal, get them loud and ballsy and then bring the ear monitor up to match."

Hendry uses an assortment of Microtech and JBL amps to power Electrotec monitor wedges onstage. Hendry's proc-

—CONTINUED ON PAGE 197



Petty Sound Crew (L to R): Todd Wilkinson, sound technician; Marc Reneault, sound technician; Bill Overstreet, FOH assistant; Robert Scovill, FOH mixer; Brian Hendry, monitor mixer; and Ed Gonzales, system engineer

PHOTOS: JAY BLAKESBIRE



PHOTO: STEVE JENNINGS

TOUR PROFILE

Anita Baker's "Rhythm of Love" Tour

TRAVELING WITH THE SIM SYSTEM

by Dave Lawler

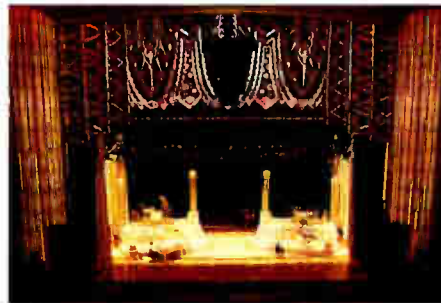
After a four-year absence from recording and touring, Anita Baker re-established her singular presence in the music industry with the long-awaited *Rhythm of Love* album, which quickly climbed the charts during the fall of '94. Gerard Smerek, Baker's studio engineer and audio consultant, teamed up with Mark Johnson of Meyer Sound Labs to assemble a sound system and staff for the *Rhythm of Love* tour.

Baker's acute hearing is well-known in the industry, as is her formidable knowledge of frequency analysis. So, the tour system was designed with the goal of both duplicating the album mix and meeting the artist's high standards in terms of stage monitoring. Meyer proposed its newest line of speakers, as well as its SIM (Source Independent Measurement) process to analyze each venue. Because the venues ranged from 2,500-seat theaters to 15,000-seat arenas, it was important that the audio system be flexible. After screening several Meyer-equipped companies,

the contract was awarded to A-1 Audio (Hollywood, Calif.) The engineers chosen were Ken Newman for front of house, Bill Fertig as Baker's monitor engineer, Bob Erickson doing band and singer's monitors, along with A-1's Lance Krive as stage technician and me, the SIM system engineer.

Johnson, Smerek and I designed the audio system so that it can be rigged in several configurations to suit the different venue types. The system features Meyer MSL-5 speakers, which are the size and weight of two of the well-known MSL-3s, but have a

House engineer Ken Newman



Paramount Theater, Oakland, Calif.

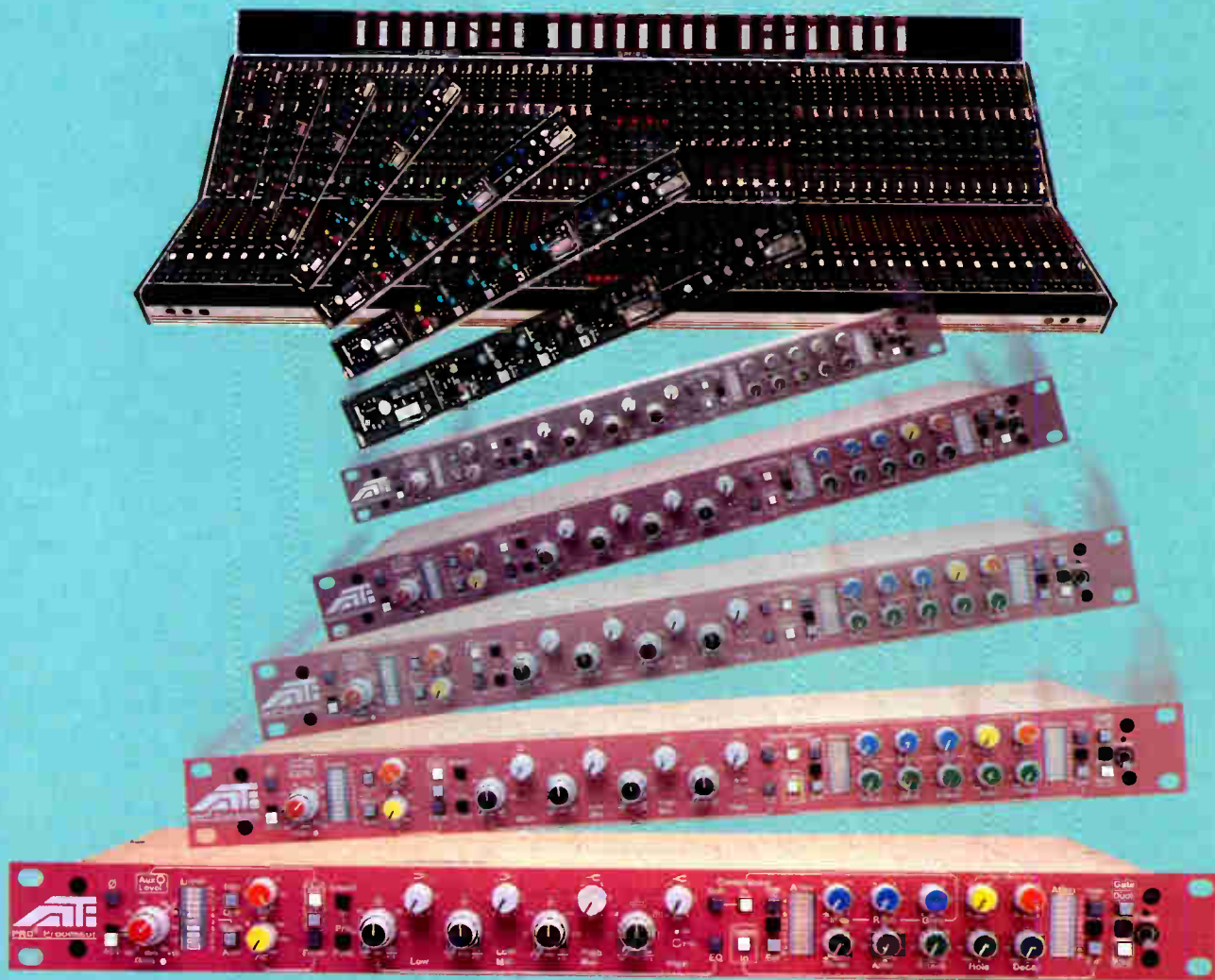
horizontal dispersion of only 30 degrees and cover 150 to 18k Hz. Their components are three 2-inch horns arrayed horizontally, and two double-12s, each pair in its own horn-loaded chamber, side-by-side. Under these are Meyer DS-2 mid-bass cabinets, each a double-15 folded design covering 75 to 150 Hz. The Meyer 650-R2 subs used are double-18, front-loaded cabinets, covering 30 to 75 Hz. Additionally, smaller two-way MSL-2s are used for down-fill and for covering any dead short-throw areas or box seats as necessary. The first five center rows are cov-

—CONTINUED ON PAGE 198

PRO⁶

A PARAGON in a Rack?

187,200 Shows
467 Venues
210 Engineers
188 Tours
...and counting



The ATI PRO⁶ uses the same road-proven technology that has passed the rigorous testing of the most demanding engineers in pro audio. ATI's PARAGON mixing console is "the most highly-specified touring desk on the market."^{*}

Now you can literally have a piece of the PARAGON in *your rack*. Loaded with features, the PRO⁶ includes:

- high voltage mic preamp
- 24db/oct hi/lo pass filter
- four band parametric EQ
- parametric noise gate
- compressor/limiter
- ducker

Get a PRO⁶ today and listen to it become your favorite audio processing tool!



Audio Toys, Inc. • 9017-C Mendenhall Court • Columbia, MD 21045
(410) 381-7879 • Fax (410) 381-5025

USE READER SERVICE CARD FOR MORE INFO
World Radio History

^{*}Mike Lethby, Audio Media Magazine



Adrian Belew
of King Crimson

TOUR PROFILE

King Crimson's "THRAK" TOUR

by Tim Moshansky

King Crimson's music has always been challenging, pushing the limits of what music can or should be. Although not for everyone, those who appreciate the Crimson sound know that it is a great occasion when the band gets together for some new recording and touring. Under the direction of founding member and guitarist Robert Fripp, King Crimson has undergone many incarnations through the years. The current lineup teams Fripp, Adrian Belew (guitar and vocals), Tony Levin (bass and Chapman stick) and Bill Bruford (drums and batterie)—the members responsible for the band's seminal '80s work—with two very talented newcomers: Trey Gunn (stick) and Pat Mastelotto (drums and percussion).

The band have been touring extensively in support of their recent album, *Thrak*, with FOH

mixer George Glossop onboard. (Glossop was first called on to mix for the *Discipline* tour in the early '80s and has been on all of the band's tours since.)

The sound company for the tour is Delicate Productions of Los Angeles, and the P.A. consists of ten Martin F2 bass cabinets, ten F2 mid-high cabinets, four Martin BSX sub-bass cabinets and four Apogee AE5 cabinets. Power is provided by two F2 amp racks containing three Carver PM1200s and four Crest 7001s, two sub-bass racks each containing two Crest 8001s, and one Apogee rack containing an Apogee A5 processor and two Carver PM 1200s. The drive rack consists of a BSS Varicurve, two BSS 960 4-channel graphic EQs, a Chaos Audio 4-station intercom, and four

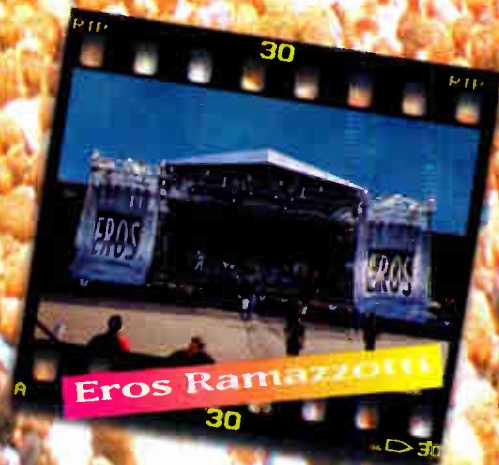
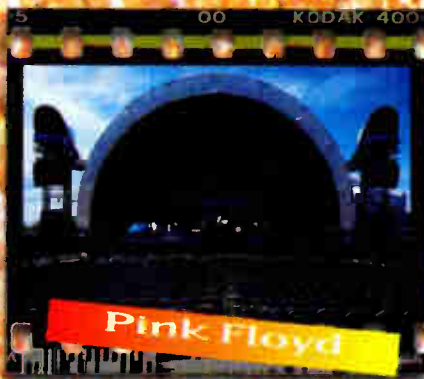
Martin MX4 crossovers (left, right, sub, and spare).

Glossop mixes the band sound through a Yamaha PM4000. The insert rack contains a Goldline RTA, Summit Tube Compressor, three UREI LA-22 compressor/limiters and a Drawmer 201 gate. The effects rack houses a Yamaha SPX-990, Lexicon PCM70 and PCM42, dbx 120X Subharmonic, two Panasonic DAT

House engineer George Glossop



PHOTOS STEVE JENNINGS



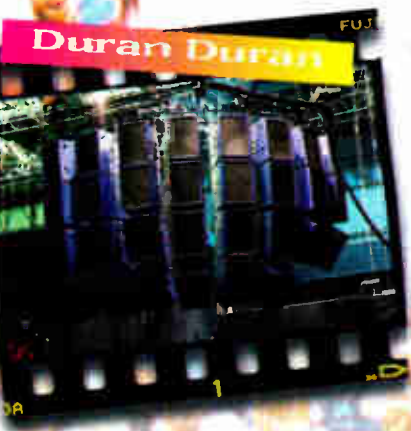
IT'S ALL IN THE COMPANY WE KEEP



From **Pink Floyd** to **Peter Gabriel**; **Depêche Mode** to **Duran Duran**; **Meat Loaf** to **Randy Travis**; **Eros Ramazzotti** to **Brian Ferry**; **Simply Red** to the artist formerly known as... more major artists tour with **Turbosound Flashlight & Floodlight** systems than any other turnkey sound system.

These prestigious artists all rely on companies recognized as industry leaders in both service and sound quality. Companies that understand the advantages offered by **Turbosound's** exclusive designs: the finest available audio quality, labor efficiency and trucking economy of any system. **Flashlight & Floodlight** rigs are supplied as

complete systems – including loudspeakers, digital system control, amplification, cabling and certified flying hardware – resulting in a coherent package with optimized system performance, industry-leading reliability and ease of transport. You owe it to your clients to offer them the finest sound reinforcement system available – You owe it to your company to offer them **Flashlight & Floodlight**.



See us at AES Booth #836

Turbosound®

Once Heard, Never Forgotten

A Harman International Company



Turbosound Ltd., Star Road, Purtridge Green, West Sussex RH13 8RY, England Tel: +44 (0) 1403 711447 Fax: +44 (0) 1403 710155
Distributed in the United States exclusively by: **Audio Independence, Ltd.**, 9288 Gorst Rd., Mazomanie, WI 53560, U.S.A. Tel: +1 608/767-3333 Fax: +1 608/767-3360
Turbosound wishes to thank the artists and Britannia Row Productions, Ltd; Eighth Day Sound Systems, Inc.; Nuovo Service srl; and BBI Inc.
Use of artist names does not imply product endorsement. Floodlight is manufactured under license from Funktion One.

USE READER SERVICE CARD FOR MORE INFO



MIX-8 8 stereo low noise line/instrument inputs. Channels 1-4 have a stereo aux sends, channels 5-8 have pan pots. Front panel Master Volume and headphone level controls. Front panel jacks for headphones, mute footswitch. XLR Sum Output for active DI. 1 meg Ω input impedance for guitar or bass pickups.



MIX-6 4 mic/line XLR & TRS inputs with low noise, wide bandwidth mic preamp stages, low cut filters. 1 stereo RCA input, 1 stereo TRS 1/4" input, mic/line XLR & TRS outputs. Left & Right Master Volume, Headphone controls. 48V phantom power, limiter, LED bar graph metering.



MIX-5S 4 mic/line XLR & TRS inputs with low noise, wide bandwidth mic preamp stages and pan controls, 1 aux input with Left & Right RCA Phono inputs, mic/line XLR & TRS stereo outputs. Left & Right Master Volume controls, phantom power, LED bar graph metering.



MIX-5 Mono version of the MIX-5S. 4 mic/line XLR & TRS inputs with low noise, wide bandwidth mic preamp stages, 1 aux input, mic/line XLR & TRS outputs. Master Volume control, phantom power, LED bar graph metering.



MIX-44 A unique problem solver, the MIX-44 is a 4x4 matrix mixer capable of producing four discrete mixes from four separate inputs (or, the MIX-44 can be configured as two 4x2 mixers). Switchable headphone monitoring, LED bar graph metering. XLR balanced inputs and outputs.

U.S. Audio

Compact and feature rich, the U.S. Audio series of mixers from Whirlwind provides exceptional sonic performance in a variety of problem solving configurations for studio, live sound, and broadcast applications. Designed and built in the U.S. at our own factory, the U.S. Audio product line includes mixers,

amplifiers, active splitters, and specialty products such as the Presspower active press distribution system. These products reflect years of real-world experience, and each one comes with the built-in reliability that Whirlwind is famous for. So the next time you need a high-performance specialty mixer, specify U.S. Audio!

AES BOOTH

938



NEW AT AES! ACTIVE CONCERT SERIES

Active gain splitting systems with Concert Series reliability. Ultra-low noise front end circuitry, ground lifts on all outs, level indicator LEDs, level controlled outs (ideal for digital multitrack feeds), redundant power supplies with auto switchover, new high-performance mu-metal shielded isolation transformers, Mass connectors, and more.

Call for details.

20 YEARS

WIRING THE WORLD™

whirlwind • 99 LING ROAD • ROCHESTER • NY • 14612 • 716-663-8820 • 716-865-8930 (FAX)

whirlwind

For twenty years, Whirlwind has been providing innovative products designed and built so we'd be proud to use them ourselves. We've custom specified and manufactured things other companies took for granted, like wire and connectors. We created a full range of specialty audio accessories, and, more

recently, the U.S. Audio brand. Whirlwind cables, connectors, and electronic products have set international standards for performance and reliability. And with our worldwide dealer network and large inventory, you can get those products when you need them. After all, we want you as a customer for the next twenty years.

World Radio History

decks, a dbx DX5 CD player, and a Technics cassette deck. Glossop doesn't like to go overboard on effects—he uses a couple of compressors and a Summit tube limiter on Belew's vocals, "just to keep things in check."

Monitors are mixed by Robin Fox. "He's kind of got his work cut out for him there, Glossop says, "because everybody monitors in stereo, which isn't the standard way of monitoring." (The band tested in-ear monitors

during recording at Real World Studios in the UK, without success.) Glossop explains how the monitoring system works. "We have a device made by Intalex that arranges the monitoring into submixes that go to each member of the band, and they've got either one or two control boxes so they can dial up groups of information to add more or less of each instrument. It seems to be working really well for this band. Robin is a damn good monitor engineer. period.

Whichever way he did it, he'd make a good job of it."

Fox mixes through a Midas XL3 console and makes use of a monitor rack that contains five Klark-Teknik DN360 EQs, six dbx 160X compressor/limiters, a Drawmer 201 noise gate, a UREI 7112 compressor/limiter, a Yamaha SPX-990 and a Lexicon PCM70. Fourteen Martin LE600 floor monitors are placed on stage, as well as one Martin F1 sub-bass cabinet (1x18-inch woofer). Monitor power is provided by eight Carver PM350/PMX amplifier crossovers, eight AB Systems AB1200 amps, one Martin MX4 sub crossover and one Crest 7001 amplifier.

Microphone selection includes three Shure SM58 microphones for vocals, four 57s for snares and Belew's guitars, two SM81s for Bruford's overheads, two SM98s for his toms and an SM94 for his hi-hat. Three Beyer M88s are

**Strings...
And Other Things**

Sennheiser's ME 64/K6 system meets the stringent demands of digital recording. The ME 64 cardioid capsule is perfect for capturing the subtle nuances of acoustic instruments and cymbals. Its high output and quick transient response yield superior signal-to-noise ratio with extremely low distortion. Plus the K6 power supply is the heart of a modular system which accepts other mic capsules: from omni to long shotgun and even lavaliers.

Now you can expand your collection to handle any studio or field recording application.

K6 ME 64/K6

MODULAR CONDENSER MICROPHONE

See us at
AES Booth #234

SENNHEISER

SENNHEISER ELECTRONIC CORPORATION, 6 VISTA DRIVE, P.O. BOX 987, OLD LYME, CT 06371 • TEL: 203-434-9190 FAX: 203-434-1759
CALIFORNIA: 4116 WEST MAGNOLIA BLVD., SUITE 100, BURBANK, CA 91505 • TEL: 818-845-7366 FAX: 818-845-7140
MEXICO: PALENQUE NO. 663, COL. NARVARTE, 03600 MEXICO, D.F. MEXICO • TEL: (5)-605-7686 • FAX: (5)-605-6473
CANADA: 221 LABROSSE AVE., PTE.-CLAIRE, PQ H9R 1A3 • TEL: 514-426-3013 FAX: 514-426-3953

Manufacturing Plant: Am Labor 1, 30900 Wedemark, Germany

USE READER SERVICE CARD FOR MORE INFO



Tony Levin of King Crimson

used for Bruford's kick and floor toms and Levin's stick. On Mastelotto's drums, Glossop uses an SM91 on the kick, three AKG 460s on hats and toys, two AKG 414s for overheads and a Sennheiser 409 on floor toms.

With the band's current "double trio" format, they now have two of everything—two drummers, two stick/bass players and two guitarists. "Just the amount of different sounds that are generated makes it hard work to hold it all together and to keep the clarity there," Glossop explains. "The musicians themselves are very good at spotting what frequency

More guts. More punch.

In this corner... PM SERIES II from Carver Professional. • **ALL-NEW** power amplifiers with the guts it takes to go the distance. Night after night, year after year. • PM Series II amplifiers are **MADE IN THE USA** from the highest quality components available. • Tested under the **TOUGHEST QUALITY CONTROL** standards in the industry. • Cooled by an innovative **NEW INTERNAL AIRFLOW** system driven by an ultra-quiet 2-speed fan. • Guarded by **FIVE PROTECTION CIRCUITS**. • And backed by a **FULL FIVE YEAR WARRANTY**. • When low end is high priority, PM Series II delivers **MORE BASS PUNCH**, thanks to redesigned power supply transformers and more capacitor storage. • New, dual two step (class H) power supplies make them **MORE EFFICIENT** at peak power. • If you need **TOUGHNESS AND BRAINS**, plug in an optional **POWERLINK™** module for remote computer control of six functions and monitoring of nine key parameters (including output current) using **MEDIALINK™** protocols. • Only PM Series II amps come standard with **POWER-UP SEQUENCING** and a front-panel **POWER CONNECTED INDICATOR**. • Finally, when it's time for road work, you'll be glad to know that Carver Professional amplifiers remain **LIGHT HEAVYWEIGHT CHAMPIONS**—smaller and lighter than most comparable models. So, when you want your music delivered with maximum impact, count on Carver for a **KNOCKOUT BLOW**.

- XLR and 1/4" TRS inputs (balanced or unbalanced)
- 11-detent level control (defeatable)
- Mode switch for stereo, dual mono, bridged mono
- Internal jumpers for true parallel mono, input polarity reversal, and input sensitivity
- Optional plug-in crossovers and input transformers

Power per channel into 4Ω, both channels driven, less than 0.1% THD

PM700: 350W PM950: 475W PM1400: 700W



PowerLink™ is a registered trademark of Carver Corporation
Medialink™ is a registered trademark of Lone Wolf Corporation.



We Rely On The Best Ears In The Business.

Warm It Up With ADL Pure Tube Equipment

Many manufacturers combine solid state circuits with tubes (known as hybrid circuitry). This may be less expensive, but certainly will not 'warm up' or 'fatten' your sound like an ALL-TUBE product. Anthony DeMaria Labs is the company that brings you the finest hand-built, pure-tube equipment in the world. Of course, you don't have to take our word for it. Check out our client list and hear the difference!

Remember... It's not ADL unless it's ALL TUBE.



(Shown Above)
ADL 200 DI Stereo Tube Direct Box
ADL 1000 Mono Tube Compressor
ADL 1500 Stereo Tube Compressor



"Top Dog In Audio"

Partial Client List:

The Rolling Stones • Aerosmith (Steven Tyler & Brad Whitford), Flood (U2, Depeche Mode), London • Bob Clearmountain • Bon Jovi • Sony Music, NY • Butch Vig (Nirvana)
Bearsville Studios, NY • Peter Moshay (Paula Abdul, Des'ree, Mariah Carey) • DJ Pooh (Ice Cube), L.A. • Chung King House of Metal, N.Y. • Isley Bros. • Heart • Hall & Oates • Foreign
Ted Nugent • Masterdisk, N.Y. • Paul Northfield (Rush, Queensryche, Alice Cooper), Canada • EMI Studios, Australia • Sunset Sound Factory, L.A. • Kevin Leonard (Whitney Houston)
The Cult • Neil Dorfman (Sting, Paul McCartney, Def Leppard) NY • Platinum Studios, Thailand • Bad Animals Studio, Seattle • Margarita Mix, L.A. • Sony Studios, Japan
John Jennings (Mary Chapin Carpenter), Nashville • Glen Phimister (Olivia Newton John), Australia • Bernie Becker (Neil Diamond) • Jimmy Buffet • Shawn Colvin
Walter Affanasief (Mariah Carey, Barbara Streisand, Michael Bolton & Kenny G • Guy Babylon (Elton John Band) • Paul Simon • Greene St. Recording NY

See Us At AES Booth #1143

Anthony DeMaria Labs

World Radio History

Sales: (818) 340-0228 • Fax: (818) 340-4331 • Service: (914) 256-0032

bands are working at whatever point in time where they can slide stuff in, and I try to EQ as much as possible and tidy the edges up. If the band has internal balance, that's half the point. A lot of it is the art of listening."

In October 1994, the band and Glossop went down to Buenos Aires for a month of rehearsals and performances in a "dingy little nightclub equipped with a horrible P.A.," followed by eight dates in a larger theater, with a better sounding P.A. and room. The early part of this year was spent touring Austria, Germany, Italy and France. The band also played two shows at London's Royal Albert Hall, which Glossop says is notorious for acoustic nightmares. "You can only get to a certain SPL before things start to fall apart rapidly. It's got a really long reverb time lurking somewhere up in the roof, and if you push it, it starts to slowly crumble, and you lose the definition that's there, and with this

band that's of prime importance."

The imaging is very wide, and the system relies quite heavily on stereo. Because the band are monitoring in stereo, they know what's going on out front. In terms of placement, Glossop says that Fripp sits in the middle between the two drum risers, with Plexiglas sheets on either side of him, and that Belew is out front in the middle. Levin is stage left, and Gunn is stage right. Brufford and Mastelotto are on the two back risers, where they charge off against each other.

"The kits are spread in stereo," Glossop says, "but I try to keep some semblance of that drummer is on this side, and that drummer is on that side." I like to keep the kick drums fairly central, because there are things where Pat and Bill are going across on the kick drums like that. I've got to keep things smack on the same level so that, in essence, it's like one drummer playing, and that's where they start coming up with such amazing patterns."

In late June, King Crimson delivered a fantastic show at the Orpheum Theatre in Vancouver. The band alternated between smooth, melodic tunes such as "One Time" and "Matte Kudesai," and dissonant, polyrhythmic numbers like "Indiscipline," "Vrooom," and the title track from *Thrak*. It was truly a show of musical brilliance and virtuosity. ■

Tim Mosbansky is a freelance writer, musician and recordist based in beautiful Vancouver, B.C.

—FROM PAGE 168, FIVE FOR THE ROAD
tor is shared by the mute (glows) and solo (flashes) functions of that strip. If you mute and solo at the same time, this LED both glows *and* flashes, but you will not hear the signal anywhere, as the mute is in the circuit before the solo, which is annoying if an input signal craps out mid-show, and you need to both turn it off and check it. The work-around

World Class Connectors

Universally accepted for their outstanding performance.

Engineers, musicians and industrial users worldwide are discovering the superior quality and reliability of Neutrik Connectors. Designed to withstand the use and abuse of applications in the audio, lighting, industrial and communications industries, Neutrik Connectors keep performing year after year.

Innovation is the key to Neutrik's success as evidenced by the 38 international patents issued for its products. Features such as:

- Superior Cable Strain Reliefs
- Screwless Cable Connectors
- Solderless 1/4" Phone Plugs and XLR Connectors
- Hazard Proof Speaker/Amplifier Connecting Systems
- The Combo 1/4" Jack and Female XLR in one
- Micro (5mm) and Miniature (12mm) Circular Connection Systems

represent just some of the innovations introduced by Neutrik.

Why not discover the world of Neutrik Connectors for your next application. Their quality and reliability make them the best value on the market today.

For additional information contact Neutrik USA or your nearest representative.

See us at AES Booth #361

NEUTRIK USA
CONNECTING THE WORLD

195 Lehigh Avenue, Lakewood, NJ 08701-4527
Tel: 908-901-9488 Fax: 908-901-9608

is, of course, to "unassign" the channel from any mix buses, rather than mute it. A green signal-present and a red clip LED are beside each pan knob.

Running frequency sweeps using LinearX™ software, it was possible to examine the response of the EQ controls. On the 20 mic channels, there is a lowcut filter and 3-band EQ with up to 15 dB of cut or boost. The lowcut filter is down 3 dB at 75 Hz, attenuating at a steep 18 dB per octave. It causes a slight 2dB boost at 125 Hz, which I liked, finding it musical and useful on nearly every type of input. As with the 8-bus Mackie board, the Hi and Low EQ are at 12k and 80 Hz. They have gentle slopes, both reaching to midrange frequencies, near 500 Hz. Combining the lowcut filter with moderate amounts of low-frequency boost achieves a nice asymmetrical peak effect at around 115 Hz.

The midrange EQ sweeps from 8k down to 100 Hz. Choice of all those frequencies is great, but with such a large range, the slightest adjustments of this small knob make differences of 10%. This is compounded by a lack of silk-screened frequencies between the extremes. There's a detent on the mid's frequency knob at 12 o'clock, corresponding to a center of about 650 Hz. Further investigation reveals that 9 o'clock is 150 Hz, 10 o'clock is 250, 2 o'clock is 1k, and 3 o'clock is about 1.8k. This filter is about 1.5 octaves wide at full cut. I'm sure someone will complain that they want *two* bands of sweepable mids. If that is so important, then they should buy an 8-bus or some outboard EQs with the money saved on this console.

The last four "channels" are two stereo, line-level inputs, each on a fader, with fixed, 4-band EQ and no highpass filter. These have no mic inputs and no inserts. One Mackie-ism is the additional "Air" EQ knob on each of the four submasters, a boost-only peaking EQ that gently lifts extreme highs starting at about 4 k and peaking at 14 kHz by up to 10 dB. Some might

remember a similar 6dB HF lifter on the old Tapco 6100 Series. Moderate amounts of Air, used with gentle reduction of highs on a channel, has a combined response that acts to reduce high-mids between 2 k and 5 k, rolling off above 16 kHz. This can be effective with certain popular dynamic vocal mics.

Each of the six auxiliary sends has a knob. The first two, obviously intended for monitor mixes, are pre-EQ and pre-fader, but post-insert. This means that any insert placed in a channel will affect the signal going to aux 1 & 2. If these mixes will be used as monitor sends for live gigs, any processing that changes the gain or EQ might be placed into submasters instead, leaving gates inserted into channels, unless they are signals that won't be routed to the monitors. The last two auxes are post-fader, while auxes 3 and 4 are switchable either way. Typical of Mackie, the aux sends have a very wide range of gain. Unity (or nominal) is reached at the 12 o'clock position, where the pot is detented, rather than 3 o'clock, as with other mixers. Any inputs assigned to an effect will be straight up, or lower. The result is that most assignment to effects is done between 9 o'clock and 12 o'clock. I do my best work before lunch, but some may find this short range limiting. On top of this, the knobs are small, meaning a tiny tweak produces a large change. The same applies to using aux 1 & 2 for monitor sends to stage, and going from 10 o'clock to 11 o'clock creates a noticeable change.

The four submasters have double output jacks, allowing the board to be connected to an 8-track recorder without repatching. Many features make this a great production mixer, so there will be much use for it in addition to gigging. Those familiar with other Mackie products will have high expectations, and they will not be disappointed here. In a word, the sound of the 24.4 mixer is clear. The stereo and mono XLR mix outputs have

tons of headroom, providing a robust +28dB signal before clipping, to send a loud, clear signal to the P.A.'s amp rack.

Mackie Designs, 16220 Wood-Red Road NE, Woodinville, WA 98072; 206-488-6843; fax: 206/487-4337.

QSC POWERLIGHT 1.8 AMP

QSC received a TEC Award nomination for its 18-pound PowerLight 1.8 amplifier (\$1,998 list), rated at 900 watts per channel at 2 ohms. It comes in a two-space chassis, 18 inches deep. Voltage gain is "50 times," or 34 dB, and the input sensitivity is 1.1 VRMS. A new model, the PowerLight 4.0, will have the combined power of two 1.8s in a three-rackspace chassis, with a target weight under 30 pounds, producing 2,000 watts into 2 ohms. This low weight is achieved through use of QSC's new PowerWave™ fully resonant switching technology, eliminating the most expensive and heaviest single component in traditional power supplies. The design of the switching supply uses a much smaller, lighter transformer and a storage capacitor bank that is a fraction of the size of the capacitors doing the same job.

A quiet, variable-speed, temperature-controlled fan provides forced-air cooling out the front, avoiding heat on the inside of the rack. A heat-sink tunnel is an integral part of the chassis, running through the center. The front panel has an exhaust grille the entire height of the chassis, in the center. On the right side, two 11-position detented gain controls have 2dB steps for the first seven "clicks." These large knobs have a comfortable feel to their rubberized surface. Between these knobs are two vertical rows of four LEDs for audio level metering. A green signal-present LED lights at -30 dB, two yellow LEDs at -20 and -10 dB, and a red LED shows clipping. On the left is a large power switch and LEDs to indicate power (green), standby (yellow) and protect (red). On the rear, a contact closure places the amp in standby, allowing it

Read Between The Lines

You'll discover the real difference between Audio Test Sets.

Flatness

AUDIO PRECISION GENERATOR FLATNESS SPECS, **TEX AM700** vs **SYSTEM TWO**

Many audio test instruments have both analog and digital input/output connectors...

AM 700

UPPER LIMIT

but they're not all the same! Audio Precision's System One and System Two are the only true Dual Domain audio test sets.

SYSTEM TWO

Some audio analyzers rely on analog circuitry

for analysis of digital signals by acquiring through a D/A converter. Other test sets do just the opposite, with only a DSP core for both analog and digital signal stimulus and measurement. In both cases, signals pass through

SYSTEM TWO

performance pro and even consumer devices often providing flatness of ± 0.03 dB, the audio tester must be even flatter. The graph shows ± 0.01 dB flatness specification limits for Audio Precision's System Two,

as well as the specs of a competitively priced "mixed signal" tester. The competitive unit has 10-20 times greater margin of error for generator flatness.

Audio Precision's true Dual Domain architecture in System One and

A/D and D/A converters. Why is this important? Passing signals to be measured through converters degrades the measurement depending on the specs of the converter and its associated filters, increasing noise, distortion and adding response ripple. Let's look at generator response flatness as an example: Test equipment specs must be significantly better than those of the devices under test. With high

AM 700

LOWER LIMIT

System Two means analog signals are generated and measured by analog hardware, digital signals are generated and measured by digital hardware, for uncompromised performance in both domains.

Our worldwide force of Audio Precision representatives will be pleased to provide further information and a true Dual Domain on-site demonstration.

Audio precision

Audio Precision
PO Box 2209
Beaverton, Oregon 97075-3070
Tel: (503) 627-0832 FAX: (503) 641-8906
US Toll Free: 1-800-231-7350

See us at AES Booth #326



INTERNATIONAL DISTRIBUTORS: Australia: IRT Electronic Pty Ltd Tel 2 439 3744 Austria: ELSINCO GmbH Tel (1) 815 04 00 Belgium: Trans-European Music NV Tel 2 466 5010 Brazil: INTERWAVE LTDA Tel (21) 325-9221 Bulgaria: ELSINCO Office Sofia Tel (2) 5 61 31 Canada: GERRAUDIO Distribution Tel (416) 696-2779 China: Hong Kong: A.C.E. Int'l Co Ltd Tel 424-0387 Croatia: AVC Audio Video Consulting Tel (41) 624 622 Czech Republic: ELSINCO Praha spol s r.o Tel (4) 49 66 89 Denmark: nprn Elektronik aps Tel 86 57 15 11 Finland: Genelec OY Tel 77 1331 France: ETS Mesureur Tel (1) 45 83 66 11 Germany: RTW GmbH Tel 221 70913-0 Greece: KEM Electronics Ltd Tel 1-6-478514-5 Hungary: ELSINCO Bádapes: KFT Tr-I (1) 269 18 50 Israel: Dan-I Technologies Ltd Tel 3-6478770 Italy: Lini Engineering s.r.l. Tel 52-648723 Japan: TOYO Corporation Tel 3 5688 6900 Korea: B&P International Co., Ltd Tel 2 546-1457 B&P (Kumi Office) Tel 546 23-7378 Malaysia: Teit Measurement & Engineering Sdn. Tel 3 734 101 Netherlands: Heynen b.v. Tel 8651-9611 New Zealand: Audio & Video Wholesale Tel 7 847-3414 Norway: Lydransjutt Tel 46-986333 Poland: ELSINCO Polska sp z o.o Tel (22) 39 69 79 Portugal: Acuton Electr-acustica LDA Tel 1 9414087 9420862 Singapore: TME Systems Pte Ltd Tel 747-7234 Slovakia: ELSINCO Bratislava spol s r.o. Tel (7) 794 16 South Africa: SOUND FUSION Broadcast Tel 11 477-1315 Spain: Telco Electrones, S. A. Tel 1 531-7101 Sweden: TTS Tel & Ton Studioteknik AB Tel 31-80 20 Switzerland: Dr. W.A. Günther AG Tel 1 910 41 41 Taiwan R.O.C. Cna Wei Electric Trading Co Tel 2-5612211 Thailand: Massworld Company Ltd. Tel 2-294-4930 United Kingdom: Thurby Thandar Instruments, Ltd. Tel (1486) 412451

SEE READER World Radio/Video MORE INFO

Your Gear is Just a FREE Phone Call Away



- **LARGE SELECTION – FAST DELIVERY**
- **GUARANTEED BEST PRICES**
- **30-DAY RETURN POLICY**
- **30-DAY PRICE PROTECTION**

Imagine the best pro gear being just a phone call away. We have the gear you want in stock at great prices. Even better, we add outstanding value with one-on-one customer service and quality after-the-sale support. Our sales associates use our gear so they can direct you to the products best suited for your needs. Isn't it time that you got both great prices and great service?



Our 2-Day Air Express Delivery is available for only \$5.97 more than UPS ground rates. Call for details.

THE BEST NAME BRANDS

AB Systems • Abel • AKG • Akai • Allen & Heath • Altman • Audio • Audio • Amel Case • Apex • Applied Electronics • ART • Atlas • AudioTechnica • Audix • BBE • Blamp • Boss • Bradford • Carvate-Vega • CAD • Crown • Daylite Screens • DBX • Decca • Digitech • DOD • Electro-Voice • E-MU • ETA • Furman • Gemini • Hosa • JVC • Lexicon • Lightcraft • Lightwave Research • Lineartech • Littlite • Mackie • Martin • Meteor • MTX • Nady • NSI • Numark • Ortofon • Panasonic • PAS • Pioneer • QSC • Ramsa • Rane • Rapco • Roland • Rosco • Ranco • Sabine • Samson • Sennheiser • Shure • SKB Cases • Sony • Soundcraft • Soundtech • Soundtracs • Stanton • Switchcraft • Tascam • Tannoy • Technics • Telex • TL Audio • TOA • Tri-Lite • Ultimate Support • Ushio Lamps • Zenith Video Projectors • Ampex and TDK recording tape 100's of hard to find accessories



PRO SOUND & STAGE LIGHTING™

13110 Magnolia Street, Garden Grove, CA 92644
 (close to Disneyland™)
 (1/4 mile north of #22 freeway).
 FAX: (714) 530-8046
 Store Phone: (714) 530-6760



Our 19th Year!

1-800-672-4128 Mon-Fri 6 am - 8 pm, Sat 7 am - 6pm, Sun 8 am - 5pm (Pacific Time)

to be turned on remotely when the power switch is in the "on" position.

Protection includes increased fan speed with higher heat-sink temperatures. Excessive temperature mutes the signal, with quick recovery (about 20 seconds), due to continued high-speed fan ventilation, which was verified by clipping the amp into a 2-ohm load while running pink noise. QSC's self-resetting Output Averaging™ protects the amp from delivering excessive current into short-circuits. Rather than using a relay, DC faults instantly "collapse" the power supply, eliminating a moving part common to most amps.

The new Neutrik Combo input connectors used on this amp accept either XLR (pin 2 hot, of course) or 1/4-inch input jacks. The new binding posts on the outputs, now used on QSC's entire line, replace familiar hex-nut binding posts. These allow insertion of up to 7-gauge wire. Beveled edges prevent shearing of wire when tightened, and they are large enough to accept a banana plug directly through, sideways. The slotted head allows tightening with a coin, instead of having to use a hex driver.

Our Field Test included running a small system outdoors—two full-range boxes and two subwoofers on one PowerLight, and four bi-amped wedges on the other. Even though one channel of each amp was running a 2-ohm load up to clip, it was only possible to tell by looking at the blinking red LEDs. The PowerLight uses a Class H design and the same Toshiba 230-volt output devices found in many professional amplifiers. Other than the power supply, there are no major differences between it and traditional professional amplifiers in its power range. What the switching power supply does is change the dynamic behavior of the amp



INWARD CONNECTIONS
presents

VAC RAC 4000

Modular Vacuum Tube System

The VAC RAC Series Tube Mic Preamp has had rave reviews from top engineers and producers who have used it. The Tube Mic Pre module features on-board two stage regulation providing very low distortion, custom transformers, very responsive metering, extended bandwidth and incredible sound. Available with Inserts and Fader Box. The 200% over-spec tube power supply assures additional headroom with any of the new VAC RAC modules.

VAC RAC 4000 accepts up to four modules, including:

- Tube Mic Preamp
- Tube EQ
- Tube Instrument Interface
- Optical Tube Limiter (LA2A type)
- Fully Discrete EQ
- Discrete compressor/limiter
- Additional modules coming soon

The VAC RAC system's superlative sound is achieved by combining unique new circuit designs with the highest quality components and manufacturing techniques.

For more information on the finest "direct to tape" recording system, and the sweetest compressors, limiters and eq's around for mixing, contact AXI at (617) 982-2626.

Nothing matches up to the modular, expandable, reconfigurable, simply amazing VAC RAC 4000 from Inward Connections. See us at AES Booth #1209. Dealer inquiries welcome.

Distributed worldwide by: **AXI** - Audio Exchange International
357 Liberty Street • Rockland, MA 02370 • Tel (617) 982-2626 • Fax (617) 982-2610



USE READER SERVICE CARD FOR MORE INFO

CDs IN 3 WEEKS!

300 CDs plus 300 Cassettes \$2,390

with two-color inserts and chrome tape



*Includes free
Graphic Design!*

"We just wanted to let you know how happy we are with the CD and cassette package! They definitely have a major label look and sound!"

— **Michael Wagner**,
INVISIBLE LISA,
Houghton Lake, MI

- FREE Deluxe Graphic Design
- Proof Positive Reference CD
- Major-Label-Quality
- No-Fine-Print Guarantee

Call today for your FREE,
1995 full color catalog:
1-800-468-9353
24 HOURS TOLL FREE
Outside USA call 609-663-9030; FAX 609-661-3458



See us at AES
Booth #478



DISC MAKERS
AMERICA'S #1 MANUFACTURER FOR THE INDEPENDENT MUSIC INDUSTRY

AVL0485 5

the bench, it was possible to confirm that a traditional amp of similar power consumed almost twice as much current. Also, the PowerLight's fan was considerably quieter, and less heat was generated. Standing directly in front of stacks or wedges, it was difficult to tell whether the amp was on by listening to its self-noise. The measured signal-to-noise ratio was at least 5 dB better than QSC's preliminary spec of 100 dB below full rated output. QSC tells me that the S/N spec is being revised to reflect that.

The constantly changing musical demands placed on a power amp require it to supply varying amounts of current. For average musical requirements, only a fraction of an amp's maximum output is needed, with full power required only for musical peaks. A traditional power supply uses a large, heavy transformer, working at a relatively slow 60 cycles per second, to first step the AC down

to a lower voltage. A full-wave rectifier then converts this lower-voltage AC into a pulsing, positive electrical voltage, charging the large capacitors that act as electrical reservoirs 120 times each second. These storage caps provide the positive and negative DC rails that are drawn on by the output devices. The storage caps charge for about 2 milliseconds during each peak from the rectifier, and then must wait 6 milliseconds for their next charge. Large musical peaks can cause the supply voltage to sag, and there can be a small delay before they are recharged, depleting the stored energy faster than the caps can be recharged.

A switching supply's design is turned around. PowerLight's switching supply *first* rectifies the AC line voltage and charges a capacitor bank to the peak voltage of the AC line. This voltage is then connected to the center tap on the primary of a high-frequency transformer. Electrical storage occurs before the

transformer, rather than after it, and the transformer operates at a much higher frequency. The ability of this pulsing, high-voltage DC supply to deliver current is not limited by the impedance of a large power transformer between it and the wall. Each end of the high-frequency transformer's primary is alternatively switched on and off by a square-wave oscillator running at 114 kHz, creating a very high-voltage, high-frequency AC supply. This transformer can be small. Secondary windings on this high-speed transformer step the voltage down to sets of rectifiers and filter capacitors, creating the DC supply rails that the amp's output devices run on.

The PowerLight's switching power supply operates at a frequency almost 2,000 times higher than the 60 Hz coming out of the wall. Rather than charging multiple reservoirs at a line transformer's speed of 60 Hz, there is a *single* capacitor bank *before* the high-speed

—FROM PAGE 185. THE BLUE NOTE

speakers are made by Netherlands-based Stage Accompany, and Peleg swears by them. "It doesn't matter where you sit in the house, you don't get offensive sound anywhere." All six mains and two of the monitors are hung from the ceiling. Two more monitor wedges are on the stage floor. The mains are Blue Box 25 speakers. Internal bi-amplifiers power each enclosure's single-15 and high-frequency SA 8535 Compact Driver—a neodymium ribbon driver that impressively handles frequencies above 1,000 Hz with low distortion. Five of these wrap around the front of the stage, with the sixth placed a bit farther out in the room, facing the bar. The sixth Blue Box and two JBL Monitor 5s located in the bar area are delayed slightly with a Klark-Teknik DN 716. The components in the S.A. L-27 monitors

are identical to the main speakers but use external Stage Accompany amplifiers.

As of this writing, the Blue Note is preparing to expand again (having recently pushed back the far end of the room), including the addition of a recording control room. The current space has accommodated many live recordings, such as Dave Brubeck's *Late Night Brubeck: Live From the Blue Note* on Telarc Records, which comes with Peleg's recommendation as a definitive Blue Note classic. The club will not close during expansion, and Peleg assures that customers will not even notice the construction.

The Blue Note jazz club has, with the help of Peleg, sailed onto the information highway through "InterJazz," a budding Internet jazz info service



Amit Peleg, Blue Note mix position

(<http://www.webcom.com/~ijazz/bluenote.html>), and its own E-mail site there, where one can inspect the artist roster and menu of the club, as well as make reservations (which are recommended) for all the Blue Note's locations, including Tokyo, Osaka and Fukuoka, Japan; and, opening in 1996, Seoul, South Korea. ■

Jazz fan and engineer Adam Blackburn works at Clinton Recording in New York City.



A totally transparent product claim.

The benefits of the RQP3200 are as transparent as its processing. This is a comprehensive pre-amp, compressor and expander/noise gate, with balanced mic or line inputs, two-band filters/four-band equalizers plus ultra-low noise and distortion inputs - all based on proven, high-performance circuits.

But best of all, the RQP3200 is from Calrec, so it comes with the quality, integrity and sophistication that's made us the choice of broadcasters and sound studios worldwide.

Standard Calrec RQ modules include:

- Equalisers
- Compressors
- Limiters
- Expanders
- Microphone pre-amplifiers
- Distribution amplifiers

The RQP3200 is one of a range of 1U deep audio modules, designed for fitting in a standard 19in rack unit. All the more commonly used units are available ex-stock, and we can design specialized units to meet your precise needs.

The RQP3200 module: transparent performance with added Calrec.



See us at AES,
Booth #1209

Now available in the US through AXI, Audio Exchange International, Inc., 357 Liberty Street, Rockland, MA 02370
Tel: (617) 982-2626 Fax: (617) 982-2610

Calrec Audio Ltd, Nutclough Mill, Hebden Bndge, West Yorkshire HX7 8EZ, England Tel: +44 1422 842159 Fax: +44 1422 845244

USE READER SERVICE CARD FOR MORE INFO

PLAYERS OF THE WORLD



UNITE

The new **K2500 Series** is Kurzweil's most powerful **sampling synthesizer**, featuring their acclaimed **V.A.S.T.[®]** technology. Available in **rack-mount, 76-note** semi-weighted and **88-note** fully weighted versions, the **K2500** is truly a **Production Station**. Its spectacular new soundscape, advanced synthesis and sampling, sequencing and stunning effects help you take a project from concept to completion without ever leaving the **K2500** environment. Plus, the **K2500 Series** interfaces with your external gear via **SCSI**, analog and digital inputs/outputs.

K2500 Options

- **DMTi Digital Multitrack Interface**
- **KDFX 8-bus Digital Effects**
- **Sampling with 'sample while play'**
- **Soundblocks: Stereo Grand Piano, Orchestral & Contemporary ROM**
- **Program Memory Expansion**

- **Rack-mount, 76 and 88-note versions**
- **True 48-note polyphony**
- **Up to 1.256 MB program memory**
- **Up to 128 MB sample RAM/28 MB internal ROM**
- **User upgradable software**
- **32-track sequencer with full event editing**
- **Full digital and analog interfacing**
- **Two ribbon controllers and 8 sliders – all assignable**
- **Extensive upgradability**

Trademarks and registered trademarks are the property of their respective owners.

World Radio History



K2500 R/S rack-mount versions also available

SEIZE THE MEANS OF PRODUCTION.

The K2500: A Revolution in the Making.

The **K2500** features a brand new soundset of

200 programs and 100 setups: 8 MB of Kurzweil's most spectacular sounds. Plus, it comes with a disk containing over 1,000 more of Kurzweil's finest programs. With optional soundblocks – *Orchestral* and *Contemporary ROM* and the new *Stereo Grand Piano* – the **K2500 Series expands to 28 MB of internal ROM sound.**

Interfaces with
Alesis ADAT®
Tascam®
DA-38
& AES/EBU
via the DMT
Option.



76
78
88

The K2500 Series: Kurzweil's most powerful instruments ever. They integrate state-of-the-art synthesis, sampling, effects, sequencing, advanced file management, true 48-note polyphony and V.A.S.T. processing plus much more in one instrument. Your musical revolution begins with a single step. Seize the power. Play the **K2500 Series** at your local Kurzweil Authorized Dealer.

Get a Free Copy of the "Players of the World" poster at your Authorized Kurzweil Dealer.

KURZWEIL®

Music Systems

Kurzweil is a product line of Young Chang

PURE INSPIRATION

If You Own One Of These...



You Need One Of These.



Get the most out of your recordings with A.R.T.'s new **MDM-8L Eight-Channel Limiter!**

We've designed the MDM-8L to work seamlessly with your eight-track recorder. Add punch to vocals, fatten up the drums, give the bass the character it needs, all without worrying about low levels and grainy noise, or endless patching. By maximizing headroom, your digital recorder can deliver true 16-bit resolution, allowing your digital recordings to sound absolutely natural.

Finally, true octal processing. You need it... you'll love it!

No Kidding.

FREQUENCY RESPONSE: 10HZ-30KHZ (± 1 DB)
THD: < 0.05%, 0 DBU IN
MAXIMUM COMPRESSION: 50 DB
NOMINAL OUTPUT LEVEL: +4 DBU, -10DBV SWITCHABLE
OUTPUT NOISE: -95 DBU BROADBAND
DYNAMIC RANGE: >115 DB

CROSSTALK: -100 DB, +20 DBU IN, 20 HZ - 20KHZ
ATTACK TIME: 1 MS COMPRESSOR MODE, 100 μ S LIMITER MODE
RELEASE TIME: 50 MS - 2 SEC (PROGRAM DEPENDENT)
RATIO: 2:S:1 SOFT KNEE, COMP MODE, 20:1 LIMITER MODE

SEE US AT AES BOOTH #744



APPLIED RESEARCH AND TECHNOLOGY

Applied Research and Technology, Inc. 215 Tremont St., Rochester, New York 14608 • Phone 716-436-2720 • Fax 716-436-3942

For A.R.T.'s full color catalog (and to be put on our mailing list) please send \$2.00, along with your name and address to:
A.R.T. Catalog Dept., 215 Tremont Street, Rochester, New York 14608. Be sure to tell us what magazine you saw this ad in, and its cover date.

USE READER SERVICE CARD FOR MORE INFO

transformer, and the current is distributed *as needed* to the different DC rails. In the switching supply, current is delivered all the time, compared to traditional designs, where storage capacitors can deliver current only part of the time. Previous lightweight amplifier designs have had performance compromises, turning many users off to the concept. With this new amplifier, performance can exceed that of traditional amplifiers, with the weight and energy savings as an added bonus.

QSC Audio Products, 1675 MacArthur Boulevard, Costa Mesa, CA 92626; 714/754-6175; fax: 714/754-6174.

FURMAN X-SERIES CROSSOVERS

Furman's new X-Series, with four different crossovers, was first shown at last year's AES. The stereo two-way, 24dB/octave X-324 (\$439 list) comes in a single-rackspace chassis. The three-way and four-way stereo models (\$599 and 699 list) come in a two-space chassis. A single-space, low-cost, 12dB/octave two-way model (\$279 list) is stripped down and has none of the extra front panel switches or features found on the X-324. Quarter-inch jacks are standard, and the TRS inputs accept balanced signals. Optional XLR connectors and balanced outputs add \$90 to the list price of the X-324, which is reviewed here. Upon opening the unit (be honest, which do you open first, the manual or the chassis?), it is obvious that an economy of scale is achieved by basing the entire X-Series around a single PC board design.

Linkwitz-Riley or Butterworth crossover slopes can be chosen with a recessed slide switch. Choice of slope affects the amount of power delivered at the crossover region. In the Butterworth position, the outputs are down 3 dB at the crossover point, which is half-power, summing them evenly. At far distances, well-designed speaker systems may sound flatter in the crossover region. Near-field listeners who are on-axis may hear

a "lobe" caused at the crossover point, where the two drivers combine in-phase. Linkwitz-Riley slopes, down 6 dB at the crossover point, cause the voltage to sum evenly, achieving a flat on-axis response. Recommended for near-field and time-alignment applications, this slope allows less interaction between components and has been popular in live sound for this reason, along with the fact that it offers improved protection for HF drivers, delivering half as much power where their excursion is greatest. Performance of these slope characteristics were verified in the shop.

The front panel is a matte off-white with black silk-screen labeling, so the controls can be read easily in low-light conditions. Crossover frequency adjustment is made on detented pots with a 4.3-octave range of 35 to 700 Hz. A higher range is accessed using a recessed "X 10" slide switch. The front-panel labels have 3% accuracy, which is quite good. Another professional unit tested was off by 20% to 25% from its front-panel labeling. Finely spaced detents allow careful adjustments to be made accurately and repeatedly.

A useful 12dB/octave lowcut filter on each input starts rolling off at 30 Hz and is down 3 dB at 20 Hz, -12 dB at 10 Hz. Input and output knobs are adjustable from completely off to +6 dB, with "zero" at the 12 o'clock position. Each output has a mute switch, with a bi-color LED glowing red for mute and green for "on."

Internal peak limiters with a 4:1 compression ratio are available on each output band. Threshold is adjustable from -20 to +20 dB on small, recessed pots (threshold indicators are red LEDs). A "greenie" or small jeweler's screwdriver is needed for adjusting the pots. Compression has an 8ms attack characteristic, which only lets transients pass through, and there's a one-second release time. The output control is located at a point before these internal limiters, and adjustment to individual

bands still leaves them protecting the same threshold point, so they can be set with confidence.

The compression driver horn EQ on the two "high" outputs is turned on by individual front panel switches to the left of each high-output control. This EQ curve is useful and musical, gently lifting the highs to compensate for the HF roll-off associated with contemporary constant-directivity, compression-driver horn designs. A gentle 3dB/octave slope offers +1 dB at 5 k, +3 dB at 10 k, peaking at +6 dB at 18 k and rolling off at a rapid 18dB/octave rate from there, crossing zero at 23 k and down over 12 dB at 40 kHz. Many professional crossovers and processors employ too much HF lift when engaged, and extend it too high.

Features on the unit's rear, clearly not intended to be used regularly, include a ground lift switch, the power switch, and a "Low Sum" switch to mix the low left and right signals, routing the sum to both outputs when engaged.

Much attention has been paid to the recent proliferation of digital process-based crossovers. Offering extensive features, their sound quality is often not significantly better than a well-designed analog counterpart. The Furman X-Series offer professional quality and sound at an attractive price.

Furman Sound, 30 Rich Street, Greenbrae, CA 94904; 415/927-1225; fax: 415/927-4548.

TECH 21 SANSAMP BASS DRIVER DI

Two new direct boxes that you may not be familiar with are both a little out-of-the-ordinary, but each offers solutions that run-of-the-mill DIs cannot. Tech 21 has redefined the active direct box with the SansAmp Bass Driver DI. Using the FET-based tube-amplifier emulation common to the company's other SansAmp products, the Bass Driver DI captures the harmonics and overdrive characteristics of tube amplifiers, even at low volume levels. This is one of the first DIs designed to *not* sound

transparent. It also can be used as a transparent DI when the effect is bypassed.

The new Bass Driver DI (\$225 list) costs about the same as a good active DI. It's based on the earlier SansAmp Bass DI, with six knobs replacing the previous internal controls. The Level control adjusts the output, with unity at the halfway point. Bass and Treble are shelving EQ, tuned



Tech 21 SansAmp

for bass guitar and turning over at 500 Hz where they meet at full cut or boost. Bass offers 15 dB of cut or boost at 100 Hz, while Treble offers up to 9 dB of boost at 2 kHz and more than 15 dB of cut.

The other three controls provide access to the SansAmp tube amp emulation. "Blend" adjusts the mix of the dry preamp signal against the processed signal. This allows balancing of the sound of a miked tube amp with the preamp's equalized, direct signal. "Drive" controls the amount of overdrive of tube amp emulating circuitry. At low settings, there is still warmth and the emulation of a miked speaker. Finally, a "Presence" control adds upper-harmonic content to the tube amp emulation. This control corresponds to the "Crunch" control on the rackmount SansAmp PSA-1 and the "Presence Drive" control on the classic SansAmp guitar box.

As with any effect, too much can sound quite nasty—although sometimes, "nasty" may be exactly what you want. I preferred settings of unity Blend (12 o'clock) or less. Because of each effect's wide range, I recom-

mend starting with all controls at 12 o'clock. I found that slight changes from this starting point were enough, primarily just adding a little bass and treble.

One benefit is the ability to get the combined sound of a DI and a miked amp into the P.A. down a single XLR cable. In clubs and at festivals with limited inputs, stage space or setup time, this DI can quickly provide a pleasing composite bass sound when operated correctly.

In Bypass mode, the box simply operates as a transparent active DI. It also has an additional parallel, unaffected 1/4-inch output, should players not want their sound affected by the SansAmp circuitry. Some engineers may want to mix the processed signal with the straight signal, and this is the place to connect a regular active DI to do that. This jack can also be used as an extra output for a tuner.

The Bass Driver runs on a 9-volt battery, DC power supply or phantom power. Battery life is about 100 hours. In the lower-right-hand corner is a heavy-duty momentary switch that alternately turns the effect on and off, and there's a large, bright red "Active" LED indicator. A recessed "pin one lift" switch, labeled "Phantom & Ground Connect," is a true ground lift and therefore kills phantom power, which needs all three XLR wires to work. The unit powers up with the effect bypassed. This means that if the unit loses and then regains power, the bypass switch needs to be turned back on. With battery or wall-wart backup, loss of phantom power will not put the unit into bypass.

What's not obvious is that the Bass Driver DI also works well on acoustic guitars, giving them a presence, punch and warmth not normally available with active DIs. The tone controls allow players to get a better sound coming out of the stage monitors. Many acoustic players find themselves performing with sound systems where the monitor send is a pre-fader, pre-EQ auxiliary on the console. This

means that any tonal adjustment to the acoustic guitar's sound must take place before the XLR going into the sound system. EQ changes made on the graphic compromise the tone of the entire monitor mix, which has been adjusted for the vocal mics. Acoustic and electric players of both guitar and bass should consider this tool for getting their sound at smaller gigs. For sound companies, the addition of a Bass Driver DI is a way of making friends with musicians.

Tech 21 Inc., 1600 Broadway, New York, NY 10019; 212/315-1116; fax: 212/315-0825.

HUGHES & KETTNER RED BOX

Hughes & Kettner's Red Box DI, introduced eight years ago, converts a guitar amp's signal to a frequency-corrected, balanced signal, directly feeding the emulated sound of an isolated, miked speaker cabinet to the mixing console. This allows the sound of the amp's tubes to go straight to the console without the drawbacks of miking the speaker cabinet.

The new MkIII version (\$129 list) now runs on phantom power, 9V battery or a DC wall wart. As long as there are 10 or more volts of phantom, it doesn't draw down the battery. Without phantom power, it draws 1 mA, and a typical alkaline battery lasts 250 hours. Phantom power,



Hughes & Kettner Red Box

is recommended, giving it headroom to handle signals 14 dB hotter. While the previous Red Box had a fairly hot output, the MkIII version provides a true mic-level signal. It now has a choice of two speaker emulations, either a 4x12 cabinet or a double-12, open-backed combo.



Freedom, Around The World

No matter where you are on earth, or what you do, there is one thing you can count on: Sennheiser Wireless. It delivers the most natural and transparent sound ever transmitted. Phase-locked loop (PLL) frequency synthesis provides frequency agility and stability, so that you can easily adjust your equipment to local RF conditions. Advanced transmitter battery management systems even allow remote status indication. And, our HiDy^{plus} noise reduction system yields tremendous signal-to-noise ratios. Only Sennheiser offers real-time computer monitoring and remote control of all receiver functions.

Only Sennheiser provides service facilities worldwide. Free yourself with confidence. Count on Sennheiser.

RF Wireless Systems



SENNHEISER ELECTRONIC CORPORATION

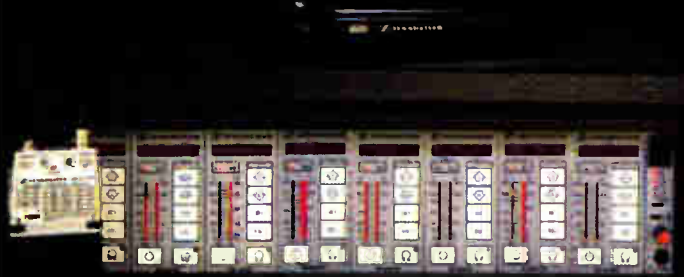
6 VISTA DRIVE, P. O. BOX 987, OLD LYME, CT 06371 • TEL: 203-434-9190 FAX: 203-434-1759
CALIFORNIA: 4116 WEST MAGNOLIA BLVD., SUITE 100, BURBANK, CA 91505 • TEL: 818-845-7366 FAX: 818-845-7140
MEXICO: PALENQUE NO. 663, COL. NARVARTE, 03600 MEXICO, D.F. MEXICO • TEL: (5) 605-7686 FAX: (5) 605-6473
CANADA: 221 LABROSSE AVE., PTE-CLAIRE, PQ H9R 1A3 • TEL: 514-426-3013 FAX: 514-426-3953

Manufacturing Plant: Am Labor 1, 30900 Wedemark, Germany

See us at AES Booth #234

USE READER SERVICE CARD FOR MORE INFO

USE READER SERVICE CARD FOR MORE INFO



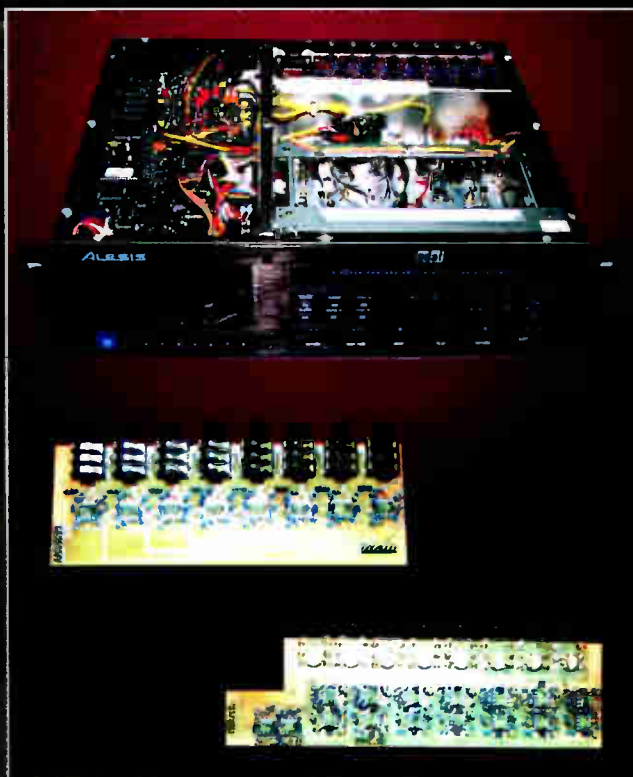


Horizon™

Upgrade I/O Cards **ALESIS ADAT**

10 FEATURES YOUR STUDIO HAS BEEN MISSING

- 1 DC(0 Hz)...70 mhz frequency response sends all of the signal to Tape.
- 2 Fully balanced 1/4" inputs (TAS)
- 3 Volume controls adjust the 1/4" and the ELCO (from unity to +40dB) allowing you to match your ADAT® with your console for lower noise and higher dynamic range. Or record direct to tape, *No console required.*
- 4 Ultra High speed devices give greater transient response. (True 3-D Sound)
- 5 Ultra wide traces on the PC board lowers thermal noise



- 6 Output levels at consumer (-10 dB) or pro level (+4 dB) on 1/4" and Elco
- 7 The Output card will support up to a 50 milliamp current which can drive very long runs or high capacitance cable with no signal loss.
- 8 Fully DC coupled, allowing no phase shifting in the audio band
- 9 Increased headroom for more dynamic devices (Like Drums)
- 10 Clear Lexan top allows access to the volume controls and provides visual inspection for normal user maintenance.

"These cards make a very noticeable improvement in both audio and user expandability"

— Stephen Pirtle, Studio Owner & Technician

"Your input cards are the closest thing to a straight wire with gain that I have encountered. They have much more 'Air' and dynamics than the mods that I've done. Your input and output cards sound incredible."

— Larry Seyer, Engineer, Austin, Texas; 5 time Grammy award winner

For more information, contact your local Horizon® or Alesis® dealer

Alesis and Alesis ADAT are registered trademarks of Alesis Corporation

UTILIZING HORIZON'S

MAPS TECHNOLOGY

Patent Pending

USE READER SERVICE CARD FOR MORE INFO

—FROM PAGE 169, TOM PETTY

essing rack includes Klark-Teknik graphic EQs, Yamaha SPX-990s, Drawmer gates and an Eventide H3000. There are four wedges on the floor around Petty, and Electrotec also flies five of its Lab Q cabinets on the side of the stage. Because Petty is wearing only one in-ear monitor, Hendry has to watch where Petty is onstage to know what to feed the in-ear monitor mix.

"Tom's getting the stage vibe and ambient sound in the other [open] ear," Hendry explains. "I'm just putting his vocal, the other vocal harmonies, the acoustics and occasional touches of pianos and solos, etc. into the ear monitor. When Tom wanders out to the wings of the stage for his guitar solos, then I feed him a track of his guitar. When you have two ear monitors in, then it's like having real good headphones on. You've got to have ambient mics up for crowd noise, you've got to have cymbal mics. I found with using only one ear monitor this time, I don't need to add cymbals or ambient crowd noise. I get sufficient ambience through the vocal mic bleed and with the other ear. So it's working really well."

Out front, Robert Scovill also appreciates Petty's back-to-basics approach. "This tour is kind of a change of pace from the tours I've done in the past," says Scovill, who recently mixed Rush and Def Leppard. "It's pretty light on the processing. Really, all I use for the most part is some pitch change and a pretty tight slap on Petty's vocal. If I put anything on it, it's usually a really tight room, or it's really tight ambience program. Typically, I use some of the new ambience programs on the TC Electronic M5000. I have a dual-loaded M5000 out there, meaning it's a two-machine unit. So I use one part of it on Petty and the other half of it on drums. The other piece that I've been using for reverb, like on the piano, is the new Alesis QuadraVerb 2. That's a great piece of gear. I use it on piano

and, if guitar solos dictate it, I'll use it there. I might use it on the Leslie every now and then, but it depends on the song."

Scovill says the SPL at mix position is between 103 and 105 dB, A-weighted. "SPL-wise, it wasn't that different from Rush. I think with Rush we were 107, A-weighted. It was just a different intensity. The attack and the style of playing give you the illusion that [Rush] is a lot louder. It's just a more intense, breakless show. Whereas with Petty,



Robert Scovill

there's a complete acoustic set that lasts about a half-hour."

One of the main challenges for Scovill is to make Petty's soft vocals intelligible above a rocking band. "He sings really softly...man, it's a whisper. It's as challenging a vocal as I've ever had to deal with," he says. "I'm using a dual-compression technique. Usually, I have a compressor set up on an initial channel for Petty, and I'll do some real light compression on it—you know, 1.5 or 2 to 1—and just have it hitting compression when he's really singing loud, and then I'll take a direct out of that—post fader—to a UREI 1176 and run it up; depending on the vocal style, it can either be at 4 to 1 or all the way up to 20 to 1. But you return that on another fader, and you just kind of goose it up under the initial fader when you need it. And it makes the vocal jump out of the mix a little bit. It's something that Chas Sandford had showed me. Then I was speaking with Don Smith [engineer on the Stones' *Voodoo Lounge* album] previous to this tour, because Petty said, 'you oughta call him.

He knows how to get my vocal above the mix.' Don was doing the same thing that I had been doing, but he was using a dbx 160 as the initial compressor on him. So I tried the 160, and I've been pretty successful with it."

The Petty P.A. consists of Electrotec's proprietary Lab Q boxes driven by Crest amps: 48 cabinets on each side of the stage, 12 subwoofers, as well as eight centerfill cabinets, which are Electrotec's MiniOperas. There is no delay tower. For the shows sold 360 degrees around the stage, another 24 cabinets are hung at the corners of the back of the stage for rear-fill. Scovill goes on to detail how he tunes the P.A. at the Shoreline Amphitheater:

"I have the P.A. broken into five components: what we call the onstage six columns, the off-stage six columns, the under-hungs, the centerfills and the subwoofer system," Scovill explains. "That's five separate amplification units, five separate crossovers, five separate EQs; they all drive off different matrixes at the console. So that gives me the ability to adjust level and tone on any one of those sections. I use Vari-curves, and I use a Sound Technologies RTA 4000, and I have reference microphones on a wireless system, a Samson wireless. So, I'll find a reference spot, usually around the mix position, and I'll take a reference curve there. And then I'll move to five or six different locations, including where Petty sings from during the show, and I'll take analysis from all these places. I try to match it up to both the frequency and the SPL at all those locations. I use pink noise, and then I'll play some reference music that I know, and I'll walk around the room with a Varicurve remote on the wireless and go to those same six locations and make sure everything is sorted out to the ear. Then I'll come back and throw the ADATs in and see what it sounds like."

Scovill had the Gamble EX56 FOH console's patchbay modified to accommodate 56 tracks of ADAT. "Actually I'm doing this in a very particular way. I don't

think there are many front-of-house engineers doing it this way," he says. "I've dedicated a track of ADAT per channel of the console. And the tape machine sits on the insert point of the channel, and any additional inserts in the chain—i.e., compressors, gates, or whatever—come post tape machine. That gives me the ability to just roll tape for a given night and record on input. So when you come into the next gig, you can put the tapes in, hit play on the tape machine and go back and EQ last night's recordings for tonight's show. You can work on just the sound of the bass drum in the hall, or you can work on the vocal in the hall, or you can work on your inserts, everything. A lot of guys use tune-up music to come in and listen to the room, and this is a more valid way of doing it: You're using the actual source that you're going to be listening to two hours from now."

When it comes to microphone selection, Petty's 20 years' experience in studios and onstage dictate his choices. "Petty is pretty set in certain microphones on certain things," Scovill says, "his vocal being one of them. He does not want to sing into anything but an SM57. Likewise, the other singers [backup singers Howie Epstein, Scott Thurston and Benmont Tench] end up on 57s, as well. For the most part, the guitars [Petty and lead guitarist Mike Campbell] are 57s. Again, that's his prerogative. I think that comes from having success with that mic in the studio. He kind of turned me loose on the rest of it."

Other mic choices on the *Dog With Wings* tour: a combination of an SM91 and a Neumann TLM170 on the bass drum; snare drum is an SM57 on top and an SM81 on the bottom; hi-hat is an AKG 460; ride cymbal is an AKG 460; toms-toms are Sennheiser MD-504s; overheads are a pair of Neumann U87s. For Howie Epstein's bass, Scovill mikes the cabinet with an Electro-Voice RE2000, combined with a Countryman DI. For Benmont Tench's

piano, Scovill uses a combination of AKG 414 TL and Audio-Technica AT851 mics. For the Leslie on Tench's B3 organ, a pair of KM184s on the horn and a pair of SM91s on the bottom. For Petty's acoustic 6- and 12-string guitars, a Countryman DI is used. Scovill adds, "What really makes [the acoustic guitars] work is the new Tube Tech LCA2B dual limiter I'm using on it." For audience miking, Scovill uses a pair of Audio-Technica AT4071a's—"I'm getting spectacular results with those mics," he says. For ambience, Scovill uses two KM140s in their stereo pair at the FOH position.

Because Petty does not use a definite set list, his vast repertoire of songs and cover tunes—and his two-and-a-half-hour performances—keep the production crew on their toes. "I gotta tell you, that's very refreshing," Scovill says. "Some of the bands I've been with over the past couple of years, because of the productions they're involved in, you kind of get tied to a set list. If you want to play a different song, you can't really do it because so much of the production is counting on you playing that song. But this show is not like that at all. I love sitting down at the console at night and not really knowing what songs are going to be coming at me. He's gone up there and done songs we never heard in rehearsals.

"This tour has kind of grounded me a little bit," Scovill concludes, "because it's very simplistic out there, and yet you get really good results from it. All the amplifiers are vintage AC30s, vintage Fenders, Fender Bassmans. You hear those sounds, and you go, 'That's a pretty good sound,' then you listen to it in the context of the mix, and you go, 'That's a *really great* sound.' As opposed to other artists that I've seen trying so hard to get sounds and trying everything that's new on the market, these guys have really stuck to their roots. They found, something that works for them and they stick to it religiously.

And I tell you, there's some validity there." ■

Jeff Forlenza is an S.F. Bay Area freelance writer.

—FROM PAGE 170. ANITA BAKER

ered by UPM-1 near-field speakers. These are also hung under theater balconies to augment HF loss.

At the Radio City Music Hall show in New York, the tour began beta-testing new Meyer speakers, the MSL-4s, which will be released at this month's AES show. This 40-degree, self-powered box has the same footprint as an MSL-3 but is only 36 inches tall and weighs 175 pounds. The internal components are a single 2-inch high-frequency horn, a single 12-inch, horn-loaded speaker and an integral 1kW processor/amplifier. All other amplifiers are Crest; the MSL-5s are powered by the new Crest 9000.

To gain total control over stage volume for Baker and prevent leakage into the house, the monitor system was designed with no speakers onstage. Additionally, the guitar amp is miked backstage, and the drummer and percussionist's setups are enclosed by Plexiglas booths. Both Baker and saxophonist Everette Harp use Future Sonics wireless earphones; the band and background singers use hard-wired in-ear headsets or Sony headphones. The Shure Beta-87 main vocal mic is routed directly to a John Hardy preamp in the splitter rack, through a Meyer CP-10 EQ, and then to the monitor console insert return, bypassing all console EQ. Bill Fertig uses two AKG CK-8 shotgun mics hung off the downstage lighting truss, and two Crown PZM PCC-160s on the stage edge, to mike the audience and room ambience back into Baker's headset mix. Before the sound check, all wireless frequencies are scanned with an Avcom RF frequency analyzer.

For the band's headphone monitors, Bob Erickson is using several Aura-Sonics AST-1F-4 Bass Shakers to augment low frequencies. The Bass Shaker is a vibra-

—CONTINUED ON PAGE 37

THE WARMTH OF THE PAST



TONewood STUDIOS, NORTH HOLLYWOOD

THE PRECISION OF THE FUTURE

SURFACE-MOUNT TECHNOLOGY

ORAM

CONSULTING

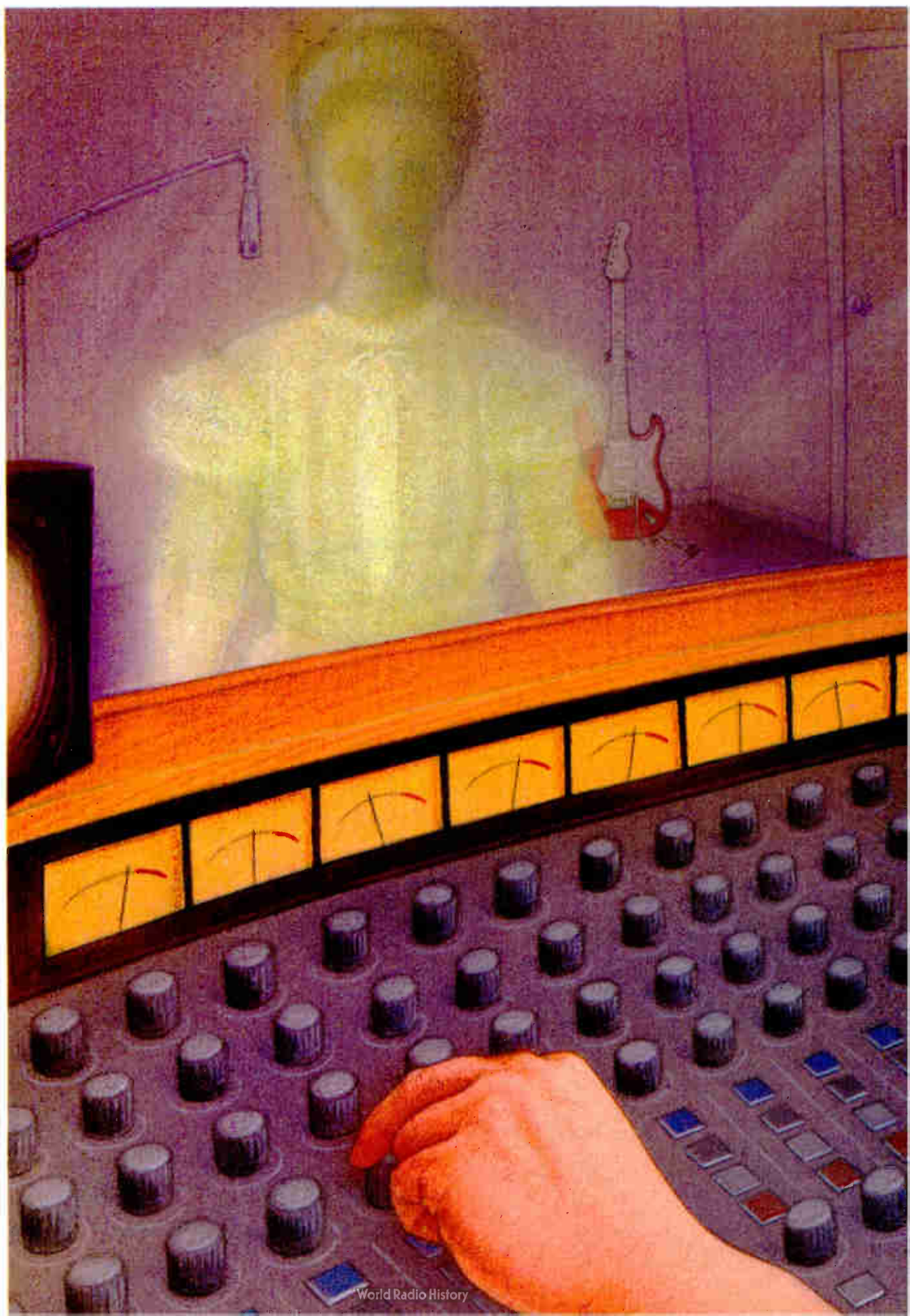
BRITISH EQUALISATION SERIES[®]

MIXING CONSOLES

PELONIS

See us at AES Booth #818

PELONIS SOUND AND ACOUSTICS, INC.
P.O. BOX 30491 • SANTA BARBARA, CA 93130
PHONE (805) 563-0505 • FAX (805) 563-9604





MIXING IT UP WITH STUDIO GHOSTS

by Rick Clark

It's past midnight, and you've been hammering away on a mix for hours, when suddenly you get a powerful sense that you are not alone in the half-lit control room. There's a sudden chill in the air, and things feel unnaturally heavy and still.

You glance up, and in the reflection of the control room glass you see a person standing behind you. It doesn't look quite like that anxious A&R guy who had threatened to drop in unannounced. So you turn around, only to discover that what you saw seconds earlier has suddenly vanished.

You shake off the involuntary shivers, wondering if you've put in too many hours on this project, and then try to reconcentrate on the mix. Nevertheless, your mind is addled by the interruption, so you shut down and lock up. As goosebumps

continue to pop up on your skin in waves, there is a sense that any minute you're going to come face to face with someone other than that elusive maintenance engineer. Walking towards the rear exit, the door to Studio B creaks open...

The logical mind has always struggled with the idea of things like ghosts and other phantom energies. Whether you are a skeptic or a believer in such matters, one thing is certain: Almost everyone likes a good ghost story. There are the usual haunted house stories, but it also seems that places where creative visions are manifested attract inordinate amounts of hard-to-explain activity. Certainly, the theatrical world is rife with tales of haunted opera houses and auditoriums, and recording studios are no different. If you have been in the music business for any length of time, chances are

ILLUSTRATION BY RUSS ANDO

good that you have experienced, or heard of, spooky studios and sessions, ranging from odd equipment behavior to full-blown spectral visitations.

Mix put out the call for studio ghost stories and received loads of them. We couldn't accommodate more than a small percentage of what came blowing in here, so after going through many hours of interviews and e-mail communiqués on the subject, we narrowed everything down to a handful of studios.

Thanks to the studios and people who participated in this endeavor. As Skip McQuinn (who runs 315 Beale Recording) says, "Hell yeah, we have ghosts! Come on down." On that note, let the stories begin.

KINGSWAY RECORDING, NEW ORLEANS

Mention New Orleans and images of mystery and thick Delta heat come to mind, along with fine music and food. Since the mid-'80s, Kingsway Recording, located on Esplanade Avenue in the famous French Quarter, has made a name for itself as the recording home base for producer Daniel Lanois, who bought the house in 1989. Bob Dylan, Emmylou Harris, the Tragically Hip, Chris Whitley and many others have come from all over to tap into the magical vibe of this large old house, which is allegedly occupied by more than just those cutting the sessions.

Depending on whom you talk to, the house's other resident is either the spirit of flamboyant Crescent City socialite Germaine Wells, or her mother Irma Cazanaze. Then again, it could be Germaine's father, Count Arnaud, the founder of the world-renowned New Orleans restaurant Arnaud's. They all passed away in this house. Maybe it is Germaine's daughter, who allegedly passed out drunk one night and set her bed on fire with a lit cigarette.

"There is definitely a spirit in this house," says Karen Brady, who has run the studio for five years and now owns it. "Germaine loved music, and that is why I think she is very happy we are here and why we have such good luck and such amazing recordings.

"I think she has a great sense of humor. Every now and then, she will do things to keep you on your toes," Brady says. "I was awakened out of a dead sleep this morning at 5



o'clock, hearing my calculator just going to town on my desk with no one there. Those kinds of things happen a lot here. You can be absolutely alone with the doors bolted and the lights are going off and on. Sometimes, you turn on the cold water and it comes out hot. I have used the same bathrooms everyday, so I know which is hot and which is cold. It's very strange, but sometimes it switches on you. There are those little odd experiences."

The spirit's playful tricks seem to be a commonplace occurrence for others who record at Kingsway. "We knew the place was haunted, but it was never anything scary; it was more mischievous," says producer/engineer Don Smith, whose credits include the Rolling Stones, Cracker and the Tragically Hip. "We would record the sax player in the kitchen booth. There was a window there, and he kept shutting and locking it before he played. The lock was inside where he was, but every single time we locked it, it always opened itself back up again when we turned around," Smith says.

While most of the unusual occurrences at Kingsway have dealt with the unseen, sightings of apparitions have also taken place there. Among those witnesses was Karin Bergquist, lead singer for the I.R.S. Records band Over The Rhine. "When we were beginning our work at Kingsway, Karen [Brady] casually mentioned, during a tour of the place, not to be alarmed if we happened to see Germaine," recalls Bergquist. "I really didn't pay that much attention to it, and I actually had forgotten this advisory.

"It was fairly late in the morning, about a week into the project, and I was in my bedroom. There were lots of windows in my room and high ceilings, and it was very bright," Bergquist says. "I was looking into the old mirror that hangs over the fireplace mantle, when I noticed in

the reflection above my right shoulder behind me a cloud-like apparition hovering and full of motion directly below the ceiling. It had more dimension and thickness than smoke, and it was iridescent. There was no discernible face, but as I turned to actually confront it, it was invisible. I couldn't see it. I then looked back into the mirror and I saw it again, moving and still present. Each time I turned back to look at it, it would be gone, and each time I looked in the mirror, it was there. You do a lot of double takes on something like that. Finally, it was gone completely.

"My first thought was, 'Okay, this is a flaw in the mirror itself,' but it really wasn't. There wasn't any smoke in the room, and it wasn't reflections from car lights or chrome, in the way that chrome can reflect on the sun and cast light on the walls as a car is moving by. It wasn't anything like that. It was very much a presence," Bergquist says. "The odd thing was I didn't feel fear. I was just a little startled."

Bergquist went down to the kitchen and told Brady what had happened, and Brady said she had taken a photograph of the same phenomenon in the pool room. Then, minutes later, the band's drummer, Brian Kelley, had his own experience.

"My room and Karin's rooms were somewhat joined together," Kelley says. "I was woken up by two girls in Karin's room who were screaming and laughing, as if they had seen a mouse or cockroach. I got up and went out into the main hallway and knocked on her door, thinking it was Karin and Trina [Shoemaker, the chief engineer], and no one answered. The sound went away after I knocked on the door. I opened the door and there was nobody in there, and nobody else was upstairs. It was pretty wild, because I would've sworn that someone was in Karin's bedroom. But the experience didn't scare me. In fact, the house was great, and I loved being there."

"I have sort of a strange attachment to Kingsway," Bergquist says. "It is a terribly romantic place, and I'd go back there in a heartbeat. I would guess that, if I was someone else reading this, I would be real skeptical about this kind of thing. I certainly was, up until it happened to me, and the experience opened my eyes."



Switchcraft's patented Littel-Plugs® are ideal for use with standard 1/4" phone jacks including Switchcraft's Littel-Jax® jacks. The rugged #580 (shown at bottom of photo) is a 2-conductor plug featuring solder termination, shielded handle, cable clamp and bears the familiar Switchcraft® logo.

The 3-conductor 299 plug (middle product in photo) also features solder termination, shielded handle and larger cable clamp wings for improved strain relief on larger cables.

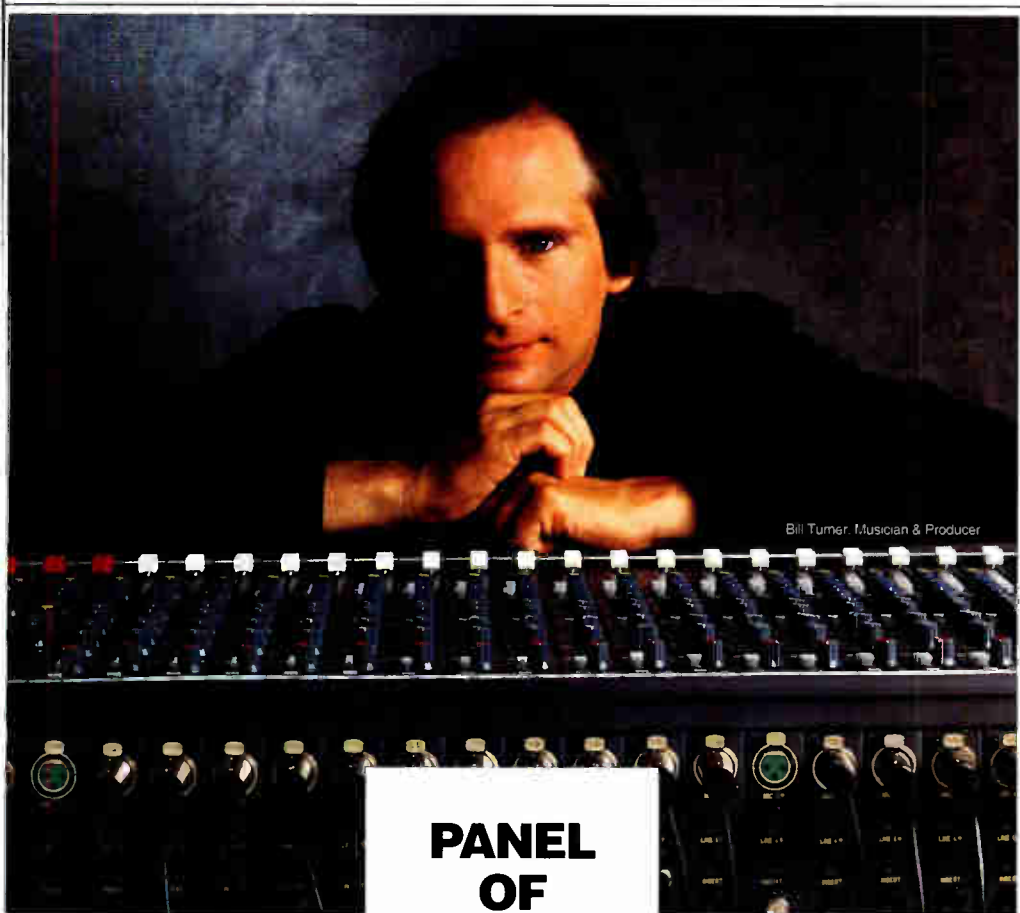
Shown at the top of the photo is Switchcraft's #121 2-conductor extension phone jack for standard 1/4" diameter phone plugs, featuring solder termination and a shielded, screw-on handle. Part #131 is the 3-conductor version of the extension jack.

Request Switchcraft's AVP-3 catalog for details. Call (312) 631-1234 ext. 243.



Switchcraft® offers a complete line of adapters including the 3-contact female to female, #389 (with Switchcraft A3F inserts at both ends) and the 3-pin male, #390 (with Switchcraft A3M inserts at both ends). Both the #389 (shown at top of photo) and the #390 (shown at bottom of photo) have pre-wired contacts. The female version has a polarizing boss; the male version has a polarizing groove.

Request Switchcraft's AVP-3 catalog for details. Call (312) 631-1234 ext. 243.



Bill Turner, Musician & Producer

PANEL OF EXPERTS

"Being an independent producer, we often have to create the product on location and many times outdoors. This is the trickiest... anything can happen outdoors. We eliminate a lot of the 'gremlins' by using only the parts and connectors we feel are the best... and that translates to Switchcraft®. We never leave the studio without Switchcraft."

Bill Turner is an expert on professional sound studios as well as being a renowned session musician*. Bill is equally talented as a producer in his Brooklyn, New York, studio, Bill Turner Productions (BTP).

Switchcraft manufactures microphone connectors, plugs, adapters, cable assemblies, recepta-

cles, patch cords, audio patch panels, and more. If you have a custom application, we'll help you design and execute your concept. Wherever music is made, Switchcraft can supply the components and assemblies to make it sound better.

So why use ordinary components when you can work with a panel of audio experts? When you do, you'll discover what Bill Turner has known for years. "Insist on Switchcraft... we do. It's the undisputed Standard of the Industry."

After all, one audio expert deserves another.

"Among his noteworthy accomplishments, Bill Turner played lead guitar with Bill Haley, and toured Europe with a revival of the original 1954 Comets band. He performs and records with his own band, Blue Smoke.

Choose The Look You Like



The D series of Q-G® connectors offers a choice of satin, pebbled, or black metal finish for panel or chassis-mounting. Choose from 3 to 7 contacts or pins with silver or gold plating. Shown above, left to right: D3F (pebbled), D3FS (satin), D3M (pebbled) and D3MS (satin). For black finish order D3MB or D3FB.

Request Switchcraft's AVP-3 catalog for more information. Call (312) 631-1234 ext. 243.

Durable Q-G® Audio Connectors



Preferred by audio professionals the world over, Switchcraft Q-G® connectors, such as the A3M, A3MBAU, A3FBAU and A3F (shown left to right), feature unsurpassed durability with a choice of finishes and contact platings. High performance inserts are available in Switchcraft® green or black. Solder terminals rotated for easier access and soldering.

Request Switchcraft's AVP-3 catalog for details. Call (312) 631-1234 ext. 243.

Switchcraft

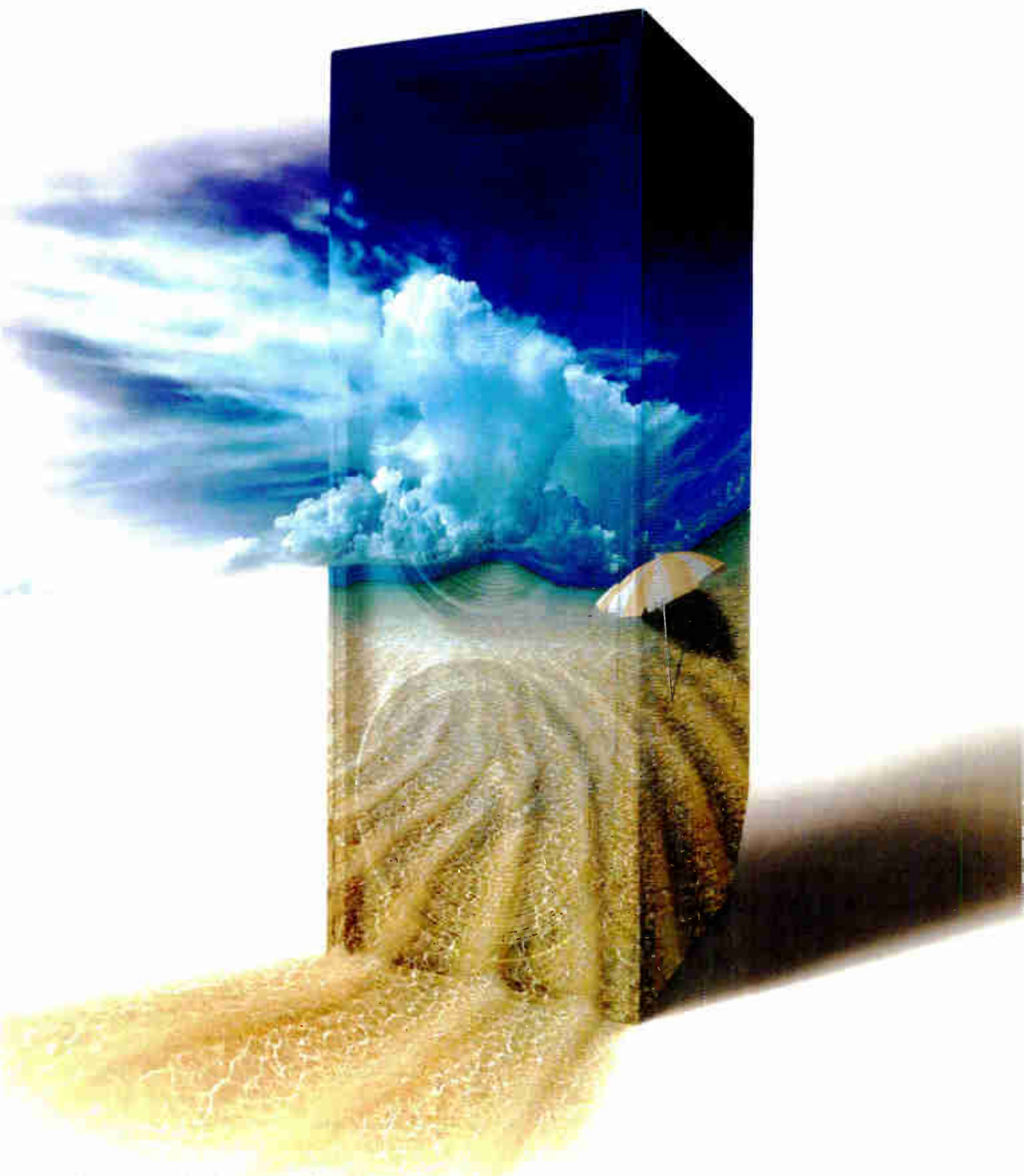
A Raytheon Company

See us at AES Booth #1254

Switchcraft, Inc.
5555 N. Elston Avenue
Chicago, IL 60630
(312) 792-2700
(312) 792-2129 (FAX)



The beauty of music flawlessly reproduced is that it astonishes your sense of hearing. Our insatiable drive for purity of sound demands



instance, that we meticulously modify each and every diaphragm to maximize the frequency response. Now, you're there.

With Meyer Sound, you only have to listen.

{Drop by for a Back Stage Tour of our Sound Laboratories. Call us at 510/486-1166}

USE READER SERVICE CARD FOR MORE INFO

World Radio History

LONG VIEW FARM STUDIOS, MASS.

On a hill overlooking a beautiful valley in rural Massachusetts sits Long View Farm Studios, a full-service, analog, two-studio residential facility (owned and operated by Bonnie Milner and Camille Barbone) housed in a 130-year-old farm house and 90-year-old barn on 125 acres of land. Since the early '70s, Long View has been popular with artists like the Rolling Stones, Aerosmith, Living Colour, Michael Bolton, Pat Metheny, J. Geils Band, Arlo Guthrie and many others.

Long View's resident spirit is more than your average spook. Ac-



ording to the studio's owners, it is a guardian angel of sorts, protecting the studio and its inhabitants from any harm. Over the years, many stories have been accumulated concerning this presence's helpful and somewhat playful activity.

"It seems what we have is not a

ghost in the truest sense, but an energy force or field called a nature diva, which we have named Emily," says Milner. "We have done quite a bit of research on the subject, and we have been to channelers and psychics to have it identified. It is not a spirit who is trapped between planes, but it's rather like a guardian angel, which is the way it is described to us. Nature divas are drawn to very creative and old environments, and that is what we have here at Long View.

"She seems to like to protect this place," Milner says. "The times when people have experienced her have usually been when something threatening or bad is about to happen—like a musician who might fall asleep in a chair with a cigarette burning.

"One night, a staff member who was staying on the third floor of the farmhouse was awakened by a very loud rapping on his door," Milner says. "He sat right up and went to the door, but no one was there. So he went down the stairs, and coming up from the basement level, where we have a video suite and a lot of other equipment, were footprints that were obviously drenched in water. He went down those stairs and swung the basement door open and, lo and behold, there was probably eight inches of water, because a sump pump system had failed. There was all this electronic equipment down there, and it was arcing, due to all the water. No human being could have walked through that basement and lived. They would've been electrocuted. Of course, the knock on the door was Emily's way of alerting someone to call the emergency people and get everything squared away. It is that sort of thing that she does. It's incredible."

Milner also relates one story of a skeptical employee who would put down the notion that there was a spirit at Long View. "He was up doing rounds at one point, and on South Stage, directly opposite of the performance stage, he was running the flashlight along the galley seats, and there was this tunnel or column of white, as people who have seen [Emily] describe it. There she was, and he literally wet his pants.

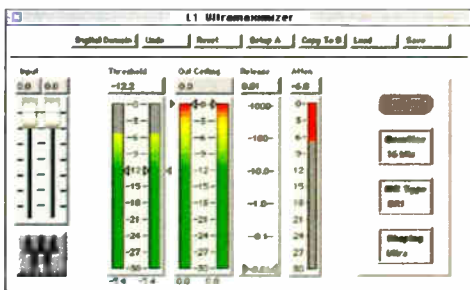
"It's the one instance that we know where she blatantly showed herself to someone. I think it was because he was putting the whole thing down so much, and she want-



TEC award nominee
1995

L1-ULTRAMAXIMIZER

- Indispensable for CD and Multimedia mastering
- TDM, Sound Designer II, and Premiere plugin
- Maximize your CD/DAT levels
- 24, 20, 16, 12, and 8-bit output
- Advanced lookahead peak limiting
- IDR gives 19-bit quality in 16-bit file
- Industry-standard 8-bit audio tool



"you couldn't ask for a more powerful tool..." -Electronic Musician July '95



WAVECONVERT FOR WINDOWS

Multimedia batch audio processor

Sample-rate conversion • Peak limiter • 16-to-8 bit • Multi-file processor

Get optimal sound quality for your multimedia production. Waveconvert combines the technology of the L1-Ultramaximizer with other Waves processors into a powerful one-step program. Just select your files, start the process, and take a break.

plus:

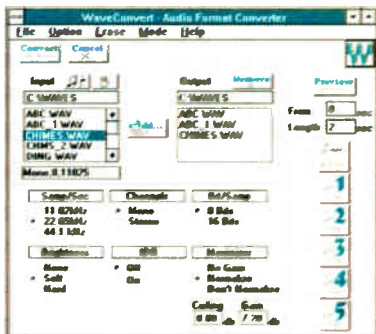
- .WAV file support
- level maximization
- file auto-naming
- tone enhancement
- low truncation noise

Requirements:

- 386 PC or higher with 8MB
- Windows 3.1, sound board recommended

List: \$299

Waveconvert Macintosh is coming this fall!



See us at AES Booth #718

<http://www.waves.com/waves> • waves@waves.com • CompuServe: GO WAVES
Call your local dealer or WAVES for info • 1-800-264-4294

**IT CHANGES ACOUSTICS.
IT CHANGES YOUR VOICE.
IT CHANGES CUTS.**

**IF IT HAD ANY MORE
FEATURES, IT WOULD COME
WITH A RECORD DEAL.**



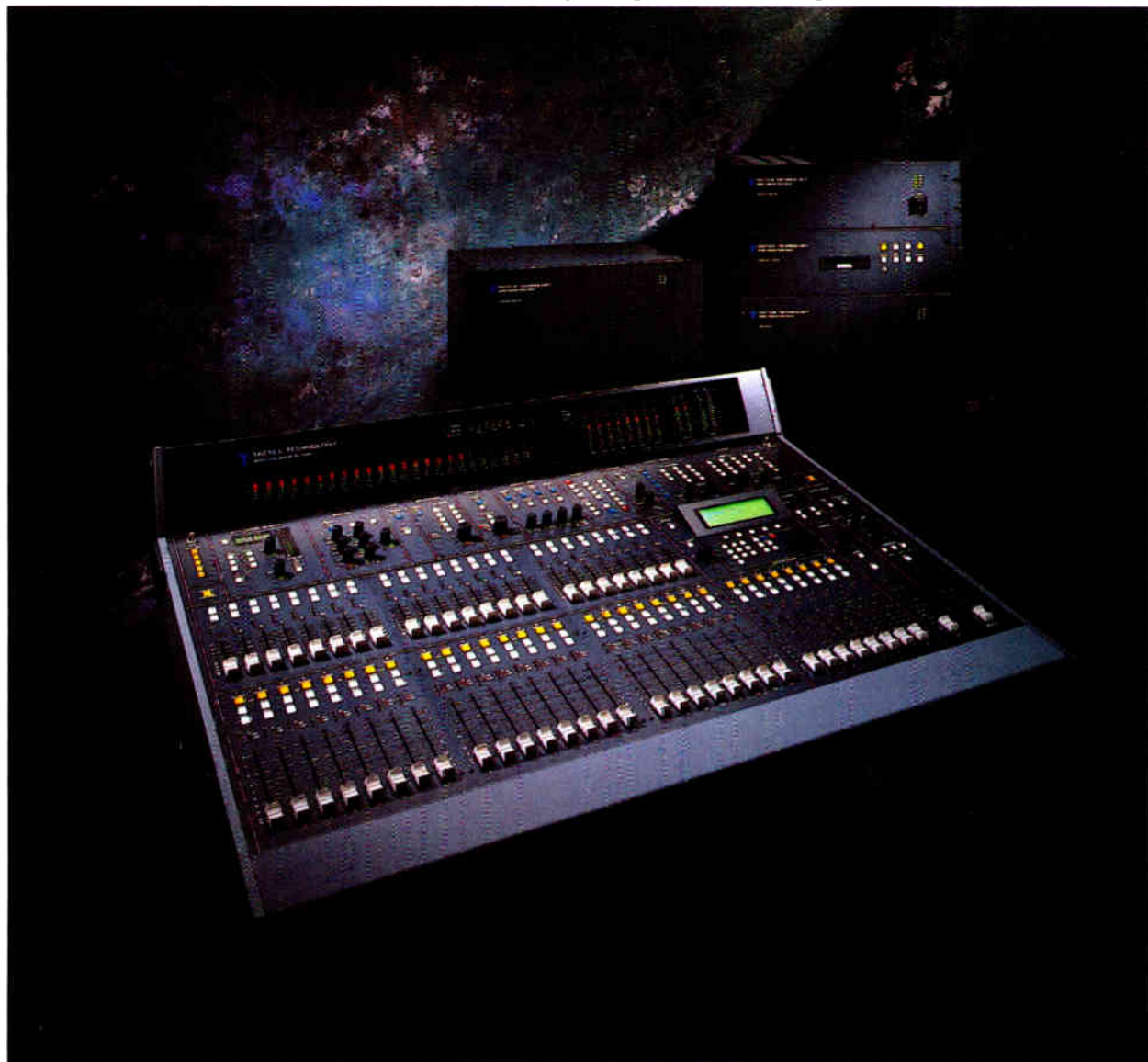
If you love understatement, feel free to call our KM-707 a mixer. But, if you're like most DJ's you'll quickly realize that "mixer" is only the beginning of what this baby does. Like change the key (not the pitch) of any source +/- 1 octave (12 steps in each direction) or, use its digital processor to add everything from reverb to echo to surround sound to your mix. Of course you could also kick in its voice reducer to give any cut a karaoke "feel". Combine that with a 3 mic/3 channel DJ mixer section (with full EQ, pan & level controls), 115v/230v operation and a full range of other high end features and you can see why when it comes to making the most out of your talent, the KM-707 represents a really big deal, in more ways than one.

geminiTM
SOUND PRODUCTS WITH SOUND IDEAS

Corporate Offices: 1100 Millik St., Carteret, NJ 07008 • Tel 908-969-9000 • Fax 908-963-3090 • Florida Office: 2848 J Stirling Rd., Hollywood, FL 33020 • Tel 305-920-4400 • Fax 305-920-4105
Canadian Distributor: SF Marketing 6161 Cypriot, St. Laurent QC, Canada H4S1R3 • Tel 514 856-1919 • Fax 514 856-1920

USE READER SERVICE CARD FOR MORE INFO

INSTANT AUTOMATION



New version 2.0 of the M4000 fully automated mixing system

All functions automated (EQ, routing, pan, gain, globals, aux send/receive, etc.)

Up to 240 inputs, 40 bus outputs, and 64 aux sends

Configured as a LAN using RS-422 ports for multiple expansion architectures

Built-in real world event controller (relay, TTL, & opto-isolated outputs)

Runs your effects units' programs via midi

"Cut and Paste" between mix passes

DAW digital stereo throughput

Outputs both analog and digital masters simultaneously

No external computer or display monitors needed

Motorized fader option

T² TACTILE TECHNOLOGY, INC.

13855 Bentley Place, Cerritos, CA 90703

Carbon-based lifeforms: 310-802-1500

Fax machines : 310-802-7330

ed him to know she was real," Milner says. "When people are skeptical about Emily at all, he is now the first one to put them in their place."

THE FIRE STATION, SAN MARCOS, TEXAS

San Marcos, Texas, is supposedly where some of the oldest human remains in North America have been discovered. It is also the home of The Fire Station, a studio housed in what was once the San Marcos Community Theater, located on the second floor above the old fire and police stations.

During the mid-'80s, producer/jack-of-many-trades Lucky Tomblin (Texas Tornados, Doug Sahm, Plan 9, Dead Kennedys, Jerry Jeff Walker, Stevie Ray Vaughan), bought the old San Marcos fire house and proceeded to renovate it and install a studio. It became quickly apparent that the old theater company room was still populated by ghostly, playful thespians and music lovers. (Though, maybe the ghost is Jack the dachshund, the fire station mascot who was killed when a fire hose nozzle bonked him on the head. Jack's



tombstone stands at the front corner of the building.)

"Our control room used to be the proscenium stage of the theater," Tomblin says. "I think the spirits of those artists are here, but they are beneficial and like what is going on. They are just enjoying themselves, and they're not bothering anybody right now. When we first got the place, my daughter was up there by herself, helping us out, and heard a lady opera singer. She walked over and looked through the glass window into the iso booth, where the voice was coming from, and no one was in there.

"A good buddy of mine, who is a retired army colonel, came by to visit while I was doing a session," Tomblin continues. "It was about 3 o'clock in the morning when we finished, and he had been falling asleep on the big sofa in our control room. He said he would just stay there alone and crash on the couch, so we turned out the lights and went home. The next day he told me that he was woken by the piano, and the lights were turned back on in the cutting room. He looked over the couch at the piano, and it was playing, but nobody was there.

"This is kind of a funny story, but my daughter, the same one who heard the opera singer, gave me some bells. I went around the studio and shook those bells, throughout the building, and I talked to the spirits," Tomblin says. "I told them that they could stay and have a good time, but they had to quit jacking with people. They did, until this band came up from California, who thought they were Guns N' Roses, and started putting cheap graffiti on the walls, destroying the furniture and being bad people around here.

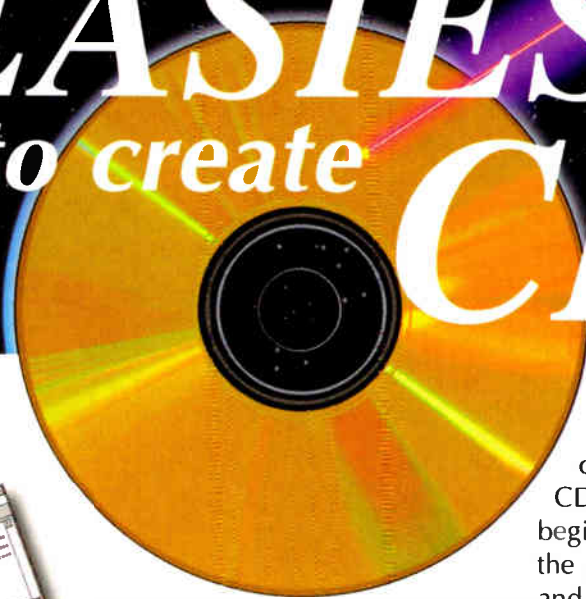
SSL E/G Console
NEVE Console
Digital and Analog
America's Largest Remote Audio Truck

*Not Just An Audio Remote Truck . . .
But A Complete Facility*

Sheffield
REMOTE RECORDINGS
13816 Sunnybrook Road
Phoenix, MD 21131
(410) 628-7260
FAX: (410) 628-1977

USE READER SERVICE CARD FOR MORE INFO

The **EASIEST** way to create **CDs**



Corel CD Creator was designed with you in mind—it's an easy, affordable and comprehensive program that lets you create CDs effortlessly. Ideal for professionals and beginners alike, the Disc Wizard included with the program will make CD recording a simple and familiar process for any user.



1 To design the layout of the information simply drag and drop data and audio files directly to the Corel CD Creator window.

2 Using a CD recorder you can now "burn" your CD.

3 Create your own jewel case insert or use the sample templates provided.

Corel CD Creator provides a secure and durable medium for storing your vital data with quick and easy access. The CDs you create can then be played on virtually every CD-ROM drive or audio player—making Corel CD Creator the most user-friendly CD recording software on the market!

"Corel CD Creator is definitely king of the mountain... it won our Best of Times award."

LAN Times
January, 1995

"The genius of CD Creator is that it hides the complexity and makes creating your own CD-ROMs a familiar process."

PC Magazine
February, 1995

"Simply the best CD authoring package available."

PC Pro
February, 1995

Features:

- Create mixed mode discs (audio and data)
- "Drag and drop" layout design using OLE 2.0
- Support for single session and multisession discs
- Writes MS-DOS or ISO-9660 file names
- Includes a WAV file editor
- Create your own customized CD jewel case insert
- Includes a utility to create your own compilation Photo CD



Did you know...?

CD recorders can be purchased for as little as \$1500*!

Corel CD Creator works with virtually all CD recorders. To create your own CDs, you will also require a CD recorder. For a complete list of Corel certified recorders, please call: 1-613-728-0826 ext. 3080, Document # 1010.

TigerDirect
1-800-CD-TIGER **\$179^{90*}**
1-800-238-4437

*US\$ plus applicable taxes.

USE READER SERVICE CARD FOR MORE INFO

COREL
custserv@corel.ca
Call now for faxed literature!
1-613-728-0826 ext. 3080
Document # 1012

Then the spirits interfered with the session, and the producer of that group will verify this. That was the last time they expressed themselves.”

The session Tomblin mentions took place in 1988, with an MCA Records band called Bang Tango, who were produced by Howard Benson (Motorhead, Wakeland, The Wild Seeds, TSOL). The band roared into San Marcos, but the entities of The Fire Station cooled them out.

“Lucky is a great guy and a pure character,” says Benson, who is now an A&R executive and staff producer for Giant Record in Los Angeles. “When we arrived, he told us about these spirits, and we took it with a grain of salt, like ‘Yeah, so what.’ Over the course of the sessions, the band had totally trashed the place. By the end, the ghosts had had enough of the band destroying the studio, and I don’t blame them.

“One day, we were cutting a vocal for this song called ‘Sweet Little Razor.’ The singer was out in the booth recording, and we were listening to him in the control room. All of a sudden, I heard another voice singing with him on tape,” Benson says. “I turned to the engineer and said, ‘Wait a minute! Do you have a Harmonizer on his vocal? What’s going on?’ We soloed the track and played it back, and there was a voice on that tape that wasn’t the singer’s voice. It sang right with him, same lyrics, not quite in time and a little breathy. The voice appeared on a line about killing somebody. It was really only at that moment that it happened on the tape. It was very late at night when we recorded this song, and it freaked us all out.

“We went home, and I woke up at four in the morning when the clock radio came on playing this song with the weird vocal. I got up and flipped the light on, and the clock radio was *definitely* on, and that song was *definitely* coming out of it,” Benson says incredulously. “I reached over to slam my hand down on the clock radio and turn it off, and then I couldn’t go back to sleep.

“The next morning, I went in and told Lucky about this, and he just nodded his head like it was to be expected. From then on, we were very careful, because we respected what was going on there.” Benson adds that the song went on the record, and the multi that contains the phantom voice is still sitting in the



MCA vaults.

These days, studio manager Mark Erikson, a sound engineering teacher for Southwest Texas State University (the school that also uses the facility), laughs at the idea of spirits and says that the worst thing that happens there now are bats that occasionally get in the building. Maybe Bang Tango gave the spirits a run for their money after all.

PARADISE STUDIOS, TIJUANA, OKLA.

During the early '70s, Leon Russell was riding high on the critical and commercial success of classic releases like his self-titled debut and his LP *Shelter People*, as well as playing landmark gigs like the Concert for Bangladesh and headlining the Mad Dogs & Englishmen tour. Besides collecting Gold records, Russell also liked building studios. One of the three studios he owned in Northeast Oklahoma was located by a lake 70 miles from Tulsa. It was called Paradise Studios, named after the Tulsa nightclub where Russell got his start. Bob Dylan, Phoebe Snow, Freddie King, Bob Seger and J.J. Cale were among the artists to record there, as well as Russell, who cut his classic *Carney* album there. The man Leon hired to wire the new building and fly the studio was John LeMay.

Shortly after arriving there, it became apparent to LeMay that Paradise was sitting on a Native American burial mound. “The spirits of this place were just as real as you and I, and I wasn’t into believing in stuff like this until I went there,” says LeMay, who now works as an engineer at TNN in Nashville. “They either liked you or they hated you. There was no middle ground.

“At first, we had some very serious confrontations in the middle of the night, and I really thought I was going to be dead a couple of times. These things that looked like black

clouds would come and drift across the room, and you would get a feeling of pure, raw terror.” LeMay says. “They would come within a few feet of you, and it would feel like something was trying to get inside your chest and rip your soul out, just like one of the old science fiction movies. I certainly knew what a deer in front of headlights felt like. I was frozen. Light wouldn’t even shine through them. I had never seen or heard of anything like that before.”

Around that time, LeMay met a Nigerian percussionist who played with Russell, named Ambrose Campbell. Campbell was in tune with such energy and helped LeMay out. “The studio by the lake was a weird place all right,” Campbell explains, “but it was also very beautiful, especially toward sunset and sunrise. There were always some dark things going on at the time. People would see and feel things and tell me about spirits. John [LeMay] was the main man that lived there and was constantly there day and night. I told John quite a lot of things at the time, and he asked many questions, and we got to know each other there.

“I told him that you will have learned how not to be afraid of things like that once you realize it’s all a work of God, really,” Campbell says. “There is visible and the invisible in everything. One must learn to read them to deal with them, not to run from them and be afraid.”

“Bit by bit, for whatever reason, we seemed to work out a truce,” LeMay says. “It worked out pretty good, because once they sort of took me in as part of their own family—I don’t know what else you would call it—they started looking after me, which was real useful.

“Leon had built this guest house by the lake for all of the artists, who would check in their stuff there and set up. If the spirits didn’t like them, the people would be screaming out of there in their cars. These spirits terrorized them,” LeMay says. “Sometimes you could walk in that house and it would be freezing cold, just like a bad Hollywood movie. You would literally hear groans and things rattling, and the doors and cupboards would all be slamming.”

“I stayed at Paradise Studios by the lake for about a week,” remembers Wayne Perkins, Russell’s lead guitarist at the time, “and it felt pretty weird. There were noises, like

bumping and knocking, and you could walk through cold spots and get goosebumps like you were tripping on acid. The spirits I got there seemed to be pissed off old Indian spirits from the Trail of Tears that wanted us out of there, and they just made themselves known to certain people. There was a sense of an invasion of privacy, when you are around spirits like that. The thing about that place is that it was wrong for that studio to be built there. It was a sacred territory."

"Towards the end, some of us would actually see the spirits as American Indians, walking across the room," LeMay says. "It was usually when we were doing something like gospel records or something that was high in intensity. They looked like a translucent transparency superimposed on the scene."

According to LeMay, the vibe was great "about 80 percent of the time. If the spirits liked you, then you'd have a great time and probably make the best record of your life. Magic would happen, because of it being up there on top of that hill. The place would crackle with electricity, unlike any other place I've worked in since. I was a staff mixer at Capitol and a lot of other places after that, and nothing ever had the magic that that place had when things were right. Nothing was worse when it was wrong. It was very interesting."

315 BEALE, MEMPHIS, TENN.

For many decades, Memphis' Beale Street was one of the social and spiritual centers of African-American culture. By the '60s, urban decay, riots and so-called urban renewal placed Beale at death's door, with blocks of vacant buildings. In time, many of those buildings were condemned, a place called Pee Wee's Saloon among them. This was the place where W.C. Handy wrote his best-known blues compositions, and famous black orchestras like Jimmie Lunceford and Lionel Hampton graced its stage.

In order to make way for the rebuilding of Beale, the city leaders of Memphis had to figure out how to clear out the old structures. In the case of Pee Wee's, they literally bulldozed the building into its basement and covered it up. Therein lie the roots of the 315 Beale story.

Since the studio's inception in the

mid-'80s, artists such as ZZ Top, Billy Lee Riley, God Street Wine, the Mother Station, Screaming Cheetah Wheelies, and black gospel stars like Jennifer Holiday, Yolanda Adams and O'Landa Draper & The Associates have worked there. There have been many stories of apparitions, shadows, voices, cold spots and other racket, but anyone who has recorded there will swear the place has a powerful vibe for creativity.

"They tore down Pee Wee's and literally pushed the whole building into the basement and sealed it like the Tombs of Egypt. It's no damn wonder you can feel things there. It's like being on top of a battery," laughs legendary producer/sideman



Jim Dickinson, whose credits include Ry Cooder, Big Star, the Rolling Stones, The Replacements and G Love & Special Sauce.

Recording engineer/producer Malcolm Springer probably knows more first-hand about 315's ghosts than anyone. "315 Beale is absolutely haunted. I'm dead serious," says Springer. "I rewired that place, put in the SSL console, and put a lot of heart and soul in there. I spent more time there than anybody ever had. At one time, I was sleeping there a lot. I've seen ghosts there twice, and both times, it was close to the same spot. I had never seen a ghost in my life until I got there.

"One night, I was headed to where the bathrooms are, and as soon as I got to the doorway, I glanced at a picture on the wall and saw a reflection of somebody standing at the top of the stairs. I turned around and looked directly at it. It was a young lady, and she was wearing a long white dress that looked like something from the Civil War period. It was like there was a

shadow over her face, so I couldn't make out her face real well. I had enough time to sit there and look at her for a while. I looked away for a second and looked back, and she was gone. We were the only thing in the building. I wasn't scared of it hurting me, but I left pretty quickly.

"There was this band that I was working with called Tom & Jeremy," Springer continues. "They came down to practice one night, and I was telling them, 'Hey man, this place is spooky.' They were laughing and telling me that I was full of shit. Well Tom, the guitar player, left, so Jeremy, the drummer, and I were alone in the actual studio tracking room.

"I was opening the double doors from the tracking space that go to the stairwell where I saw the first ghost. As I was opening that door I turned around, and across the front of the control room, towards the rear stairwell, I saw this dark apparition slowly moving across the floor. I'm talking real slow.

"I turned around to Jeremy, and he saw it too. He looked at me with this funny expression on his face, hollered as loud as he could, and literally knocked me down running out of the studio. That is the only time anybody ever saw the ghost with me," Springer says.

"About the time Malcolm started to push on the door," Jeremy Silman adds, "the whole room just went completely still. It was like somebody had dropped a huge black sheet over every inch of it. It was completely dead. We saw this black shadow that moved slowly across the floor in front of the control room glass. Every hair on my body just stood up immediately.

"Once I got over the freakiness of it, it was a really cool, warm vibe there," Silman says. "I love that studio, and I've had so many incredible things happen there. It's drawing me there now, and I eventually plan on doing an album there."

During the debut album sessions for Atlantic/EastWest group the Mother Station, Springer and a group of ten people caught 315 in fine form one night. "We were punching in some drum parts," Springer recounts, "and during a quiet part of the song, this voice came through the speakers shouting, 'Hey! You!' real loud. I stopped the tape machine, after I got

—CONTINUED ON PAGE 354

STUDER: THE BEST INVESTMENT IN YOUR STUDIO'S FUTURE.

IT'S DECISION TIME in studios around the world. The question: what's the best multitrack platform to suit your needs today, take you reliably into the future, *and* protect your investment? There are many choices... but in many applications, there's simply no substitute for multitrack tape.

Tape works — artistically and financially. It's the most cost-effective medium for multitrack music production, and it's easy to work with. Tape isn't going to become obsolete, and neither is your tape machine — analog or digital.

Good reason, then, to come to Studer. We've been making tape machines from the very beginning, and whether you need analog or digital multitrack — or both — we have the highest-return solution.

The new Studer D827 24/48-track DASH recorder (right) sets new standards in digital audio recording — just as its



partner, the A827 (left), offers new levels of quality for analog recording. The Studer D827 digital multitrack offers full field upgradability from 24 to 48-track. With 18-bit converter technology and advanced noise-shaping techniques for the very highest audio quality — in the Studer tradition. There's a unique 24-bit Studer-format recording option — while retaining full compatibility with existing DASH machines. Both analog and digital 827-series machines are always on cue when you need them, thanks to a fast, responsive transport and built-in locator. Enhanced servo control and dynamic tape-handling ensure your masters get the respect they deserve.

With the extended leasing options now available, Studer multitrack recorders are surprisingly affordable. Analog or digital, the Studer 827 series offers the ultimate in sound quality — and the ultimate return on your investment.

Hear Today — Here Tomorrow.

STUDER
PROFESSIONAL AUDIO EQUIPMENT

H A Harman International Company

Los Angeles: 818/703-1100. Nashville: 615/391-3399. New York: 212/626-6734. Toronto: 416/510-1347.
London: +44 (0) 81 953 3533. Worldwide Distribution: Studer, Regensdorf, Switzerland +41 (0) 1 870 75 11.

World Radio History



THE World "LIVE" CELEBRATION Liberty Concert

OF UNITED NATIONS' ANNIVERSARY



by Paul Tingen

When is live really live? And how best to synchronize the largest array of special effects ever witnessed, while contending with a multi-artist rock music show being televised live to dozens of countries around the world?

These were just two of the many questions posed by the World Liberty Concert, which was presented on May 8 this year in Arnhem, The Netherlands. The concert was one of the more unusual events staged to celebrate the 50th anniversary of the defeat of Nazism. It was also, perhaps, the most controversial, generating admiration, astonishment and furor in equal measure. The furor was caused by the fact that television viewers and attentive members of the audience noticed that much of the music for the show was mimed to backing tapes. With a 100-musician symphony orchestra onstage, plus a variety of top solo artists and rock bands on hand, this reliance on prerecorded

material struck many as peculiar. Moreover, since 70,000 spectators had forked out around \$50 each for the privilege of witnessing the event in person, some considered it an outrage. After the show, there were a lot of angry voices crying 'foul' and demanding clarification. There was even a post-concert riot, extensively covered in Dutch newspapers and magazines. This is unfortunate because, by most standards, the World Liberty Concert was a spectacular success, and the occasion for many technical "firsts."

MORE THAN A MILE OF EFFECTS

In terms of scale alone, the show was ground-breaking. In format, the World Liberty Concert most resembled "Live Aid," but with the addition of spectacular effects that ranged far beyond the music stage, and with a backdrop that spanned the adjacent Rhine, the Arnhem skyline and the famous John Frost bridge, known to World War II historians and movie-goers as "A Bridge Too Far." Appearing on a specially constructed 200-foot by 100-foot stage on the riverbank were Cindy Lauper, Art Garfunkel, Alan Parsons, Joe Cocker, Wet Wet Wet, UB40, the Metropole Orkest, a large choir, and Dutch artists Candy Dulfer and René Frogers. They performed a selection of hits, as well as some tracks especially written for the occasion by musical director Alan Parsons. The music was framed by live narration by Walter Cronkite, whose image was projected on two huge screens on either side of the stage.



PHOTOS: TILA MARISE VAN GELEIN VITRINGA



Cronkite told the harrowing story of the battle for the John Frost bridge and also spoke of the post-war founding of the United Nations, and its ideals of liberty, peace and prosperity for all. Cronkite's comments and the music were complemented by a flood of special effects, including flyovers by 1940s airplanes, explosions, and appearances by helicopters, inflatable ships and parachutists. Dutch army soldiers dressed in white and black carried out a symbolic re-enactment of the war and staged a mock gunfight featuring tanks and armored personnel-carriers on the bridge. Visual effects included fireworks, a light show, a laser show emanating from three purpose-built 150-foot towers, 100-foot water fountains, onstage choreography and a flag-waving freedom parade.

NAUGHTY

The World Liberty Concert was a technical and organizational tour de force and involved thousands of people. Technical coordination was done by The Production Factory, which in turn contracted Stageco (recently responsible for the European leg of the

Rolling Stones tour) to build the stage. Ampco provided the 150,000-watt Martin F2 P.A., which was set up in a long-throw configuration and included Crest 7001 amplification, two Midas XL3 FOH mixing desks and two Ramsa WRS840 desks for onstage monitor mixing. Flashlight supplied lighting equipment for the enormous effects stage, the bridge and the riverbank. Laser Promotions supplied three 7kW Xenon bright-lights, which were brought over from Xenotec in Hollywood, and three 45-watt Argon lasers.

The original concept for the World Liberty Concert was developed by Arno Geul, the driving force behind the Dutch company responsible for the venture, K&B Events and Television. Artistic direction for the event was divided among three people: show director René van de Water, who oversaw the special effects; TV director Egbert van Hees; and musical director Alan Parsons. It was Geul who was responsible for involving Parsons, who enjoys great popularity as a solo artist on the European continent. Geul clearly reckoned that Parsons' track record as an

engineer and producer—on his own records, as well as with artists like The Beatles, Pink Floyd and Al Stewart—combined with his experience working with large orchestras (Parsons recorded and produced *The Symphonic Music of Yes* in 1994, for example), would make him the ideal man for the job.

A few weeks after the concert, and far away from the slowly receding Dutch debate over the "live or not live" question, Alan Parsons sat in his Sussex Parsonics studio and gave a detailed description of what went on behind the scenes.

"The only thing that was entirely live during the concert was Cyndi Lauper's 'True Colors,'" said Parsons. "Everything else was on tape, apart from all the lead vocals, sections of the backing vocals and Candy Dulfer's saxophone. The only exception to this was UB40, who [mimed] their two contributions to tapes taken from their CDs. The big giveaway in their case was the fact that both tracks faded out. What they did was probably a bit naughty, and we tried hard to get them to at least sing live, but they refused, say-



- *Platinum East* ▶ SSL 4064 E/G, Studer A-800's & mondo onboard!
- *Platinum West* ▶ NEVE 8128 (56 in) w/ Flying Faders
- *Platinum MIDI* ▶ Harrison 4032, A-827 iso booth & mucho MIDI. (Mitsubishi X-850 available)

an oasis of art & technology

P
L
A
T
I
N
U
M

Recording Studios
676 Broadway
New York 10012
212.473.9497

Michael Jackson, Deee-Lite, Vanessa Williams, C&C Music Factory, Public Enemy, Robert Palmer, Chaka Khan, Rosanne Cash, Miles Davis, YES, Bootsy Collins, Yossou N'Dour, Madonna, B-52's, David Byrne, Ramones, Burning Spear

USE READER SERVICE CARD FOR MORE INFO

ing that since it was a TV show, they were going to mime."

The remainder of the music portion of the concert was presented as follows: Having decided that getting the musicians to play to a click track was too risky for such a complex live TV broadcast, Parsons opted to pre-record all the music tracks "live" in the studio and play those recordings as backing tapes during the concert. Parsons made the recordings, which included backing tracks for Joe Cocker, Art Garfunkel and Candy Dulfer, with his own band and the Metropole Orkest.

Cindy Lauper provided her own backing track, recorded specifically for the concert, for her hit "Time After Time." Wet Wet Wet mimed two of their songs to backing tapes they had made previously for general TV broadcast purposes. These recordings were identical to the album versions, minus the lead vocal, which they performed live. Because Wet Wet Wet were a last-minute replacement for Simple Minds, who had withdrawn from the event only a couple of weeks before, lack of preparation time precluded the re-recording of the backing tracks in the style of the rest of the show.

NIGHTMARE

All of the other backing tracks were recorded and mixed by Parsons to resemble a true, outdoor live-concert sound. He did an amazingly good job, and explained why and how he fooled scores of people in the audience (who didn't see any of the close-ups that were broadcast to the international TV audience).

"The most obvious reason we chose to prerecord the concert was that with a live TV broadcast and scores of special effects going on, we could not afford to have any timing problems or delays with the music," said Parsons. "The second reason was that the orchestral and choral arrangements were an integral part of the music, and, frankly, an orchestra and a live rock band together on one live stage are an absolute nightmare. I've never heard a rock band with live orchestra sound good. A rock band is simply too loud onstage, and when orchestra players can't hear themselves, they stop playing. In working with prerecorded backing tapes, everything sounded much better. You could hear the quietest flute, and the orchestra and band were in balance."

Synching Music, Airplanes, Parachutists And Pyrotechnics to Picture

One of the biggest technical challenges for organizers of the World Liberty Concert was synchronizing the array of effects with the music. Fundamental to the process was the timing of the individual music selections, which were prerecorded and played back from a DA-88. The DA-

88's timecode track was striped with 25-frame-per-second (EBU) timecode, which became the key time code for the whole event.

The problem was how to lock all effects securely to the key timecode. In more normal circumstances, this is usually done manually, with some people reading cue sheets, others reading timecode, and lots of communication by intercom, walkie talkie, or mobile phone. K&B had the foresight to realize that, with an event as complex as the WLC, this reliance on human communication could be problematic, so they invited the Dutch company Wow! Control Technology to build a computer-centered system to make operations easier and more reliable. The result was a piece of software called SmartCue that runs on an Apple computer platform and that links to the central timecode of the DA-88. SmartCue provided different special effects cue lists that were tailor-made for the people cueing and/or executing them, and supplied a ten second count-in for each cue.

Wow! also built a rack system that was connected to the serial interface of the DA-88, using RS-422. Designer Joshua Newar elaborates: "The rack system enabled us to read Tascam timecode, which we converted to a 10ms code, because it's easier to calculate with, and more precise than the 40 ms of the 25-frames-per-



second system. The system also made it possible for us to stop and start the machine from the control center, where the server computer, a Wordbook 9150, was located, and which was connected with a fiberglass link to the Tascams in the NOB mobile. The server computer contained all cues, and supplied the relevant cues, with timecode, to all slave computers."

In total, there were 25 slave computers, mostly PowerMac 6100 models, linked to the server via Ethernet, and located at strategic positions around the site, from which the cues were read and passed on to the people who executed them. Newar explained that they chose not to make any hard links, because "people have to get used to a new system like this. You shouldn't make too big a step at once. We might link things like the fireworks directly to the computer next time, but this time everything still happened by hand. For example, someone with a walkie talkie had a SmartCue computer and waited for the cue for the airplanes to fly [in the direction of the] stage, or for the parachutists to jump. A ten-second count-in appears on-screen, and at the right moment he or she received the cue and passed the relevant instructions to the traffic control tower, or to the people in the airplane." ■

Parsons recorded most of the rock backing tracks for the World Liberty Concert in the Parsonics studio, with his regular live band. The sumptuous and highly convincing “live concert” sound of the recordings was achieved as follows: First, the basic tracks—bass, drums, guitar, keyboards—were recorded live in one pass, and in the case of eight or nine of the eleven tracks, without using a click track or metronome.

“We avoided using clicks if we could,” explained Parsons. “What was important for the special effects team was that the exact length of each song remained exactly the same, not whether the tempo was 100 percent stable. Thankfully, the action was staged to match the music, rather than the other way around. So, I had a relatively free hand in putting the whole music program together.”

The second important factor in achieving a live concert sound was the “subtle use of digital reverb. I had to find a program that sounded like the spread you get on a big stage. I think I ended up using a REV7 program with 0.8s reverb time and a short predelay.” Third, Parsons kept overdubs to a minimum and wasn’t too precious about mistakes.

“In general, we didn’t labor about things too long and didn’t bother fixing ragged edges here and there as long as things were basically acceptable. We didn’t worry about togetherness on last chords, for example, which gives it more of a live feel.” And finally, the 70-track mix for the whole two-hour concert was done in a phenomenal two days, at the Metropole Orkest’s NOB Studios in Hilversum, which, Parsons says, “probably added to the live feel.”

Parsons arrived at this monumental amount of 70 tracks by filling 32 tracks at Parsonics, and recording orchestra and choir on another 40 tracks. The recordings at Parsonics were made on four Tascam DA-88 machines. Parsons then made an 8-track submix of the 32-track recordings and took these tapes, plus his Tascams, to the NOB studios in Hilversum, where he recorded the orchestra and choir, plus Candy Dulfer’s and René Froger’s contributions.

“The 8-track mix was purely for purposes of foldback for the orchestra recordings,” explains Parsons. “It meant that I didn’t have 32 different things to send out to them. I transferred the 8-track mix to the first eight

tracks of a 48-track digital Studer, striping the tape twice with each song so that we could do two successive takes with the orchestra, and recorded orchestra and chorus on the remaining 40 tracks. For the final mix, I reconstituted my original 32-track Parsonics backing tracks, and synched up the Tascams with the Studer.”

LIVE IS AN ILLUSION

The final mixdown was onto a fifth DA-88. Parsons mixed two versions of every track, one less anything that was going to be added on the night, and one with lead vocals and Candy Dulfer’s saxophone.

“The latter we called the rehearsal tape, and it sounded like the finished product. We used sections of it during the dress-rehearsal the day before, and it was also there as a backup in case anything [went] wrong during the concert itself,” said Parsons.

Parsons then used Pro Tools to assemble all of the tracks, which now included Lauper’s DA-88 version of “Time After Time” supplied to Parsons’s specification, and the backing tapes for Wet Wet Wet and UB40.

“We put everything in sequence and created specific gaps for applause, for getting the artists off- and onstage, for Cronkite to speak, and so on,” said Parsons. “The whole show was put together in Pro Tools, for which we had six Gigabytes of memory on two drives, and was timed to the second, so that we simply could roll the tape from beginning to end. The Pro Tools version became the bible of the show, the timing anchor from which the whole show was run.”

The final Pro Tools version featured the two different stereo mixes of each song, with clicks and counts for miming purposes on a separate track. It was transferred to the two DA-88 8-tracks designated to drive the whole show from the on-site NOB mobile.

“One DA-88 was for backup. They ran independently alongside each other, simply by pressing the play button of each at the same time,” said Parsons. On the day, the Tascam performed perfectly, and the backup wasn’t needed. Halfway through the concert, the show ran for two minutes without the all-important backing tape when Lauper performed her “True Colors” live, which gave the crew the opportunity to change the DA-88 tapes.

The live mix for television was rel-

atively simple. Only a handful of stage mics, plus the audience mics, were patched through to the NOB mobile, where they were recorded onto a digital Studer 48-track. From there, stereo mixes were fed to the television mobile, where the live sounds of the effects—gunshots, explosions, helicopters, water cannons—were added.

The end result of all these efforts was a flawless and spectacular show, with the aural sleight-of-hand barely noticeable to most of the live audience (with the possible exception of UB40’s contribution). It seems reasonable to assume that the largely satisfied audience would probably never have found out they had been duped if the concert hadn’t been televised, and if UB40 hadn’t mimed so blatantly. The question as to whether Parsons’ and K&B’s approach was justifiable is one that Parsons has obviously given plenty of thought.

“Of course I expected criticism, because we, strictly speaking, didn’t play the game,” he explains. “But the whole business of playing live is creating an illusion of something that isn’t necessarily happening—and you don’t criticize a magician for using mirrors. Whether you succeed in creating the illusion is all that matters. And as long as you have some live mics, as long as there is someone actually communicating with the audience—and with the live vocals there almost always was—the concert is, to all intents and purposes, live.”

One might argue that if an event is billed as a concert, as the World Liberty Concert was, it should be a concert. If backing tapes or sequencers are used extensively, then perhaps the audience should be informed and the concert billed as a “show” or an “event.” Today, when sampling on records, special effects in movies, and virtual reality applications increasingly blur the line between fact and fiction, perhaps the time is not far off when concert promoters will be required to publish a list of ingredients.

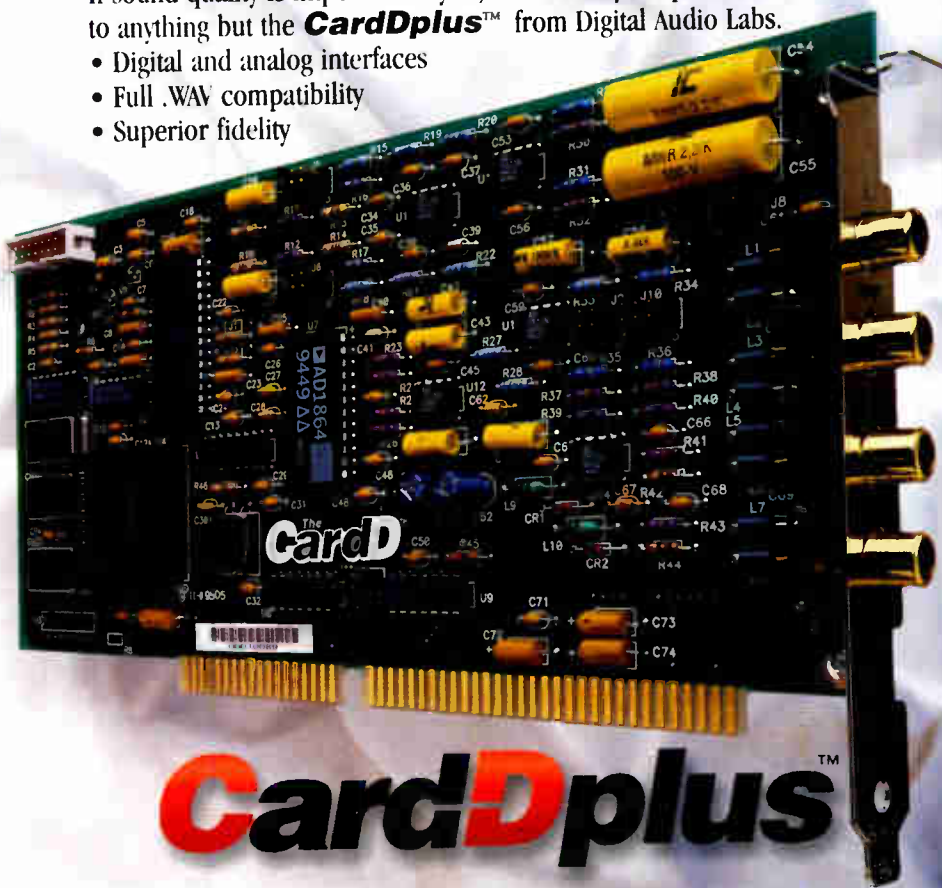
Alan Parsons, for one, is unrepentant. “I think that the results speak for themselves,” he asserts. “If you get better results by doing it a certain way, then that’s okay, especially if it doesn’t make any difference to the audience perception of what was going on.” ■

Paul Tingen is a writer and musician based in England.

WARNING: This is NOT a TOY!

If sound quality is important to you, don't trust your production to anything but the **CardDplus™** from Digital Audio Labs.

- Digital and analog interfaces
- Full .WAV compatibility
- Superior fidelity



CardDplus™



I/O CardD™ Companion to the CardDplus™ offers direct digital transfer to and from your DAT.



Digital Only CardD™ Stand-alone card for direct digital transfer to and from your DAT.

The professional's choice for digital audio on the PC.

Digital AUDIO LABS

Call today for your nearest authorized reseller.

Trademarks are the property of their respective owners.

USE READER SERVICE CARD FOR MORE INFO
World Radio History

"The Digital Only Card gives me back exactly what I put into it, clean, quiet audio."

Tom Jung
DMP Records

"Professional features and excellent audio quality... an excellent companion to Software Audio Workshop™."

Bob Lentini
Innovative Quality Software

"Great analog sound and perfect digital transfers. This is the one!"

Tom Bates
Grammy-winning Engineer

"Exceptional... the sonic quality is superb, rivaling digital equipment many times the price."

Dominic Hawken
Audio Media Magazine

"The digital quality is unsurpassed. We've produced three platinum albums on the CardD in the last year alone... tremendous bang for the buck."

Dave Morse
Record Way, Los Angeles

"Five out of five for sound quality!"

Dave Miles Huber
Electronic Musician

"We recommend the CardDplus to all our Sound Forge™ users."

Monty Schmidt
Sonic Foundry

"Easy to use, yet powerful. Totally transparent. Dollar for dollar, the best system available."

Bruce Schirmer
KGO Radio, San Francisco

"Unbelievable... this is one piece of gear you should hear for yourself."

Tom Schizzano
Home & Studio Recording

612/473-7626

by Dan Daley



Control room of
Studio I and II,
Wisseloord Studios

DUTCH TREAT

POST IN THE LOW COUNTRIES

It's not a place we think about often in the grand scheme of post-production; it's more likely to conjure up images of windmills, wooden shoes and dikes than of Scenarias and synchronizers. But Holland, like many countries, has its own audio post industry—a substantial one, with more than 100 professional A/V, television, commercial and film producers, along with 27 post facilities listed in one national guide. And thanks to the Mc-

Donald's-ization of the world in general due to universally available technology, its experience is remarkably similar to that found in the States.

There are a few differences, however, which reflect the U.S./UK leadership in technology, and that should also make us thank our lucky stars that we don't have to read our computer screen menus in Flemish. That's sort of what film and video project manager Ron Haansschoten and his cohorts at NOB (Nederlands Omroep-productie Bedrijf n.v.), the sprawling, former state-owned production and post facility in the Amsterdam suburb of Hilversum, have to do each time they work on their SSL Scenaria or Avid AudioVision (linked to eight Avid video editing systems) workstations. That's right, the menus are in English, which is the equivalent of us trying to cut and paste in German.

"It sometimes takes awhile to get through the manuals," says Haansschoten, with the kind of lightheartedness that comes from living in a multilingual society. NOB is in a transi-

—CONTINUED ON PAGE 227



At NOB, Tergan Ailers at the Scenaria



Left and below:
the refurbished
CTS Studio 2

FACILITY SPOTLIGHT

CTS Studios' Eight-Year Facelift

by Barbara Schultz

For 25 years, the four-room CTS Studios in Wembley, England, has hosted some of the most important film-scoring and album-recording sessions worldwide. (Scoring for films such as *Gbandi*, *Passage to India*, *Henry V*, *Four Weddings and a Funeral* and *Judge Dredd* are only the tip of the proverbial iceberg.) It has also seen a number of different owners. Today, CTS is owned and run by veteran recording engineer Adrian Kerridge, who has worked in the industry for more than 40 years, and composer Johnny Pierson. The pair, who also co-own Lansdowne Studios, have quietly been giving the old rooms a substantial facelift since purchasing the facility in 1987, and this past June, they celebrated the re-opening of Studio 2, which now has a Neve Capricorn digital console with dynamic automation, Dolby Surround capability and ATC custom ICRS monitoring.

"If a place has been established a long time," explains Kerridge, "it can get a bit run down. CTS had a long reputation,

particularly in the States, and a lot of West Coast composers—Henry Mancini, for example—had been working regularly in CTS, but it had lost some of that work. People begin to see it as a thing of the past. When we bought CTS, it needed a fresh approach, fresh injections of money. We needed to make a lot of upgrades, and the total spend has just exceeded \$2 million."

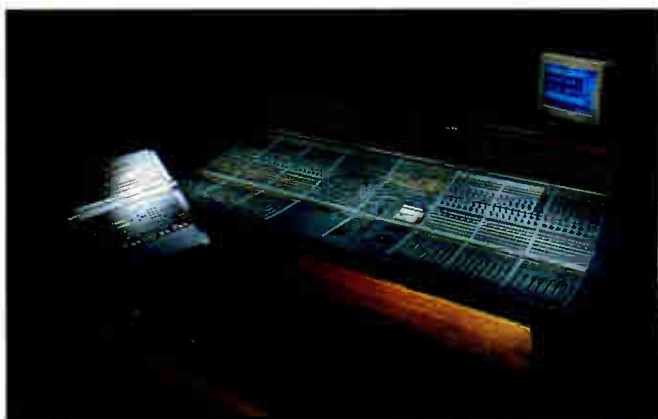
The overall renovations were accomplished in two phases, with design by London's Recording Architecture. First came the natural-acoustic Studio 1, which is large enough for up to 130 musicians. "When we bought CTS, Studio 1

still had the first digital recording console in the world, the DSP from Neve," says Kerridge. "It was not, in my view, a good place for the world's first digital recording console. So that came out, and we put a regular Neve console in and subsequently replaced it with a VRP a few years ago." Studio 1 also received acoustical upgrades and Dolby Surround capability, and new ATC monitors and amplifiers were installed.

Also during the first phase, Studio 3 got a new console—a DDA AMR24 44-channel with Optifile automation—and Studio 2's control room was upgraded acoustically. The second phase saw a complete

aesthetic and acoustical redesign of Studio 2's recording area and control room, including the installation of the Capricorn, which Kerridge describes as a "very powerful creative tool. I was working with a lot of pop artists in the '60s and '70s—people like the Dave Clark Five, the Spencer Davis Group, Uriah Heep—and I thought, 'Well, wouldn't it

—CONTINUED ON PAGE 230



Oceania Audio

Auckland, New Zealand

by Mark Frink

I recently traveled Down Under with Tony Bennett. I won't attempt to go into the politics of production in Australia, but the investment of several phone calls before going there is recommended. We had the pleasure of using Oceania Audio while in Auckland, New Zealand, and I can comfortably recommend not only the company but the amplifiers that it manufactures.

Oceania was inadvertently founded in 1975 when owner Greg Peacocke was involved in film projects and working on a job in Los Angeles. Being an avid hi-fi nut, he purchased four V-43 full-range boxes from Cerwin Vega (at a time when that manufacturer was making a name for itself by supplying speakers to enhance the soundtrack of a popular disaster film) for use in his home stereo setup. Eighteen-inch bass speakers were a bit uncommon in '75, but so were noise-control officers.

Some time later, he was approached to hire them out for a concert by a band called Schtung. Lead singer Paul Jeffery was working on a degree in electrical engineering, as well as working as an industrial electrical engineer, when he wasn't playing keyboards and singing. Shortly thereafter Peacocke went into the sound-hire business full-time, renting a small building and inviting Jeffery to move his sound equipment repair and fabrication efforts from his home to the new location. The business expanded slowly, until in 1980, a massive loan was raised to buy a large system. Oceania was one of the first Crest international customers, purchasing P-3500s, most of which are still in service.

In 1990, Oceania bought its first Turbosound TMS-3 speaker system. The company now has 64 boxes, and Robert Scovill called it "the

world's best-sounding TMS-3 rig." The system was combined with JANDS of Australia's 64 boxes for three Dire Straits and three AC/DC shows in 1991. Recent clients have included Sheryl Crow, Garth Brooks, Pearl Jam, Bryan Adams, Gun N' Roses and R.E.M. Cliff Richard liked their system so much that he brought the Oceania rig over to Australia. Peacocke, currently the company's managing director, is



Greg Peacocke of Oceania Audio of Auckland, New Zealand

quick to suggest that, with the seasons reversed in the southern hemisphere (their winter is North America's summer), he would be glad to ship his new Flashlight/Floodlight system by container.

Providing the sound system for a 1982 production of *Evita* was the company's first venture into theatrical production. Oceania went on to do *My Fair Lady*, *Grease*, *The Buddy Holly Story* and *Phantom of the Opera*, to mention but a few. Recent theater tours have included *The New Rocky Horror Show* and *Les Misérables*, with *Cats* out currently and

Phantom going to Australia this spring. The main console has been a Soundcraft Europa with Outboard Electronics VCA moving fader automation and a 16-output automated matrix with moving faders. Other inventory includes Yamaha PM-4000, PM-3000 and M-2000 40-channel consoles, along with Soundcraft 800 and 200B 32-channel boards.

Four years ago, after being in business for a dozen years and with maintenance experience on items ranging from pro audio to high-power industrial electronics, Oceania began building its own amps, for both technical and financial reasons. The company's amplifier inventory had comprised American name brands and, although reasonably reliable, replacement costs were high, due to the weak exchange rate of the New Zealand dollar and a 30% to 40% import duty placed on foreign-manufactured goods.

It was decided to design the amp racks as an entire system, with a common power supply unit (PSU) and modules with enough power and channels to run eight TMS-3 speakers. This number of speakers would require six traditional stereo amps. Their design allows Oceania to almost double the power-to-weight ratio over the conventional approach. Each of the four vertical modules is a tri-amplifier, powering two TMS-3 speakers. Using 60-volt supply rails, the output power for the low band is 2,700 watts RMS into 2 ohms, 1,500 into 4 ohms on the mids and 800 into 8 ohms for the highs. Oceania claims to have achieved an amplifier propagation delay of 250 nanoseconds and a slew rate of 120 volts per microsecond in this early design.

By designing the rack as a system, rather than simply stacking stereo amplifiers, which must have

Introducing the new **HOT HOUSE HIGH OUTPUT SERIES MONITORS** and **HIGH IMPACT SUBWOOFER**

Unlike anything that's ever been offered for control room applications before, the new dual-concentric point-source technology not only provides sound pressure levels previously unobtainable in primary studio monitors, but also advances the state of the art by full levels of magnitude in phase linearity, distortion and power handling. The heart of the system is the extraordinarily high powered 2" throat **SUPER-DUAL**. With a 1200 watt compression driver, a 1400 watt cone midrange, and unencumbered by low frequency information, it achieves unequalled transient capability while maintaining the transparency necessary to resolve subtle details at lower operating levels. The full-range **SD312**'s three high speed long-throw 12" woofers, engineered for extreme excursion and durability, provide exceptionally fast and tight bottom end down to 25 hertz with an input of up to 3800 watts. To address the needs of very large control rooms or any application requiring even higher SPL and low frequency content, the **SB412 High Impact Subwoofer** is offered to augment the **SD312** (or any large format monitor). Identical in size to the **312** but with four of the 12" woofers and a peak power handling capability of 5000 watts, its addition pushes the system's peak SPL potential to nearly 150 decibels. Available bi, tri and quad amplified, packages are provided with a full complement of up to 20 kilowatts of **HOT HOUSE** high current audiophile amplification, custom **HOT HOUSE SDX** electronic crossovers, **TEFLON KIMBER KABLE** wiring harnesses and full isolation mount system.

The High Output Series cabinets are standard retrofit dimensions, but are also available in several custom configurations to meet difficult or unique installation applications.



See us at AES Booth #818

TEL 914-691-6077 • FAX 914-691-6822
275 Martin Avenue Highland N.Y. 12528



YOU'VE NEVER FELT ANYTHING LIKE THIS IN A CONTROL ROOM BEFORE



WHITNEY HOUSTON'S PRIVATE STUDIO



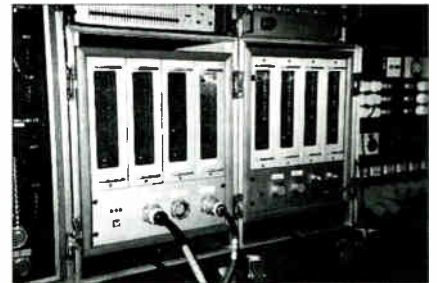
**RUSS
BERGER
DESIGN
GROUP
INC**

4006
BELTLINE
SUITE 160
DALLAS
TEXAS
75244
214/661-5222
FAX
214/934-3935

- RECORDING AND BROADCAST FACILITY DESIGN AND PLANNING
- ARCHITECTURE/INTERIORS FOR ACOUSTICAL SPACES
- NOISE AND VIBRATION CONTROL
- ROOM ACOUSTICS AND SOUND ISOLATION

USE READER SERVICE CARD FOR MORE INFO

a rack fabricated for them, it also provides built-in customized power and multipinned input and output connections. These AC, speaker and input connections must be provided for in conventional rack designs and need to be paid for within the budget for fabricating a rack, along with the cost of the amps and rack itself. In a conventional design, the connections provided by the manufacturer on stereo amps become redundant, adding weight, expense and additional points of interconnection.



Oceania Audio amp racks

The PSU is a three-phase design and employs a technique called "reverse slope regulation" to control the primaries of the power transformers. The three PSU transformer primaries are each controlled by large 90-amp back-to-back thyristors, doubling the frequency of the incoming AC mains and reducing the transformer core size. The circuitry that controls the thyristors senses the DC output voltage to control the reverse-slope regulator.

A soft-start turn-on ramp is engaged when power to the amp is switched or when all three phases of the AC connection are interrupted. After the Tony Bennett soundcheck, with the system turned on (to my horror), Peacocke demonstrated this by quickly unplugging and plugging in the AC connection at the power distro several times, commenting, "Try that with your average amp rack." The PSU can be connected to only a single phase of AC and still function, with only a slightly reduced regulation capacity. Peacocke calmly reached over to the distro and clicked off two of the three breakers for that rack and invited me to run the show that way.

Forced-air cooling fans feed air from under the PSU, up into the amplifier modules and out the top. The fans are speed-controlled by a tem-

We're in the Middle of a Warming Trend

Turns out that digital recording, with all its advantages, produces sounds that are cold and brittle. Nothing warms up digital like the GT Audio tube microphones and signal processors. Our sleek, hand-made stainless steel microphones, the MD1, MD2 and MD3 deliver world class tube tone for about 1/3 the price. The choice of top recording artists from Kathy Mattea to Aerosmith, our tube microphones produce that warm, round, classic sound you crave. For a price that makes it possible to own. Call or write for more information.



Groove Tubes • GT Audio
12866 Foothill Blvd., Sylmar, CA 91342
(818) 361-4500 (Fax) 365-9884

perature-sensing circuit located in the exhaust airstream above the amp modules. Protection includes DC and short-circuit on the outputs and an over-temperature circuit that opens the speaker protection relays when the heatsink reaches 180° F. Due to the high power output of these amps, a user-adjustable power integrator is included. It is factory-set to 3 dB below full output power and operates with a sustained signal of more than a ½-second duration. All protections, except short-circuit, are self-resetting.

The first revision, completed in 1993, still features a common PSU and four vertical modules but is intended for bi-amp applications. There are two removable crossover cards for each 4-channel module, and limiting and custom EQ are included, allowing one rack to power eight bi-amp mixes. The second revision, completed in late 1994, was another tri-amp system to power their new Flashlight and Floodlight loudspeaker purchase. Peacocke reports that Oceania was able to increase the speed of these new amps significantly over the originals through the use of improved bipolar devices, to provide a slew rate approaching an amazing 400 volts per microsecond in bridge mode.

Each channel on a module has its own stepped level control, a fault LED and a 12-segment LED meter. At the base of the module is a four-LED temperature indicator and a reset push-button. The amp modules and PSU are built into a wooden sleeve that is mounted in high-density foam in a flight case with removable front and wheels. The incoming 16-foot AC cable is captive and stores under the PSU in the air intake. The entire weight of the newest racks is 319 pounds, and they are 3 feet tall (on castors) by 22 inches square. Next time you're in New Zealand, check this company out. (Phone 64-9-849-3114.) ■

—FROM PAGE 220, DUTCH TREAT

tional state, technologically and otherwise. Several years ago, the Dutch government started gradually shifting its operations from public to private. The move, says Haansschoten, has been wrenching, causing the sorts of trauma that most industries undergo when transitioning to the private sector and leaving unionized insulation behind; the facility has let more than 1,500 employees go during the peri-

Which DAW Increases Production the Most?

This is what four MicroSound users have to say...

"I've been using MicroSound™ for nearly 4 years and love its quiet, pristine, squeaky clean editing and mixing capabilities. It was very easy to learn, even though I'm not a computer wizard. ***I was able to edit our first program within an hour of turning on my MicroSound Workstation.*** Thanks to MicroSound, top quality audio is heard in our broadcasts every day worldwide. Only the prices look as good as the specs."

—Bob Vermeulen,
Words of Hope



"What keeps on amazing me is the intuitiveness of the complete system... I was thrilled to find that you had anticipated a radio producer's on-the-fly needs by allowing just about all functions to be executed right from the [same] screen."

—Robert Smith, Smith Creative - International

"After years of producing programs on everything from analog 8-track to ADAT, I increased my output the very first week. But more amazing, MicroSound improved the quality of my work immeasurably. ***I achieved that elusive perfect mix the very first time I used MicroSound!*** Whether I'm producing one spot or cranking out 6 hours of programming, MicroSound has become an invaluable tool. I can't imagine how I ever did without it."

—Todd Chatman,
CCM Radio

"I used my MicroSound for the first time and mixed a spot in one hour that would have taken me a day and a half with analog multi-track. I made edits and concocted sonic layers that never would have occurred to me to try before... I love this thing!"

—J.R. Lyons, Electric Cafe

- Audio for Video • CD-Tape mastering • Radio/TV
- Multimedia Wave-AIFF-CDI • Every Audio Application

micro sound™

Isn't it time you discover the industry's best kept secret, polished for 18 years. MicroSound gives you the highest audio quality in its price range at every sample rate used worldwide. No matter what project you need to tackle, MicroSound is equipped and ready. The 56-bit DSP based MicroEditor™ software gives you the true non-linear freedom of Project-Editing™ — every sound free floating in an audio palette mixing up to 100 tracks at any point.

PC/AT486 based, DOS format drives and files allows running any software. Optional Sync-lock to Video or SMPTE even on VHS analog track

Peripherals from \$2,995 • Workstations from \$6,995.

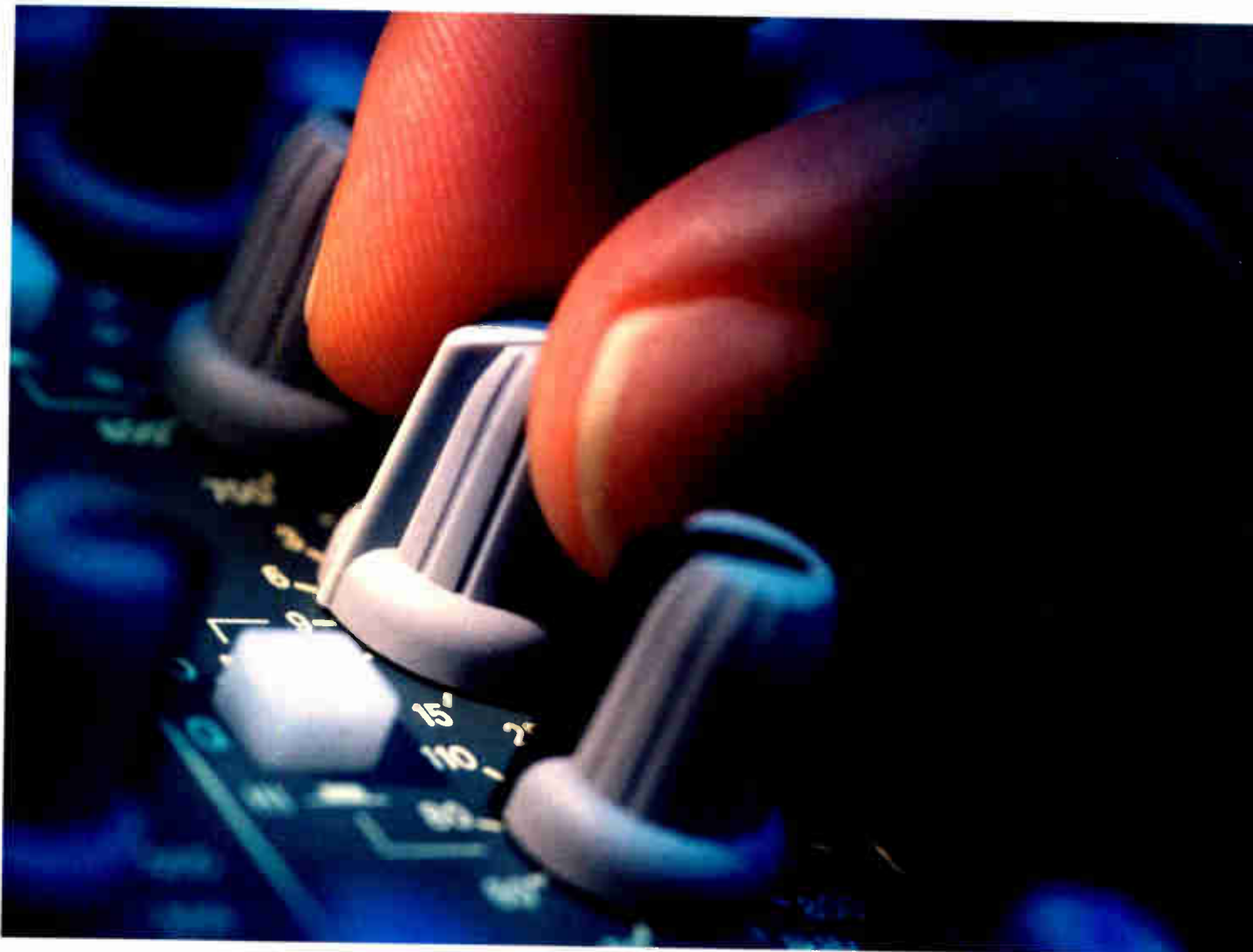
"Quality Digital Audio Workstations Since 1977"

Isn't it time to revolutionize your studio or station? Call, fax, or write now.

Micro Technology Unlimited

PO Box 21061, Raleigh, NC 27619-1061 USA
Voice: (919) 870-0344, FAX: (919) 870-7163

USE READER SERVICE CARD FOR MORE INFO



The Soundcraft DC2020 -because not all EQs are equal.



Whether working in post-production or music recording, you are judged by the sound of your finished product - however diverse and whatever the quality of the source material.

one source. Add to that moving fader automation, touchscreen driven machine control,



With outstanding new EQ design, Soundcraft's DC2020 delivers an unrivalled degree of control - invaluable when assembling audio from more than

video sync, plus on-board hard disk storage, and the argument for choosing DC2020 becomes irresistible.

Discover more about the DC2020 by calling 818 893 4351 today.



See us at AES Booth #524

HARMAN INTERNATIONAL INDUSTRIES LTD., CRANBORNE HOUSE, CRANBORNE INDUSTRIAL ESTATE, CRANBORNE RD., POTTERS BAR, HERTS. EN6 3JN, ENGLAND. TEL: +44 (0)1707 665000 FAX: +44 (0)1707 660482
SOUNDCRAFT, PO BOX 2200, 8500 BALBOA BLVD. NORTHRIDGE, CA 91329. TEL: 818 893 4351, FAX: 818-830-1220



A Harman International Company

od, and many of those remaining have taken on multiple responsibilities. But it's also allowed NOB to gear up to become more proficient, efficient and competitive in an increasingly multinational post environment.

Technologically, the Scenaria represents the apex of the facility's transition thus far, with a second one being considered for later this year. It occupies one of five suites that range from a Sonic Solutions system to a 16mm film mag studio with an aging Telefunken broadcast console. What ties them together, says Haansschoten, is that all of the suites are tielined, minimizing physical transfers of data around the huge complex. What's driving all this is more commercial work and a more diverse range of smaller post houses that can make technological transitions faster, he points out. As with its European and North American counterparts, NOB has seen budgets decline in the last two years, says Haansschoten, which puts pressure on increased efficiency.

Another change has been to allow major clients, which include Dutch television production companies, to establish satellite shops on-site at NOB, leasing equipment and space from the post house. "It's been an interesting transition," Haansschoten says over lunch in the facility's cafeteria. "We're a large place, and it's hard to handle both technological and management restructuring at the same time. But the resources here are good, and we now also have a satellite facility in Germany, and we're planning others in Poland and Portugal. As television gets more complex, so does the post business."

Wisseloord Studios, also in Hilversum and probably the Netherlands' best-known music-recording facility, has four main Tom Hidley-designed studios. The facility has hosted Def Leppard, Mick Jagger, Elton John, Metallica, Paul McCartney and other major pop artists, abetted by an infusion of capital several years ago when Dutch record label PolyGram became a majority shareholder. But studio founder and managing director Bart Sloothaak says the most recent trend is toward post-production. "It's now 80 percent music and 20 percent post," he estimates. "A year ago, it was 95 percent music, so you can see it's changing quickly." That ratio has been boosted by a recent agreement with

Disney's Buena Vista Films to do all its versioning for Holland at Wisseloord, and post is as much responsible as music for the studio's acquisition of the first SSL 9000 on the continent in April of this year.

The trend to post has not been technologically traumatic for Wisseloord, Sloothaak says. Remarkably, post work there is being carried on in a linear environment; the purchase of a hard disk-based system is being considered, but tape machines have been fine for versioning dialog on the M&E tracks that Buena Vista provides, Sloothaak asserts. Although, he adds with satisfaction, the Disney account is expected to amortize the cost of whatever random access system the studio purchases within a year's time.

Wisseloord is going after the Dutch commercial post industry, Sloothaak says. "There's enough work to go around at the moment. The smaller, cheaper rooms don't really provide the quality that major agencies are looking for." (Although it should be noted that the project studio phenomenon has affected Wisseloord as

it has other major music studios. The facility's response has been to establish pre-production rooms on its lower level for in-house work by independent producers, building symbiotic relationships to help ensure the future of music revenues. Wisseloord has also acquired ADATs and DA-88s as an interface with project studios. Again, a scenario very much like that in the States.)

Wisseloord is one of the smaller and more flexible facilities referred to by Haansschoten; Sloothaak knows it and views it as a distinct advantage in light of the fact that he knows he is going up against such large and well-equipped facilities as NOB. "That, along with our expertise in music—which is something that's important in post work—and the hard drive system we'll be getting in the near future, is what will give us an edge," Sloothaak says. "I know post is important in the future of a studio like this, because I expect the ratio of music to drop further still in coming years. After all, there are only six major record companies now doing

BITS & PIECES

Livingston Recording Studios (London) were the first in the UK to order Amek's Rembrandt console. The automated, 80-input board will be installed this month in Studio 2, which will also receive acoustical upgrades to the studio and control room and the addition of a private lounge. Recent clients at Livingston include Everything But the Girl, Maxi Priest and George Michael...**Airwaves Sound Design** in Vancouver added a 56-channel DDA QMR console with patchbay for use in a new recording suite designed for standard and Dolby Surround mixing...**Axon Studios** (Toronto, ON) purchased a DDA DCM224V console for use in soundtrack and jingle production for TV and radio...**Atlantis Studios** (Tokyo) installed a 32-patchbay Soundtracs Solitaire production console. The board was supplied by the manufacturer's exclusive Japanese distributor, MTC Japan...A Solitaire was also installed by Larking Audio in Nik

Kershaw's home studio in the English countryside...**The Corn Exchange** (Cambridge, England) installed a Soundtracs Sequel II sound reinforcement console for front-of-house mixing in the main auditorium...**Dan Lacksman**, producer of ambient dance group Deep Forest, took delivery of a Sony PCM-3348 DASH recorder for his **Synsound Studios** (Brussels), which opened for business on March 14. The facility, designed by Andy Munro, comprises two studios, a central control room overlooking the studios, and a machine room...**Ampex Media Corp.** signed an exclusive one-year agreement with the **Egyptian Radio and Television Union** (Cairo) wherein the company will provide more than \$1 million of Ampex audio and video recording tape during 1995...**Sun Studio** (Copenhagen) installed an SSL G Plus console and a ScreenSound editor. Sun Studio's recent work has included foreign-language recording and mixing for feature films such as *The Lion King* and music-recording for Iceland's Bjork. ■

about 80 percent of the releases. And maybe 40 acts between them generate most of the income for those record companies. Even as alternative music becomes more mainstream, those acts will just be replacing older, aging ones. So the future demands that we move into post."

In the center of the Dutch post mix are a number of mid-sized facilities that have traditionally had to combine music services with post-production. Artisound, in Amsterdam, has two post rooms. SSL ScreenSound systems handle a variety of post work, although voice-overs and ADR seem to take up much of the facility's bookings. Established 40 years ago, with 25 years in its present location, Artisound rounds itself out with two music studios, the larger of which has evolved into a project-type room for owner Eli Van Tijn's son Erik, who produces local Dutch recording acts, such as Mai Tai, on an SSL E Series console and a Sony 3324 digital multitrack. "It's getting to the point in Holland that you really have to fight to earn money in a music recording studio," observes Erik. "You can get an SSL room in Amsterdam with an engineer for 800 guilders [about \$550] per day. It's the same thing that's going on elsewhere in the world. We read the magazines." The elder Van Tijn, who learned post-production after a career in radio, compares that with the 450 guilders an hour he says that post grosses. "Post is definitely the story in Holland," he says. "With companies like Amstel and Heineken beer and their agencies that advertise internationally, you have a very good base of clients." (It's also very much a family business; daughter Eline is studio manager and a producer there.)

Nonetheless, Van Tijn notes, competition has become more intense for those clients. "They're not really aware of how the technology itself works, in most cases," he says. "What they're looking for is service—including extra services, such as the voice casting that we do for them, often at no additional charge." Van Tijn says he has traditionally targeted the commercial field as opposed to film and television programming. That, he says, keeps him in Amsterdam proper, closer to the agencies, a situation that many New York and Chicago studios would find familiar. Versioning for Coca-Cola spots and other foreign products is as far afield

as Artisound ranges. "But [post] is a good business for Holland," he adds. "It's healthy even though there's little room for new studios in the market. But I tell you..." he leans in and takes a long drag on an ever-present unfiltered cigarette, "It's a good thing the world likes Dutch beer." ■

—FROM PAGE 221, CTS STUDIOS

be wonderful if I could have a fully automated console.' I had this dream. We were using processed sounds then but doing sections at a time and physically cutting the tape together because there weren't enough hands to do it.

"The other beauty of the Capricorn," Kerridge continues, "is, of course, that freelance and guest engineers come in and we can preprogram for their particular setups, whether they want an in-line console or a group console, and we can give them their own configurations to take away on a disk, so when they next come in, they pop the disk in, and it gives them their basic recording configuration. If you try to reset an analog board with 72 channels, you can spend more than half an hour doing that. And we can't charge for that time."

The staff at CTS includes five full-time engineers, five assistant engineers and a three-person, 24-hour maintenance crew. "We do it properly," Kerridge says. "If I've got a 100-piece orchestra on the Studio 1 floor and a piece of equipment breaks down, it's no use if you're going to have to ring up and get the local maintenance guy to fix it. It's too late; you've lost the date by then. You have to be there, and be there all the time."

CTS engineers work cooperatively with their counterparts at Lansdowne in Holland Park, and clients can travel between the two locations to accomplish projects. "When we do work for Paramount Pictures, for example," Kerridge explains, "they often come to CTS 1 and then go back into town to Lansdowne to do the mixing. Now, they have even more choice, as they can also mix in CTS Studio 2 with the Capricorn."

CTS now also offers ISDN lines, which were used recently for an album project by Sir Cliff Richard, and mastering capabilities with the Sonic Solutions Sonic System. Kerridge hopes that all of the money and hard work that he and Pierson

have poured into renovating the facility will re-establish CTS as a cutting-edge studio. "I was talking to a Los Angeles composer a couple of weeks ago," Kerridge says. "He came down to our opening party for Studio 2, and he said, 'The last picture I did here was ten years ago. My God, the place was very tacky and run-down.' I said, 'Well, we're the new owners. This is the new room,' and he said, 'I'll come back.' He had a good time here, this composer, but the last time he was here, it was a little dowdy, and he didn't like the loos... You know, it's very important. It's attention to detail that counts. And CTS has been here so long, people tend to think it's not moved on. The message now is that CTS is still in the forefront of what it does best, and that's music recording, with a warm and friendly atmosphere. In terms of space, choice of studios and technologies, and staff expertise, it offers more than most." ■

—FROM PAGE 222, BBC REMOTE

than 500 feet from the processor rack and connected via a simple coaxial connection. Because each audio source is digitized at its source gain and other system parameters are implemented remotely, signal degradation can be dramatically reduced. A proprietary A-to-D topology was developed specifically for Axiom and offers a quoted -104.5dB CCIR-weighted noise floor. All internal mixing and signal processing within Axiom is to greater than 24-bit precision, according to the company; Axiom features user-selectable 16/20-bit recording to hard disk.

Glancy says that the BBC's Digital Sound Vehicle is expected to be available for rental to outside companies on an as-available basis. The daily rental cost of £2,000 per day (around \$3,200) includes a complement of 20 microphones—four B&K 4006s, four 4001s, eight AKG C414-ULS and four Neumann KM84s or KM140s—plus a Sony PCM-3324 DASH-format multitrack. Audio monitoring is provided on BBC-designed LS5/8 units powered by Korg amps.

One of the vehicle's first assignments will be audio production for the upcoming series of annual Promenade Concerts from the Royal Albert Hall, London, in addition to DAB productions that are scheduled to begin in England during October. ■

Why All The Smiles?

If you're one of the guys chosen to test a new microphone that has vintage eye appeal — a classically designed large diameter capsule — powered by an exclusive advanced servo head-amp which exhibits extraordinary audio performance for nearly every critical recording application — with a price as astounding as the quality . . . you just may find cause to smile!

- **Extraordinary Low Noise**
- **Extremely Wide Dynamic Range**
(137 dB)
- **Exceptionally Wide Bandwidth**
(10Hz–20kHz)
- **Large Diameter Capsule**
(Dual 1.1" Gold Sputtered Diaphragm)
- **Uniquely Advanced Head-Amp**
(Transformerless Servo Design)
- **Exclusive Internal Power System**
(Delivers ten times the current available from standard phantom supplies)

Introducing the Equitek E-300

Large Diameter Dual Diaphragm, Servo-Condenser Microphone

A nearly perfect synergy of classic capsule design and advanced head-amp technologies



Rich, warm, smooth clear, quiet and accurate—technology becomes art—The microphone performs for more applications than any other that I've ever used.

—Ray Kennedy,
Engineer/Producer—
Kennedy/Rose, Steve Earle, Don Henry, Kindred Spirit, The Ratlers

Without a doubt the best mic I've used for percussion and close proximity miking!

—Richard Dodd,
Engineer/Producer—Joan Petty, Billy Pilgrim, Traveling Wilburys, George Harrison, Roy Orbison

A Big mic with a Big sound. On everything from vocals to drums to grand piano, it delivers 'The Goods' with a dynamic range and image that is first class.

—Michael Clute,
Engineer/Producer—Diamond Reo, Blackhawk, Brett James, Michele Wright, Faith Hill, The Delevantes

You can listen to what they have to say or you can listen for yourself. Either way, when you plug an E-300 into your studio, you'll share the joy.

...The Revolution Continues!



Conneaut Audio Devices

See us at
AES Booth #1050

(Photo from left to right)

A Brand of CTI Audio, Inc. P.O. Box 120 Conneaut, OH 44030 • 216-593-1111

bits



ILLUSTRATION: DAVE EMBER

The Secrets of Dither

Keeping Your Digital Audio Pure From First Recording to Final Master

BY BOB KATZ

You just bought a new, all-purpose digital audio workstation and now discover that its equalizers sound so edgy they tear the cilia out of your ear canals. You wonder why your digital reverb leeches the ambience out of your music, when it's supposed to be *adding* ambience. Your *do-all* digital processor certainly does all—except that what goes in seems to come out veiled, dry and lifeless.

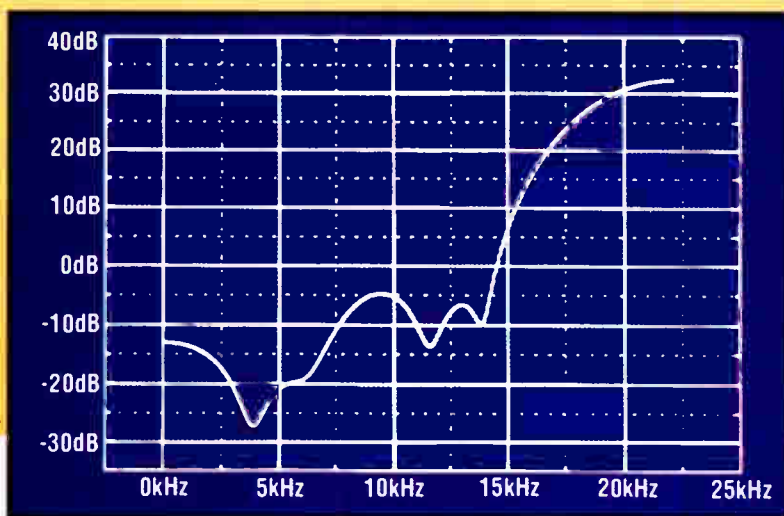
If you've experienced such problems and want to avoid them in the future, then you've come to the right place. We'll explain these strange phenomena and help you avoid mistakes that could irrevocably distort or damage the quality of your hard-earned mixes when they're turned into precious masters: There are activities you should *never* perform on your workstation if you want to keep your audio sounding good, and it may be easier, better and cheaper to mix down to high-quality analog

tape than to a 16-bit digital tape.

In fact, you should avoid any digital processing unless you have the money for the kind of workstations and processors that are de rigueur at pro mastering studios. Let's find out why.

A topic ignored by the vast majority of workstation and processor manufacturers is word length. With rare exceptions, marketing departments (and sometimes even engineering departments) have no idea what happens to the integrity of digital words during signal processing. These aren't Einsteinian concepts: Sixth-grade arithmetic reveals the limitations of any digital audio mixer, and every salesperson and buyer should have the answers to questions about sample word length and calculation precision. Find out the answers before you buy, and know the limitations of your equipment after you buy. If you don't, you may join the legions of engineers whose final masters have lost stereo separa-

One of
the most
successful
noise-
shaping
curves



COURTESY MERIDIAN AUDIO LTD

digital console's output to a DAT machine, that only stores 16 bits. Frankly, it's a serious compromise to take your console's 24-bit output word and truncate it to 16 bits. Wait a minute, you say, you've just bought one of those new digital consoles that has a 16-bit output word on its digital output. Well, an awful lot of important bits are being truncated on their way to your final mix. Honestly, you will get more resolution and better audio quality by mixing with a decent analog console to a 30 ips, ½-inch analog tape than by passing your signal through a digital console that truncates its internal word length to 16 bits. If the console dithers its output to 16 bits instead of truncating (check with the manufacturer), we're a little happier; but dithering has its compromises, too—we'll discuss dither shortly.

As you can see, it takes a lot of expensive processing power and long-word storage space to preserve the resolution of your precious digital audio. There's a lot more to those expensive digital consoles than buttons and auto-recall—it's the horsepower under the hood and storage space that really cost.

IN THE MEANTIME

In the future, more digital tape recorders, processors and DAWs will deal with 24 bits. Meanwhile, be very careful with your digital audio.

If you record or mix to digital tape, then what should you do next? The short answer is *nothing*. Do not return to analog. Successive A-to-D and D-to-A conversion is almost as damaging to sonic quality as the above-mentioned truncations (both conversion and processing are quantization processes; changing gain is a re-quantization process).

The next step after producing your mix is mastering. The mastering engineer takes the caffeine-filled mixes you produced at two o'clock in the morning and the tunes you mixed at two in the afternoon. He/she artfully gets them all to work together, perhaps by putting just the right amount of EQ or digital compression to add punch to the mixes. As you can imagine, doing all of this properly requires processors with 24-bit inputs and outputs, workstations with high internal precision (56 to 72 bits) and 24-bit storage media.

What if you want to perform some digital premastering or equalization

(to save money or time) before taking your tape to mastering? I recommend you do not perform digital EQ, compression or other processing. As we have seen, every digital audio calculation increases word length, and if all you have is a 16-bit recorder (or hard disk) to capture the equalizer's output, you're far better off waiting until the mastering stage to perform digital processing.

What about digital editing before mastering? If you start with a DAT, 16-bit digital editing is fine, provided you follow some simple rules. The first rule is to remember that all workstations depend on software. And software is written by human beings, who are subject to human frailties. (Remember this the next time your computer crashes, taking all your work with it!) It is your job to verify that your workstation makes a perfect digital clone of your tape.

GOOD ADVICE

Once you've verified that your workstation makes perfect clones, proceed with editing, with the goal of maintaining the integrity of your 16-bit audio.

- Do not equalize.
- Do not fade in or fade out.
- Do not change gain. (Changing gain deteriorates sound by forcing truncation of extra word lengths in a 16-bit workstation.)
- Do not normalize. (Normalization is just changing gain.)

Just edit. By the way, every edit in a 16-bit workstation involves a gain change during the crossfade (mix) from one segment to another, which creates long word lengths during the calculation period (usually a brief couple of milliseconds). You probably won't notice the brief deterioration if you keep your edits short. Leave the segues and fade-outs for the mastering house, where they can properly handle the long word lengths necessary for smooth fades. (So that's why your last fade-out sounded like it dropped off a cliff!) Follow these simple guidelines, and your digital audio will immediately start sounding better.

UNDERSTANDING DITHER

So far, we've learned that every digital gain change, equalization and mix (even the wet/dry control on some digital reverbs) creates longer word lengths. Either deal with these word lengths properly, or suffer the conse-

quences.

Preserve those word lengths every step of the way. (Easier said than done.) Suppose you start with a 16-bit DAT and want to pass it through a digital compressor. Ask the manufacturer of that compressor about its internal word length (maximum calculation precision) and whether it can produce a 24-bit output word. Insist until they give you a satisfactory answer.

There's only one right way to use a digital compressor: record its 24-bit output onto a 24-bit medium. Sometime soon, expect to see a 24-bit, 2-track recorder at popular prices. Wait until then before fooling with the fancy processors with the long word lengths.

When you send your tape to a mastering house, the word length should be maintained at a practical maximum of 24 bits. If they send you a reference CD-R or DAT, it will be properly *dithered* down to 16 bits. (I'll explain in a minute.) If you request a revision (gain, EQ, compression, etc.), the mastering engineer should go back to your source and reapply the same steps, to avoid cumulative processes.

DITHER EXPLAINED

Let's look at that long sample word. Whether it has 24 bits or 32 bits, we have to find some way to move the important information contained in the lower (least significant) bits into the upper 16 bits for recording to the CD standard. Truncation is very bad. What about rounding? In our digital dollar example, we ended up with an extra half-cent. In grammar school, they taught us to round the numbers up or down according to a rule (we learned "even numbers, round up; odd, round down"). But when we're dealing with more numerical precision and small numbers that are significant, it gets a little more complicated.

The best solution for maintaining the resolution of digital audio is to calculate random numbers and add a different random number to every sample. Then, cut it off at 16 bits. The random numbers must also be different for left and right samples, or stereo separation will undoubtedly be compromised. For example: starting with a 24-bit word (each bit is either a 1 or a 0 in binary notation). See the bit notation chart on the following page.

The result of the addition of the Zs



WE'VE CAPTURED
EVERYTHING FROM
CRASH CYMBALS TO
SEX SYMBOLS.

In this business timing is everything. Which explains some of the success behind our industry-leading lineup of SMPTE timecode DAT machines. Of course, mass appeal doesn't hurt either. So if you're looking for outstanding value, you'll find it in our **D-10**, the most affordable timecode DAT recorder on the market. If you need a full-function chase/lock machine, you'll appreciate our **D-25** with RAM scrubbing and Sony® P2 protocol for serial editing control. Our **D-30** represents the pinnacle of DAT technology, with its remarkably user friendly nature and renowned intuitive display screen. If multitrack is the issue, our **RD-8** is the machine of choice. And when it comes to portable recording, nothing keeps up with our second generation **PD-4's** unparalleled ease of operation and 3-channel mixer. Want to know more? Simply call Rick Cannata at **800-9-FOSTEX**. You'll see why—from music tracks to soundtracks—we've developed a following that stretches from Nashville to Hollywood.

Fostex



D-10 Production TC DAT Recorder



D-25 Studio TC DAT Recorder



D-30 Master TC DAT Recorder



RD-8 Digital TC Multitrack Recorder



PD-4 Portable TC DAT Recorder

Fostex Corporation of America 15431 Blackburn Avenue, Norwalk, California 90650, U.S.A. Telephone: (310) 921-1112 Fax: (310) 892-1969

USE READER SERVICE CARD FOR MORE INFO

See us at AES Booth #566

—Upper 16 bits—
Original 24-bit word MXXX XXXX XXXX XXXW
Add random number

-Lower 8-
YYYY YYYY
ZZZZ ZZZZ

with the Ys gets carried over into the new least significant bit of the 16-bit word (LSB, letter W above). In essence, the random number sequence combines with the original lower bit information, modulating the LSB. Therefore, the LSB, from moment to moment, turns on and off at the rate of the original low-level musical information. The random number is called dither; the process is called redithering, to distinguish from the dithering process used during the original A/D conversion.

Every 16-bit A/D converter incorporates dither to linearize the signal. If you have a 20-bit A/D and 20-bit storage to begin with, then initial dither is not necessary. All 20-bit A/Ds self-dither somewhere around the 18- to 19-bit level due to thermal noise, a basic physical limitation. But if you use a 20-bit A/D to record to a 16-bit medium, then add dither at the 16th-bit level. Some of the newest A/Ds incorporate switchable dither for this purpose; when in doubt, con-

sult the manufacturer.

These random numbers used in dither translate to random noise (hiss) when converted to analog. The amplitude of this noise is around 1 LSB, lying at about 96 dB below full scale. By using dither, ambience and decay in a musical recording can be heard down to about -115 dB, even with a 16-bit word length. Thus, although the quantization steps of a 16-bit word can only theoretically encode 96 dB of range, with dither there is an audible dynamic range of up to 115 dB!

How is this possible? The maximum signal-to-noise ratio of a dithered 16-bit recording is about 96 dB. But the dynamic range is far greater, as much as 115 dB, because we can hear music below the noise. Usually, manufacturers' spec sheets don't reflect these important specifications, often mixing up dynamic range and signal-to-noise ratio. Signal-to-noise ratio (of a linear PCM system) is the RMS level of the noise with no signal applied, expressed in

dB below maximum level (without getting into fancy details such as noise modulation). Ideally, S/N ratio should be the level of the dither noise. Dynamic range is more a subjective judgment than a measurement—you can compare the dynamic range of two systems empirically with identical listening tests. Apply a 1kHz tone and see how low you can make it before it is undetectable. You can actually measure the dynamic range of an A/D converter without an FFT analyzer. All you need is an accurate test tone generator, your ears and a low-noise headphone amp with sufficient gain. Listen to the analog output while dropping the level of the tone and see when it disappears. (Use a quality 16-bit D/A for this test.)

Another important test is to attenuate music in your workstation (about 40 dB) and listen to the output of the system with headphones. Listen for ambience and reverberation; a properly dithered system will still reveal ambience, even at that low level. Also listen to the character of the noise—it's a very educating experience.

...over 1,000 remotes since 1979
THE TECHNOWORKS MOBILE
(A division of CBC Radio, Toronto, Canada)



28 ft Mobile Multitrack
Recording Studio • Highly
Experienced Engineers •
48 x 48 Neve VRM
with Flying Faders / Total
Recall Automation • Sony
3348 Digital Recorder •
Full Range of Processing
Gear and Mics • Remote
Control Video Camera •
Motorized Cable Winders
... and MUCH MORE.

For more
information and bookings:
Call
(416) 205-6073
in Toronto

CBC  **Radio**

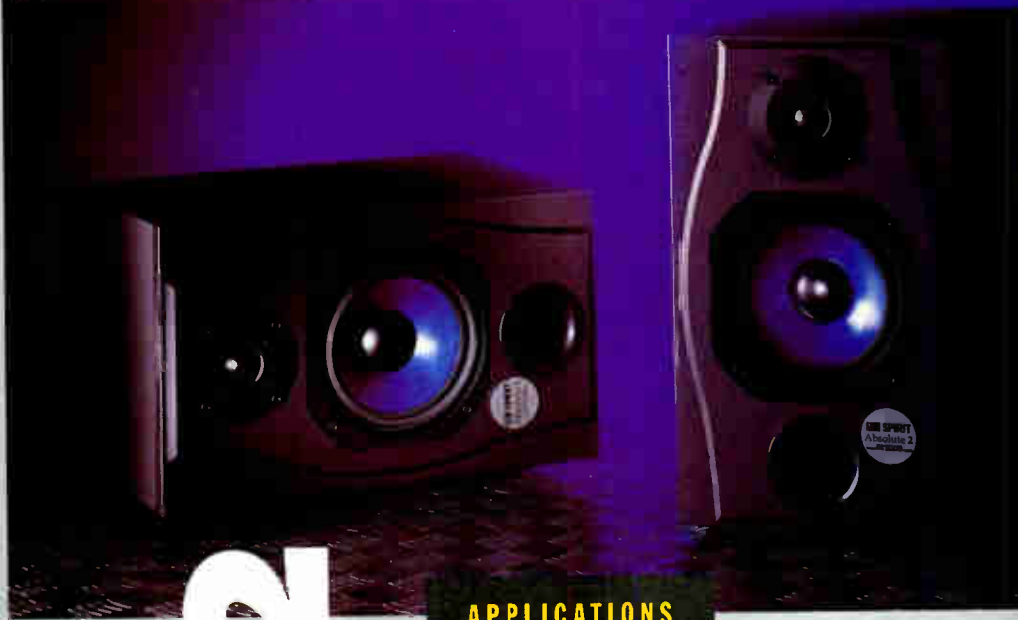
POWER

WITHOUT CORRUPTION

SPIRIT

GURU APPROVED

Like all Spirit products, Absolute 2 is designed and built in the UK. We set an exacting brief for our team of British monitor specialists to create an affordable loudspeaker, capable of delivering the clear, honest sound of Spirit mixers. But before the result could bear the Spirit name, it had to pass the guru test. Would it measure up to Graham Blyth's standards of excellence? As the designer of many classic mixers over the last 25 years, he knows a thing about accurate monitoring, and he's a hard man to please. Fortunately the design team excelled themselves, turning in a speaker with professional performance at an unbelievable price: a speaker that Graham, and all the Spirit team, can welcome into the Spirit range.



★ *When we looked around for an affordable speaker that matched Spirit standards of audio accuracy and quality, we found there was no such thing - so we built it ourselves. The result is Absolute 2, the only loudspeaker in its price range to deliver this much power with this much precision - a thumping 100W of professional sound.*

Whatever the size of your studio, whether you're mixing music or dubbing sound for picture, the basic requirements for an effective nearfield monitoring system are the same: an uncoloured, flat frequency response, minimal distortion, and an ability to deliver high volume when you need it.

Absolute 2 offers all this, at a price that no other professional monitoring system can touch - because we know from our experience with mixers that good design and high quality construction doesn't have to cost more.

APPLICATIONS

Studio nearfield monitoring

Video edit and post-production suites

Multimedia

The advanced vented cabinet design complements the 6.5"/165mm low-frequency driver to give smooth, extended bass response. The soft-dome tweeter and high quality crossover keep the frequency response smooth right up to a crisp high end that's free of unnatural colouration - unlike the harsh sound of some low-cost monitors.

Of course, it would be a shame if you could only appreciate Absolute quality in the studio, so we've included magnetic shielding to ensure that Absolute 2 is safe for use next to video and computer screens, and terminals for bi-wiring mean that you can also use Absolute 2 as a superior hi-fi speaker. Read on to find out how we did it...

THE INSIDE STORY

- As with Spirit mixers, the electronic design of Absolute 2 uses **high quality components**, including film capacitors and an air-cored inductor, in a circuit that embodies classically simple design principles. Terminals allow **bi-wiring** as well as standard connections.
- Rather than compromise with off-the-shelf components, we use **custom hardware** built to our specifications - both drivers are exclusive to Absolute 2.
- The **ferro-fluid cooled soft-dome tweeter** ensures minimal distortion, with excellent heat dispersion. Not only does that mean a more accurate sound, but it puts less strain on your ears after long periods of high-volume monitoring - and don't pretend you don't like it loud!
- The LF driver features a **solid cast chassis** and **30mm edge-wound voice coil**, for optimum efficiency and cooling. That means you can push Absolute 2 to the limits and still hear music, not distortion.
- The vented cabinet employs a **special port design** that does more than simply deliver extended bass response. With its carefully chosen dimensions, air turbulence is reduced, contributing to Absolute 2's smooth, uncoloured low-frequency characteristics.

8760 S. Sandy Parkway,
Sandy, UT 84070 USA
(801) 566-8919
Fax (800) 333-7363
© 1995 Spirit

For information on Absolute 2 or other Spirit products, simply complete and return the coupon to the address shown. I am interested in: Absolute 2 Spirit mixers

Name

Address

Zip Code

What application will you use your Absolute 2 for?

What magazines do you read?

Please tick here if you do not want to be kept on **Spirit's mailing list**

USE READER SERVICE CARD FOR MORE INFO



SPIRIT

By Soundcraft

H A Harman International Company

See us at AES Booth #707

RIPIG

ACOUSTICTOOLS®

High-Performance, Affordable, Complete Room Solutions From
The Music Industry's Leading Acoustical Innovator

for PROJECT STUDIOS

The music you hear in your Project Studio is distorted by interfering reflections and the room's low frequency modal response. Even the most sophisticated electronic equipment cannot overcome these acoustical problems. AcousticTools® is the first affordable, integrated system which lets you realize the full potential of your hardware investment. Listen to the music, not the room!

Ablector™



B.A.S.S. Trap



Skyline®



Innovative Acoustics for the Digital Age

RPG Diffusor Systems, Inc.
651-C Commerce Drive, Upper Marlboro, MD 20772
Phone: (301) 249-0044 Fax: (301) 249-3912 E-mail: rpgpda@aip.org

See us at AES Booth #346

World Radio History

USE READER SERVICE CARD FOR MORE INFO

SOME TESTS FOR LINEARITY

You can verify whether your digital audio workstation truncates digital words, or does other nasty things, with no measurement instrument except your ears. Obtain the disc *Best of Chesky Classics and Jazz and Audiophile Test Disc, Vol. III*, Chesky JD111. (Available at major record chains, high-end stereo stores or through Chesky Records: 212/586-7799.) CBS Labs test disc CD-I track 20 also contains a fade-to-noise test. Track 42 is a fade-to-noise without dither, demonstrating quantization distortion and loss of resolution. Track 43 is a fade-to-noise with white-noise dither, and track 44 uses noise-shaped dither (to be explained). Use Track 43 as your test source; you should be able to hear smooth and distortion-free signal down to about -115 dB. The CD liner notes explain how to use a stopwatch to measure the dB level. Then check out track 44 to see how much better (quieter) digital audio can sound. Try processing track 43 with digital equalization or level changes (both gain and attenuation, with and without dither, if it's available in your workstation) to see what they do to the sound. You'll be shocked.

If you don't have a quiet, high-gain headphone amplifier, send the output of the test from the workstation to a DAT machine, load the DAT back in, and raise the gain of the result 24 to 40 dB to help reveal the low-level problems. The quantization distortion of the 40dB boost will not mask the problems you are trying to hear.

SO LITTLE NOISE—SO MUCH EFFECT

A level of -96 dB seems like so little noise. But strangely, engineers have been able to hear the effect of the dither noise, even at normal listening levels. Dither noise helps us recover ambience, but conversely, it also obscures the same ambience we've been trying to recover! Dither noise can add a slight veil to the sound. Dither: You can't live with it, and you can't live without it.

IMPROVED DITHERING TECHNIQUES

Where there's a will, there's a way. Although the required amplitude of the dither is about -96 dB, it's possible to shape (equalize) the dither to minimize its audibility. Noise-shaping techniques (see page 233) re-equalize the spectrum of the dither while retaining its average power, moving the noise

away from the areas where the ear is most sensitive (circa 3 kHz), and into the high-frequency region (10 to 22 kHz). As you can see, it is a very high-order filter, the result of considerable deliberate calculation; notice that the curve carefully dips where human hearing is most sensitive. The sonic result is an incredibly silent background, even on a 16-bit CD. The 0dB line is around -96 dBFS in this diagram.

There are numerous noise-shaping redithering devices on the market. High-precision (56- to 72-bit) arithmetic is required to calculate the random numbers used in dither. One box uses an entire 32-bit DSP just to calculate dither. The sonic results of these new noise-shaping techniques range from very good to marvelous. The best techniques are virtually inaudible to the ear. With 72-bit arithmetic, all the dither noise has been pushed into the high-frequency region, which at -60 or -70 dB is still inaudible. Critical listeners have complained that the high-frequency rise of the early noise-shaping curves changed the tonality of the sound, adding a bit of brightness due to the shaped hiss. But the best of these curves have moved the hiss into the inaudible frequency range, resulting in true 19- to 20-bit performance on a 16-bit CD.

Noise shapers on the market include dB Technologies Model 3000 Digital Optimizer, Meridian Model 618, Sony Super Bit Mapping, Weiss Advanced Noise Shaping Dither and Waves software plug-ins for Digidesign Systems.

In response to complaints about the sound of earlier noise-shaping systems, Apogee Electronics produces the UV-22 system to improve the performance of 16-bit playback systems. They do not use the word "dither" (because their noise is periodic, they prefer to call it a "signal"), but it smells like dither to me. Instead of noise-shaping, UV-22 adds a carefully calculated signal at around 22 kHz, without altering the noise in the midband.

To compare the sound and resolution of these redithering techniques effectively, perform a low-level listening test. Feed low-level 24-bit music (around -40 dB) into the processor, and listen to the output at high gain in a pair of headphones with a quality 16-bit D/A converter. You will be shocked to hear the sonic differences

All Manufacturing
In Our Plant...
Since 1977

EUROPADISK LTD.

CD's

AS LOW AS

75¢

FROM YOUR CD-R
& LABEL FILM

• Cassettes

Finest European Equipment!

• Vinyl Records

Direct Metal Mastering - HOT!

• Graphics

*Custom Layout & Printing
Included In Our Packages!*

• Mastering Studios - Dmm®

*Neve DTC with Sonic
Solutions PMCD*

Package SPECIALS *"With This Ad Only"*

500 - Promo CD's - \$995

(1,000 CD's - \$1,550)

Delivery in 15 Business Days!

Promotional Package includes:

**CD-R Reference, One Color CD Label
with Layout, Typesetting & Film**

(to 63 Min.)

500 - CD'S, Full Color Graphics

- \$1,995 (1,000 CD's - \$2,265)

Retail-Ready: FULL COLOR Front

& Tray Card, free CD-R Reference,

2-Color CD Label, Graphics Layout,

Film, Jewel Case & Shrink-Wrap

(to 63 Min.)

500 - Cassettes - \$715

(1,000 Cassettes - \$1,025)

Retail-Ready: FULL COLOR J-Card,

Test Cassette, Graphics Layout,

Typesetting & Film, Cassette Label,

Norelco Box & Shrink-Wrap (to 50 Min.)

Call For Our Complete Catalog

EUROPADISK LTD.

75 Varick Street, New York, NY 10013
(212) 226-4401 FAX (212) 966-0456

(800) 455-8555

USE READER SERVICE CARD FOR

OCTOBER

CONTACT CLEANERS ARE NOT CREATED EQUAL

ProGold™

ADVANCED CONTACT TREATMENT

- Improves Conductivity
- Reduces Noise & Distortion
- Improves Definition & Clarity
- Maintains Connector Integrity
- Seals & Protects Surfaces

Even the finest equipment cannot guarantee noise-free/error-free operation. One "dirty" connection anywhere in the signal path can cause unwanted noise, distortion and signal loss. Considering the hundreds (if not thousands) of connections in electronic equipment today, it is only a matter of time before they begin to fail.

Use what the
Manufacturers
Use!



Environmentally-Safe/Non-Flammable Sprays, Wipes,
Pens & Precision Dispensers - Ideal for Service Techs

How Does ProGold Actually Work?

ProGold outperforms all other contact cleaners, enhancers and lubricants. Due to its unique properties, it deoxidizes and cleans surface contamination, and penetrates plated surfaces and molecularly bonds to the base metals - **NO OTHER PRODUCT DOES THIS.** ProGold fills the gaps in the contact surfaces, increasing the effective surface area and current flow (conductivity).

Why Use ProGold?

ProGold increases the performance and reliability of all connectors, switches, probes & equipment. It improves conductivity for greater definition and dynamics, and reduces noise & interference and lowers distortion. Unlike other products, it also stabilizes connections between similar and dissimilar metals. ProGold provides long-lasting protection (1-10 years), on gold, silver, rhodium, copper and nickel connections. ProGold is available in many convenient non-flammable and environmentally-safe applicators that are ideal for use by service techs worldwide.

CAIG Products ... used by those who demand the best!

Sywell Switchcraft
Hosh Labs Tektronix
Brola Texas Instruments
Amichi Xerox Corp.

16744 West Bernardo Drive
San Diego, CA 92127-1904
TEL: 619 / 451-1799
FAX: 619 / 451-2799

G-123

FOR MORE INFO

75

between the systems. Some will be grainy, some noisy and some distorted, indicating improper dithering or poor calculation. The winner of this test should be your choice of dithering processor.

Yet another method of redithering is a process called HDCD (High Definition-Compatible CD), a trademark of Pacific Microsonics, Berkeley, Calif. The makers of HDCD have been very secretive about how their technique works, so I can only speculate. I surmise that HDCD is a subtractive dithering method, which requires a special decoder to play back the CD. Their encoder puts down a pseudo-random number sequence in the LSB that can be recognized by the decoder. The decoder cancels out the input dither, resulting in theoretically perfect 20-bit reproduction from a 16-bit CD. HDCD has received some praise in the audiophile press, but it remains to be seen whether it will catch on.

DAMAGE, DESTRUCTION OR JUST DETERIORATION?

With the advent of digital audio workstations, people started talking about "nondestructive" editing, and keeping sound digital until the end. But as we have seen, even nondestructive processing may be damaging if word lengths aren't maintained.

There are four levels of DAW sophistication. The first level of DAW has no equalization or mixing capability and is primarily a 16-bit editor. The second level is 16-bit, has equalization and other processing functions available, but in a destructive manner only. Or there is one level of Undo, and you have to make a decision before doing anything else. The third level of DAW sophistication provides one or more simultaneous online processes; each process is probably programmable and undoable—without ever altering the source file—but is 16-bit only and does not have dither available. The fourth level of DAW is the most sophisticated, with internal calculations of 32 to 56 bits, rounding to 24 bits to feed to a "dithering module" for 16-bit output or for intermediate storage on a 24-bit sound disk. Some DAWs are hybrids of these characteristics, but you get the idea.

In the second level of DAW, any destructive calculation (gain change, equalization, normalization) is not just destructive, it's also sonically

compromising. The process must be dithered, or audio will be permanently damaged; but with dither, there's always a slight veil. White-noise dither puts a blanket on the sound, reducing stereo soundstage, definition and clarity. Noise-shaped dither can cause other problems down the line. The third level of DAW has all those nondestructive equalizers and processors, but every one of them damages the sound because dither is not available. The fourth level of DAW provides the least compromise to the sound, and if used properly, will produce transparent, clean output.

THE BEST APPROACH

To maintain the quality of your digital audio, always store the full output word length of your digital processors and mixers. You could dither it down to a 16-bit word and store the result on a DAT, but only if you're sure your music doesn't need further processing. (But producers always change their minds, don't they?) Avoid cumulative dithering, which not only accumulates noise, but can result in granular noise, or even beat tones (birdies or chirping noises) from the combination of the two dithers! Go back to an earlier source if possible, which means you must have archival 24-bit storage of sources (prior to all processing) and an archive of the EDLs that manipulated those sources. It also means that the common practice of using pressed CDs as compilation masters is a potentially degrading process, because they came from a dithered master (we hope).

If you must use a pressed CD as a source for a new master, then apply dither only to the parts where you change gain or equalize, and the rest of the album will remain a perfect clone.

Going back to the source is a difficult, often economically impossible task. But stick to your guns whenever possible: Use dither once, and use it properly—and everything will sound much better. ■

Bob Katz recorded virtually every Chesky record and has engineered or mastered hundreds of CDs. His New York-based company, Digital Domain, offers mastering and CD/CD-ROM replication services, and manufactures digital audio hardware. Its web site is at <http://www.panix.com/~bobkatz>.



SL 9000
J-SERIES

**TOTAL
STUDIO
SYSTEM**

THE ULTIMATE ANALOGUE CONSOLE

with Hard Disk Multitrack Recording and Editing

*Now a feature of these
world-class facilities*



MASTERFONICS

Nashville

Contact: Susan White
Tel: (615) 259 4452

OCEAN WAY
RECORDING, INC.
Hollywood

Contact: Claris Sayadian
Tel: (213) 467 9375

RECORD PLANT

Hollywood

Contact: Rose Mann
Tel: (213) 993 9300

Right Track
RECORDING

New York City

Contact: Nancy West
Tel: (212) 944 5770

Starstruck

Nashville
Contact:

Robert De La Garza
Tel: (615) 742 5162

STUDIO GUILLAUME TELL

Paris, France

Contact: Alain Aubert

Tel: (1) 42 04 05 05



WISSELOORD

Hilversum, Holland

Contact: Marcel Gelderblom
Tel: (35) 217256



*"Without a doubt the SL 9000 J Series
represents a major achievement for SSL. It presents studios with
the best of analogue, full integration of facilities, proven
comprehensive automation and system management, renowned
ergonomics, plus new levels of audio manipulation."*

Patrick Stapley - Studio Sound

Solid State Logic

International Headquarters:

Begbroke, Oxford, England OX5 1RU · Tel: (01865) 842300

Paris (1) 34 60 46 66 · Milan (2) 612 17 20 · Tokyo (3) 54 74 11 44

New York (212) 315 1111 · Los Angeles (213) 463 4444

US Toll Free Number 1-800-343 0101

A **BY BOB HODAS**

As an engineer and consultant, I have had the opportunity to work in a wide variety of control rooms around the world. In my experience, every control room is unique. Of course, some monitor types are more popular than others, but no single soffited speaker design dominates the market. Similarly, room sizes, wall treatments and reverb times all vary. But one thing common to 95% of the rooms I have seen is that equalizers are in use for "tuning" the speakers to the room.

Purists may argue that a properly designed control room and speaker system interface does not require equalization. Without getting drawn into that argument, I submit that there is general agreement that an acoustic solution to a room problem is preferable to an EQ-only solution. However, if acoustic solutions are impractical or fail to cure a room's

Optimizing

THE STUDIO LISTENING

Environment

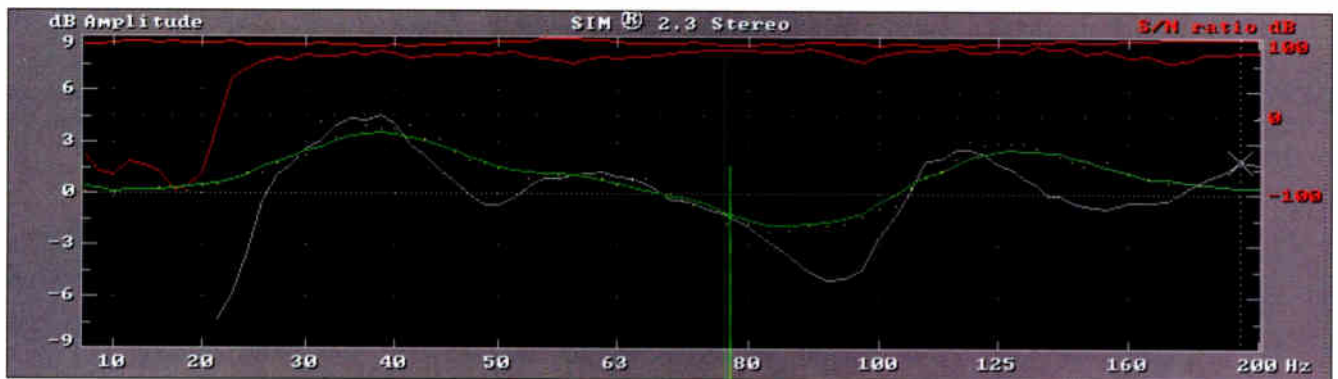
rarely heard today.

THE "FLAT RESPONSE" MYTH

Many audio professionals assume, not unreasonably, that the whole

room has no personality and is no fun to work in. Equally important, working in a flat room does not necessarily ensure a recording that sounds good elsewhere.

Figure 1: 1/2-octave EQ attempt to correct low-end problem (inverse of EQ shown). White trace is frequency response; green trace is EQ inverted.

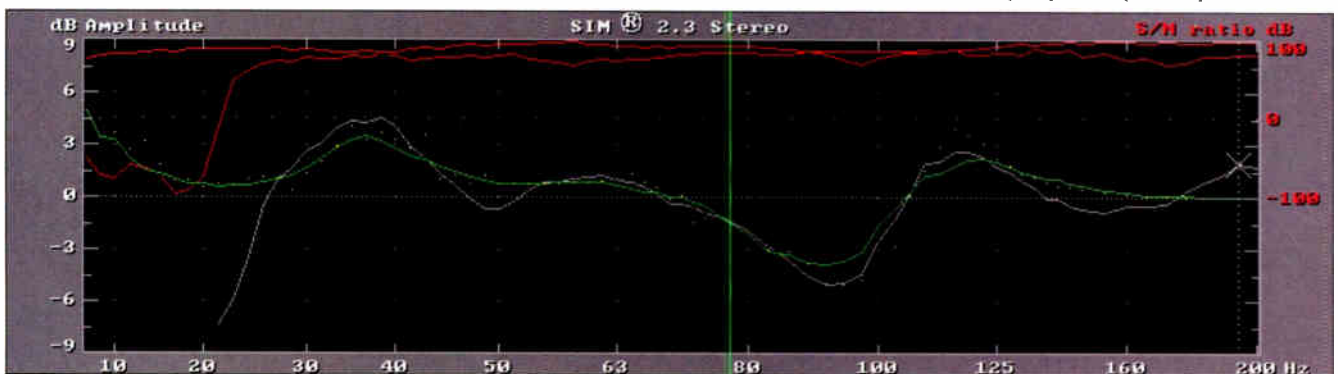


problems, then equalizers are called for. Equalizer technology has come a long way since early designs (which often introduced massive phase shift), and complaints about room EQ sounding "electronic" are

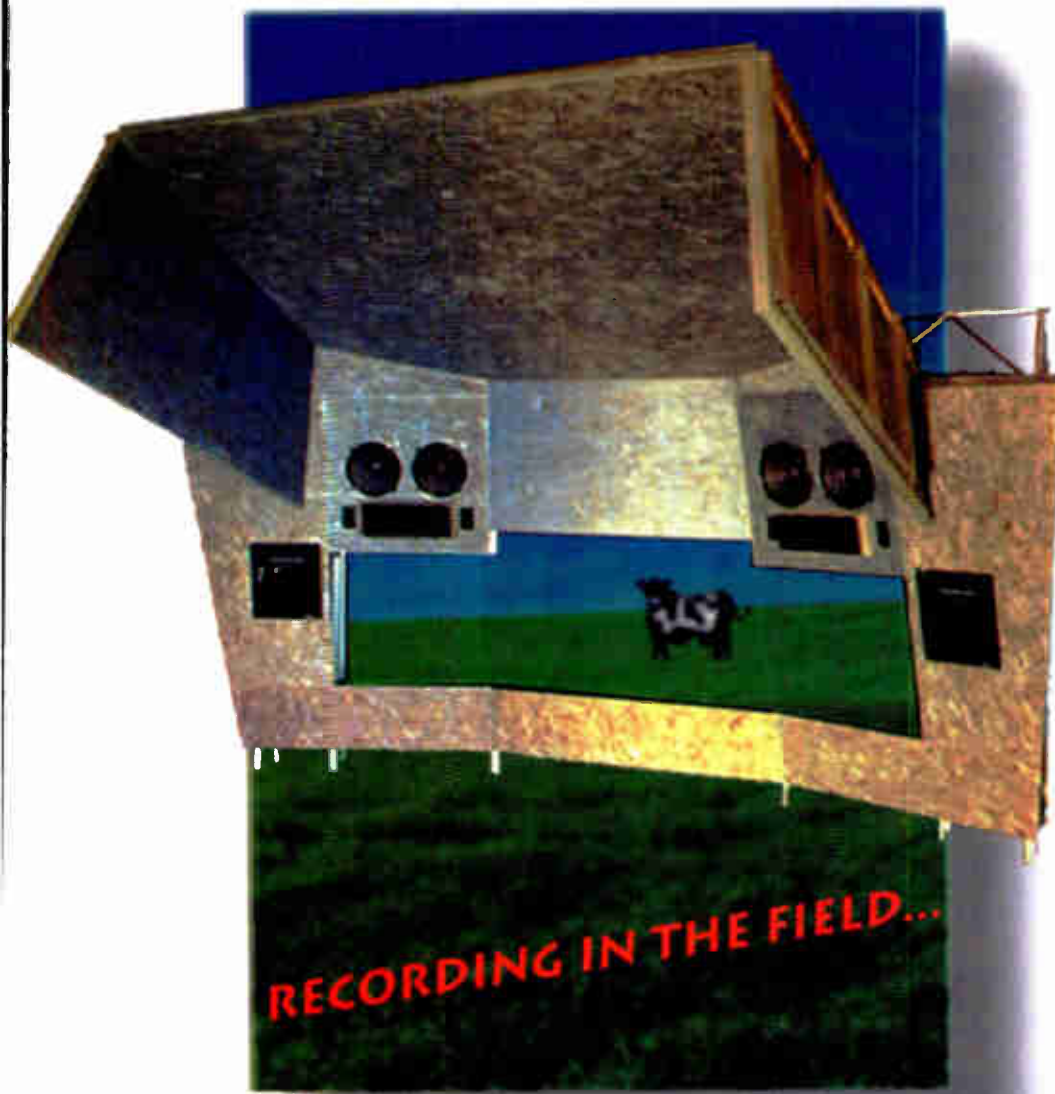
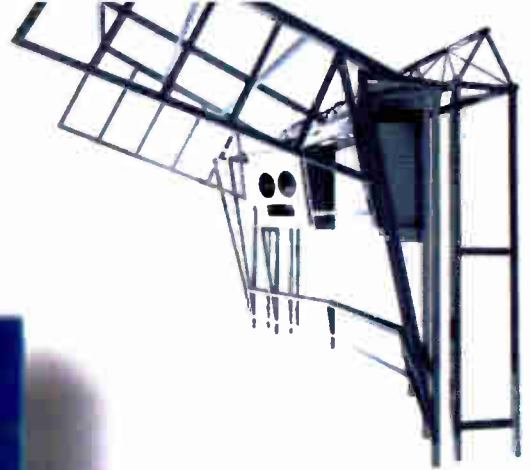
purpose of room tuning, whether acoustically or through EQ, is to make the room "flat." In fact, I have yet to find an engineer or studio owner who actually wanted a "flat" room. Experience shows that a flat

In general, most rooms conform to what is known as the "analog curve"—a gentle, linear roll-off starting in the upper midrange. Two factors in particular have contributed to the development, or evolution, of this curve. The first factor is the progressive high-frequency loss characteristic of analog tape—high frequencies are

Figure 2: Parametric EQ correction of low-end problem (inverse of EQ shown). White trace is frequency response; green trace is EQ inverted.



remember ?



RECORDING IN THE FIELD...

waterland

frontwall

Fits easily in your budget
Shipped quickly to any location
Set up for you in a matter of hours
Available on a lease-per-project
or purchase basis



In the past, bias and EQ, clean power, and horsepower were what you took when a project went on a trip away from home. Digital solves some of these.

In the past, mixdown and playback of your takes had to wait until the tape returned to familiar and trusted ground.

frontwall solves this problem.

We can help with clean power and throw in a "greenie" for you analogues...



phone 213 469 7754 fax 213 469 6757
waterbase@pan.com <http://www.waterland.com/wall.html>

USE READER SERVICE CARD FOR MORE INFO

Soundscape

Digital • Audio • Workstations

"Soundscape seems to be a remarkably stable system in that I didn't experience a single glitch, crash, or hiccup during the entire review period. It's a credit to the developers that every operation worked smoothly and as advertised.

That is not something you can take for granted."

Dennis Miller. *Electronic Musician* Nov '94

"Soundscape is one of the few digital recorders that permits recording while chase locking without an expensive hardware add on to control its sampling rate. The SSHDR1 currently provides the most cost effective solution for this application."

Jim Aikin. *Keyboard* Nov '94

"The quality of the converters seems particularly high; I couldn't detect any coloration when comparing recorded material with the original. A lot of effort and care has been devoted to this crucial side of the system."

Dennis Miller. *Electronic Musician* Nov '94

"Ever since the introduction of the DAT format, the world has looked for a replacement for the razorblade. Soundscape is a sharp, affordable replacement with extras."

Eddie Ciletti. *EQ* Feb '95

"Everybody reported that their system had never crashed and that they had never found any bugs, not even on preliminary alpha or beta versions ..."

Paul Tingen. *User review for Audio Media* Dec '94

"Soundscape does offer everything that you could want from a professional quality hard disk recording system ... it is cheaper, more powerful and more stable than many similar systems. But most of all it is so easy to use, allowing you to concentrate on the music."

Philip Moore. *Australian Digital* Mar '95

"Having used Soundscape for three months in post producing audio for corporate programmes mastered on Betacam SP, it is now unthinkable to return to the old way of working ... Soundscape is reliable, simple to learn, easy to use and produces very high quality results."

Nic Blinston. *Business Video* Mar '95

"Soundscape could well find its way replacing the analog tape recorder up and down the country ... a welcome addition to any studio set for the sheer freedom it offers when it comes to laying tracks down quickly and easily in order to make the most of that creative muse."

Bob Walder. *Music Technology* Jul '93

"I've been playing around with Soundscape's hard disk recorder this week and feel almost as though I've had a religious experience."

Brian Heywood. *MIDI Monitor* Issue 11

"I wanted to really check out the vari sync mode. I slowed the video down to a crawl, Cubase locked in and the sequenced music was playing slowly ... a bit faster ... and ... yes the Soundscape synced up and was recording. The SSHDR1 has lots of features, creative usage available power, sounds great, syncs great, straightforward, easy to use and expandable."

John Zulaikha. *Connections* Feb '95

"The next stage of the Digital Revolution starts here."

Bob Walder. *Home and Studio Recording* Jul '93

Need we say more.

SSHDR1-R*



705-A Lakefield Road
Westlake Village
CA 91361

Tel: 805 495 7375
Fax: 805 379 2648

See us at AES Booth #781

World Radio History

gradually erased throughout the overdub and mixing processes as the tape passes over the machine heads again and again. High frequencies are also lost as the magnetic particles on the tape realign themselves to their "at rest" positions. The roll-off adjustment in the speaker system—the analog curve—allows the engineer to compensate for HF loss by putting a brighter sound on the tape initially. Then through the recording process, the extra high end eventually finds the middle ground.

The second factor stems from the human ear's reaction to extended periods of high-volume listening. A slight top-end roll-off can have the effect of reducing high-frequency listening fatigue, helping avoid the problem of mixes ending up too bright.

Many digital room owners want the high end fairly flat, as there is no high-frequency loss (roll-off below 20 kHz) in the digital domain. However, the fatigue factor is still at work, and if any roll-off is applied, it is usually based on the engineer's listening levels. I believe that one of the reasons many of the early digital recordings were harsh is that they were made in rooms originally set up to do analog work. Old habits die hard in the audio trade.

LOW END BUMPS ADD TO THE "FUN FACTOR"

Regarding the low-frequency curve, most people prefer a slight bump in the bottom end. This gives the impression of a larger space, which is associated with a longer reverb time. Most concert halls exhibit this sort of low bump. It seems to equate with the "fun factor" in the room. This curve seems to vary from studio to studio based on the engineer's preference and the music style, but care must be taken not to exaggerate the bump, as recordings may turn out bass-shy. I have only tuned one room where the engineer wanted the bottom flat.

Between the high/low personality filter, the best results throughout the midrange are achieved with a linear, or flat tuning. Looking at rooms with $\frac{1}{2}$ -octave resolution, a straight line is impossible to achieve, and this stems from a number of factors. First, there are console reflections. I have seen a few well-designed rooms where soffitted speakers interact at a minimum with properly raked console topology, but in

most cases, path length differences between the speaker/listener path and speaker/console/listener path create cancellations at the mixing position, causing holes in the frequency response.

Near-field speakers can also cause console reflection problems. Simply moving the near-fields back a foot or so can minimize this interaction (see November 1994 *Mix*). Reflections from the ceiling and/or walls that bounce back into the mix position within the Haas window (within 18 ms of the direct signal) are also destructive. These undesirable boundary reflections can often be acoustically treated and minimized in a cost-effective manner for the mid-to-high frequencies, but are more problematic on the low side. If not properly angled, equipment racks can bounce first-order reflections to the mix position. Additionally, scurrilous room modes wreak havoc on many rooms' low-end response.

Even small, closely placed monitors are affected by room modes and acoustic problems. I am not recommending that everyone equalize close reference systems, but if a small monitor is your only system, you are probably working in a small room, so some acoustical treatments and, most likely, an equalizer will help. Most important is assembling a creative listening environment that translates to the outside world. If you are finding that more than a dB of EQ is being applied to your mixes in the mastering room, then you need to "tune up" your studio.

NEW COMPONENTS MAY AFFECT SYSTEM LINEARITY

Although most studios understand the need to "tune up," there is quite a bit of confusion about maintaining the system tuning. First, any changes in the physical arrangement of the listening environment will have some effect on the acoustics. For example, if you have changed or added wall treatments or traps, then you have also changed the linearity of the system response and the room's reverb structure. Similarly, the addition of an equipment rack will affect the room's volume and mass, and may effectively change wall angles. If you change consoles, then you have probably changed the angle of the work surface, and because most console upgrades mean additional inputs, the console's mass

in the room may be larger. Changing from a console that is closed in front to the floor to one that has an open front can make a huge difference in the way the bass rolls through the room. I have seen major changes in linearity as a result of moving the tape machines from the back of the room to a position beneath the speaker soffitt.

Changing electronic components can also make a big difference in linearity. New amplifiers may handle your speaker impedance or wire capacitance differently and cause changes in linearity. I have witnessed changes of several dB in different parts of the spectrum when clients switched between solid-state and tube amps. Of course, changing the crossover filter order and the crossover point itself will also have an effect on the system.

Check the system response whenever you change a speaker component. I have seen fluctuation by as much as 3 dB across the range of a speaker when an old element was replaced with a new one. Sensitivities will vary, and many manufacturers do not have a tight grip on quality control. As with any equipment changes, it is important to maintain overall system polarity.

GOOD COFFEE IS NO SUBSTITUTE FOR MAINTENANCE

You should schedule regular system tuning even if you do not change equipment. As speakers age, their resonant frequencies change and the room/speaker tuning will "drift" out. How long that takes depends on how often and how loud a system is driven. A few studios tune their system every three to four months. If a really loud alternative or rap group is in your studio for three or four weeks, you can probably count on some damage being done. A moderately driven system can often go six months before changes in linearity occur. Some facilities (often media or post) who work at modest volumes can often go a year before needing attention.

Sadly, the typical response to a proposed regular maintenance tuning schedule is "I can't afford that." So, how important is sound in our business anyway? Most studios spend more money on coffee than on control room monitor maintenance. Even sadder is the following typical scenario: A studio has its room tuned but



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

USE READER SERVICE CARD FOR MORE INFO

THE PRICE FIGHTERS!



Our Service, Selection & Prices will
KNOCK YOU OUT!

- Keyboards • Multitrack Recorders • Guitars
- DAT Recorders • Signal Processors • MIDI Software

Rock 'n Rhythm

Div. of:
The Woodwind & The Brasswind
 19880 State Line Rd
 South Bend, In. 46637

CALL OR WRITE FOR FREE CATALOG: 1-800-348-5003

does not follow a maintenance schedule. At some point after the room really needs another tuning, a producer listens to the studio for an upcoming project. Unhappy with the sound, he takes the project elsewhere. If the studio owner had been more concerned about the way the studio sounded, this would not have happened. Ironically, sound takes a back seat to gear in many studios. For most engineers, the latest toys seem to be more important when booking a studio than how good the room sounds.

A THIRD-OCTAVE EQ IS NO MATCH FOR PARAMETRICS

Conversations with studio owners and engineers reveal that there is little awareness of the difference among the types of equalizers commonly used for treating speaker/room interface problems. In my experience, 90% of the equalizers used for tuning control rooms are $\frac{1}{3}$ -octave models. These equalizers were originally designed as shapers for the NAB and RIAA curves. They later gained popularity for sound shaping and were then applied to room tuning. However, room acoustics are anything but well-behaved phenomena. Resonant frequencies rarely coincide with the center frequencies of a $\frac{1}{3}$ -octave graphic EQ and almost never exhibit the same fixed Q. As a result, one often winds up equalizing more than necessary or can't get to the problem at all using $\frac{1}{3}$ -octave EQ. In my book, $\frac{1}{3}$ -octave EQ is now "old school."

A parametric equalizer, on the other hand, allows the user to dial in the exact center frequency and bandwidth curve necessary to address the problem. Figs. 1 and 2 demonstrate the point. (Note that the EQ curve is an inverse of the EQ that is being applied. This simply makes it easy to see how it fits into the room curve.) Fig. 1 shows the low end of a room curve with a $\frac{1}{3}$ -octave solution applied to it. Notice that you can't quite get to the problem and wind up affecting more frequencies than necessary, especially around 150 Hz. Fig. 2 is the same room with a parametric solution. The parametric allows a much better match.

In the past, parametrics were notorious for introducing extraordinary phase shift. Today, many units have this problem solved, and some room equalizers of modern design even

—CONTINUED ON PAGE 355

Sam Ash Pro.
Sales & Parts
AES Booth 1024



The Heart Of It All

The hard drive. It's the heart of modern recording equipment. Since 1988, Sam Ash Professional pioneered new technologies for digital recording, editing, processing, and mixing. Our knowledge and

support for the equipment is second to none. Hard drive. Our commitment is providing the best analog and digital equipment solutions plus the technical excellence and professional service you need.

**Sam Ash**
P R O F E S S I O N A L

723 Seventh Avenue • Third Floor • NYC 10019 Phone: 212 • 719 • 2640 Fax: 212 • 302 • 4289

Akai • Amek • Apogee • Apple • Behringer • Cedar • Crown Macro Reference • Digidesign • E-mu • Eventide
Focusrite • Genelec • KRK • Kodak • Lexicon • Manley • Millenia Media • Otari • Roland • Sonic Solutions
Soundscape • Soundtracs • Spectral • Summit Audio • TC Electronics • Tascam • Yamaha Digital

Among many other professional audio products, parts, and accessories

Sony's New Digital Music Recording Console



BY MEL LAMBERT

Leading Japanese multinational companies rarely perform significant product development outside their island home. Though sales channels in foreign markets are trawled for possible product ideas—which might then be turned into small-scale prototypes at specialist R&D centers within overseas locations—most of the major design and development takes place in Japan. Against this background, a new Sony digital music-recording console, currently code-named “APX-R3,” is surprising in many respects. An all-digital design with assignable front-panel controls and moving faders, the APX-R3 developed from a long-term collaborative effort between Sony’s R&D Center in Atsugi and a group of talented Brits located in Oxford, England. After spending many years prototyping hardware and developing some remarkable ASIC-based software code, Sony will unveil the results of its team-driven handiwork at the AES convention in New York.

Though future versions of the system’s processing engine might be configured for other market segments, the first “serving suggestion” is targeted squarely at the music-recording industry for tracking, overdubbing and mix-down. A Multiformat option allows the console to accommodate 8-bus surround formats

during film-sound scoring and related mix-to-picture sessions. Future versions will offer expansion beyond 100+ channels, as well as additional onboard signal processing.

The first APX-R3 consoles to emerge from the production line will be configured with up to 120 analog and/or digital inputs, with internal routing to 48 multitrack outs, 24 auxiliary send buses, 16 independent submix stereo outs, four dedicated stereo foldback sends, plus the familiar stereo two-mix bus, studio-plus-control-room monitoring, etc. Said to “compete with high-end analog designs,” the APX-R3 to be shown at AES is priced at less than \$800,000 for the 120-input/48-fader version. Initial deliveries are expected in early spring of 1996, with production ramping up next summer. At the time of this writing, a pre-production system was scheduled to be installed for final system evaluations at Sony Music Studios in New York.

Digital control and assignability aside, emphasis has also been placed on ensuring high-grade A/D and D/A conversion. Sony quotes a 110dB SNR spec for the A/D stages, which are based on Crystal ICs wrapped in a proprietary topology that also uses Motorola 56000 DSPs. The patented D/A stages make use of a pair of Burr-Brown ICs per channel, with randomized, nonharmonic error interpolation. All

High Performance CD Recording & Duplicating Solutions for Audio and Multimedia.



4
NS
CD RECORDERS

RECORDERS

CD EXPERT



DUPLICATORS



PRINTERS

YAMAHA®

Products

Hardware

Yamaha
IPC Technologies
Digital Audio Labs
RIMAGE CD-R Printer

Media

Yamaha
Mitsui

AV Packages

Zip CD AV
CDE100 w/AV Hard Drive

AV Systems

Zip CD Factory
SR-4100 CD Duplicator

AV Software

Toast CD ROM Pro
Toast CD-DA
MasterList CD™
Easy CD Pro
Gear
Fast Eddie
EdDitor Plus

...Plug & Play CD
Recording Solutions
for PCs and Macintosh*
Work Stations

Zip-CD ©
AV Series
A Genesis Product

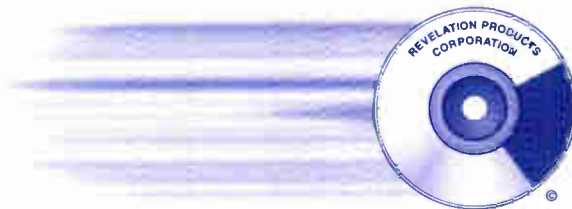
Includes:

4X CD Recorder
Pre Mastering Software
Blank CD Media - 10 pieces
SCSI Adapter (as required)
SCSI Cable
CD Caddy
Documentation
One Year Warranty

**See Us At
A.E.S. Booth #1282**

Revelation Products Corporation

Authorized Yamaha
National Distributor



Call (800) 836-1823 for Dealer Listings

1220 Valley Forge Road • P.O. Box 2225 • Valley Forge, PA 19482-2225 • (610) 933-5875 • FAX (610) 933-6190 • (800) 836-1823

MasterList is a registered trademark of DIGIDESIGN

*Macintosh is a registered trademark of Apple Computer.

USE READER SERVICE CARD FOR MORE INFO

1200 WATTS, NO WEIGHTING.

\$995.00

Suggested retail price.

Take a look at your current rack of power amplifiers, or for that matter, most of the amps at your local dealer. They're using oversized, linear power supplies and circuit topology that was developed from the old transistor application hand books of the early 60's.

Our engineering staff, most of whom have lugged these same overweight power amplifiers on gigs for way too many years, decided it was time to drag power amp technology into the 90's.

The result is our Megatech™ switch mode power supply technology. This is not some fragile, up-graded computer supply, either. We developed a proprietary, full bridge, digital power supply utilizing hand wound torroidal transformers, and high speed MOSFETs switching at over 100kHz clock speeds. 200 Volt storage capacitors provide extended duration high current output ensuring maximum performance in even the most demanding applications.

Most amplifiers use an inefficient single high voltage supply which is only fully utilized during peak output power. During most of the duty cycle, the extra supply voltage dropped across the output transistors is wasted as excess heat. This reduces the amplifier's ability to perform in extreme conditions, as well as making you pay for (and carry) oversized heatsinks.

The MTA1200's Class H amplifier design enables maximum thermal efficiency by utilizing our Cool Rail™ dual voltage supply technology. Cool Rail™ allows the MTA1200 to run on ±40VDC supply rails for most of the duty cycle, dynamically switching to a high current ±80VDC rail during peak output. Cool Rail's™ benefits to you are lower heat dissipation, compact design, and lower cost.

Our factory computer tests each FR4 fiberglass PCB subassembly. After the top goes on, each MTA1200 is subjected to QC function tests, vibration hardening, burn in, and a critical audio check before shipment. Our final step is an Audio Precision® pedigree, verifying frequency response, THD + N, and power output of each hand crafted amplifier.

**PICK ONE UP AT A ROSS SYSTEMS DEALER
NEAR YOU.**



P.O. BOX 2344 • FT. WORTH, TX 76113 • 817-336-5114

USE READER SERVICE CARD FOR MORE INFO

World Radio History

* OK, it does weigh 17 1/2 lbs.
But check out these specs!

4 Ohm Bridged*	8 Ohm Bridged**	2 Ohm*	4 Ohm**	8 Ohm**
1200 Watts	800 Watts	600 Watts	400 Watts	275 Watts

*1 kHz, 1% THD, **20Hz - 20 kHz, .05% THD

internal processing is to 32-bit precision, using custom-developed signal-processing ASICs (application-specific integrated circuits), coupled with 24-bit data highways extending between all digital I/O ports. For the technically impressionable, the processing array is scalable up to a throughput of ten giga-instructions per second.

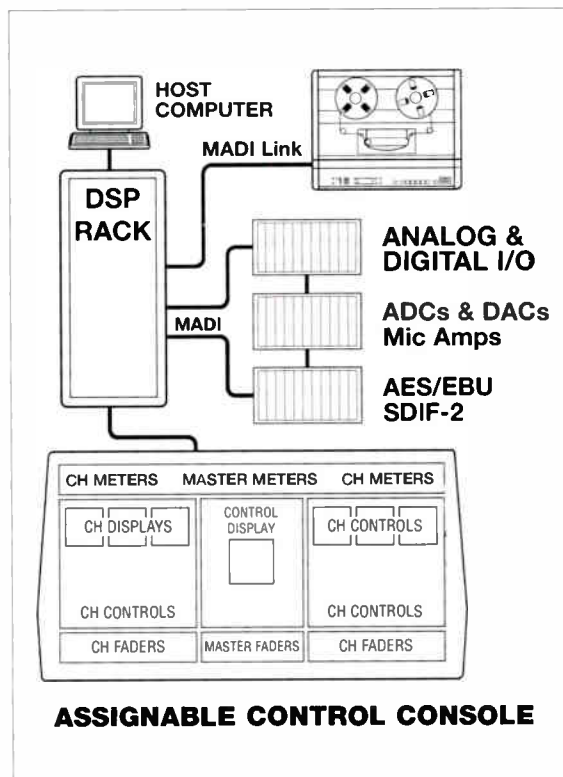
ASSIGNABLE CONTROL SURFACE, DEDICATED CHANNEL/GROUP FADERS

The control surface to be shown at AES can be configured in a virtually limitless number of ways, and is equipped with 24 "channel" faders to the left, 24 to the right, and a bank of 16 "group" faders in the center with a master stereo fader. The two left and right input-channel sections are functionally identical, and each features a central assignable panel equipped with rotary control elements and switches for setting and adjusting the built-in EQ, dynamics and related functions. Each fader is also equipped with dedicated pan, AFL, cut and record in/out buttons, plus group/tape monitor switching. A small button located in the center of each fader slider can also be used for single-finger drop in/out.

Dedicated banks of switches between the channel and master sections enable different signal sources to be controlled from the respective section; in the case of input fader sections, they can also be bank-switched to access different channel sets (1 to 24, 25 to 48 and so on). Each set of channel faders can also be selected to control aux sends, input gains, multitrack sends, group trim or multitrack monitor. The central faders can be selected to serve as group masters—much like a VCA group—or to set the levels of audio subgroups or aux-send masters. All long-throw channel faders are fitted with a proprietary design of servo-controlled linear motor to provide visual feedback of channel/group levels.

According to John Richards, senior manager of Sony's Oxford Group, "The system hardware is based on a flexible and scalable digital signal-processing platform.

The processor rack can be installed remotely; our DSP array is general-purpose in the sense that it has no fixed relationship with the console signal path. In addition, input/output racks can be installed separately from the processor rack and linked to it via coaxial or fiber-optic cable." The system can accommodate analog inputs and outputs via proprietary 20-bit A/D and D/A conversion stages, as well as AES/EBU, SDIF-2 and MADI format digital I/Os. Links to SMPTE/EBU timecode and video sync are also available. Machine control is currently via Motionworker synchronizers and 9-pin protocols, or direct parallel I/Os for Sony DASH-format transports.



Routing of audio and control signals

In terms of system ergonomics, APX-R3's assignable control surface differs radically from competitive designs, including the AMS Neve Capricorn and SSL Axiom. "Layout and style of the panels offer an approach to ergonomics that is fundamentally different to the 'reluctant assignability' of some designs," says John East, the Oxford Group's design manager. "The functionality, if presented as an analog console, would occupy at least four times the space. The [console] ergonomics provide all of these facilities within easy reach, [yet] without having to move outside of

the acoustic sweet spot. Paging of faders was made an operational priority so that flexible use of faders becomes intuitive." The APX-R3's compact control surface is less than 2.5 meters (8.3 feet) wide.

COLOR-CODED SECTIONS AND VISUAL DISPLAYS

As I discovered during an exclusive hands-on session with a prototype system at the Oxford Group's headquarters in early August, pattern recognition is used to ensure that an operator instinctively reaches for the correct control. Clear layout shapes are used to differentiate functions and reduce confusion while navigating around the control surface. All control knobs are large enough to fall easily between your fingers; a circle of LEDs embedded in the skirt displays the control's current position. A bank of full-color LCD screens along the top of the console—just below the input and output level meters—can be set, via an array of toggle keys, to display EQ response curves, dynamics envelopes, multitrack routing and subgroup output assignments, plus a variety of other functions. System control and interface with the console's automation system is via dedicated command keys. Useful trackballs are located at each side of the center section to accommodate both right- and left-handed operators. A standard QWERTY keyboard (required solely for labeling mixes and other house-keeping chores) is located centrally in the front buffer; a cover slides forward to provide wrist support. A neat touch.

CHANNEL CONTROLS AND ASSIGNABLE EQ/DYNAMICS FUNCTIONS

Two types of channels are featured on the APX-R3: Full Channels and Stereo Return Channels. The number of each channel type within a given console configuration can be selected and defined in software. Full channels will accommodate an input signal and a multitrack return signal; they can be compared, in the context of recording and overdubbing, to a conventional in-line channel. Stereo Return Channels are input-only sources to the mix but also feature EQ, dynamics and all output assignments available on a Full Chan-

nel, apart from multitrack routing. The same controls command both channel types via access buttons at the bottom of each fader and in each of the channel control sets. A front-panel screen can be selected to display signal flow in diagram form for any channel.

External inputs to the system from analog or digital sources can be assigned to the mic, line or multitrack input of any channel via a routing screen; input configurations are saved as part of the console setup. To optimize the noise performance of analog mic/line input circuitry, all gain controls are operated remotely. A cluster of assignable buttons allow all circuit elements (EQ, dynamics, aux sends, routing, delay, multitrack sends, multitrack returns, etc.) to be interconnected in virtually any sequence. For example, the console might be configured to emulate a conventional in-line topology, where the EQ, inserts, dynamics and delays can be freely moved between the Record and Monitor paths, and set pre/post channel fader. Cue sends can also be individually attached to any point in the channel signal flow.

APX-R3 equalization comprises a 5-band, fully parametric section with overlapping bands. A separate LF filter offers an adjustable center frequency between 20 Hz and 200 Hz; roll-off slope is 0 to 36 dB/octave in 6dB steps. The companion HF filter is identical, apart from a center-frequency adjustment between 2 kHz and 20 kHz. The LF Bell/Shelf filter operates between 20 Hz and 400 Hz; the LMF band between 30 Hz and 600 Hz; the MF band from 100 to 6k Hz; the HMF between 900 and 18k Hz; and the HF Bell/Shelf from 2 kHz to 20 kHz. Bandwidth on all parametric bands is variable from a Q of 0.5 to 16, with ± 20 dB of cut/boost. The LF and HF bands feature a switchable Shelf mode in which an adjustable overshoot or ringing characteristic can be added. Mimicking the effect of certain analog EQ sections, the overshoot can be used to reduce, for example, the perceived harshness of HF gain by subtracting at frequencies just below the nominal shelving frequency.

As I discovered, the controls use real-time computation without lookup tables to provide fully continuous operation—no glitches or zipper

noise. During my admittedly limited test period, the EQ sounded sweet and very musical. Each band can be individually switched in/out; an overall in/out switch is also available. Two different EQ settings can be dialed in and then compared using an A/B switch. A user-definable control allows additional EQ features, including blending of the equalized and direct signals.

The dynamics processor offers four independent sidechain processors for Gate, Expander, Compressor and Limiter, any or all of which then act together at a single point in the audio path. Each section, when selected, re-labels the six available rotary controls with the appropriate control function, such as attack or release time, threshold and slope characteristics. Dedicated meters display the amount of gain reduction for each section; an indicator also lights in the corresponding channel meter to alert the engineer. In addition, sidechains can be linked to any other channels or to freely assignable groups for channel ducking and sectional compression. Each compressor employs a very handy Adaptive Soft-knee that can be set in 5dB steps as a second threshold. Finally, a "Free Assign Area" located below the dynamics controls enables up to 500 ms of individual channel delay; a mix control blends the delayed sound with the original.

MULTITRACK ROUTING AND OUTPUT SOURCES

A programmable matrix enables post-fader signals to be routed to a total of 48 multitrack outputs (96-track routing is a planned option), with stereo panning between output pairs. A separate monitor bus allows a 2-channel mix to be created while recording a simultaneous multitrack backup, as would be the case during live mix dates. A dedicated track-bounce button simplifies the re-laying of tracks to multitrack while the monitor mix balance and pan settings are retained. As the console's track-record controls tie directly to a Sony PCM-3324/48 transport via the latter's parallel remote, direct punch-in from the control surface with source/tape switching is a snap.

Channel output routing is normally fed from a point in the signal flow post-fader and pan; it can also be switched to feed the main stereo output and/or any of the stereo sub-

groups, which, in turn, can be used for mix-minus or submixes. Sony's multiformat option converts the first eight stereo subgroups into multiformat buses; in this mode, a bank of three panner controls come into their own.

Up to 24 buses are available for aux and cue sends, which can be derived from any part of the channel signal path. Sends can also be linked to provide stereo feeds. Cue logic permits automatic adjustment of levels at the drop-in point. Overall system delay—mic to headphones—is quoted to be less than 2.5 ms with one A/D-D/A conversion cycle. Stereo return channels allow a direct path to be created to the mix bus, and include a 3-band parametric EQ section, dynamics and balance/width controls. Output routing is the same as for input channels except for the lack of direct routing to multitrack buses.

"The APX-R3's automation is in many ways reassuringly familiar," John East offers, "and uses terminology that most engineers will be familiar with." Moving faders can be set to provide read/write/update modes, with ramped return to previous settings after an update sequence. Automation can be set to one of several modes, allowing full dynamic automation of all fader sections, for example, plus snapshot automation of EQ, dynamics and I/O routing. "Of course, all controls can be dynamically automated, and rotary controls [feature] a push-push switch to arm them for this purpose. Faders, outs and the record button are recalled to quarter-frame accuracy, while all other controls are reset within one frame," East says. Master mixes can be created by combining elements from two or more different mixes, by editing of data in terms of timecode locations and/or control elements to create a composite mix.

All in all, Sony's new all-digital music recording console represents a remarkable achievement. Given the firm's extensive experience in both developing and marketing digital audio systems, I'm sure that the new digital design will appeal to a wide cross-section of music recording facilities. ■

Formerly editor of Recording Engineer-Producer magazine, Mel Lambert now heads up Media&Marketing, a consulting service for pro audio firms and facilities.

Tools Change.



Prisma. The Digital Audio Workstation that changes everything.

Until now, workstations have had a "one size fits all" approach that forced you to adjust your working style to suit the computer. But times have changed.

With Prisma, you can choose between two *completely different* user-interfaces optimized for *your* production environment: Prisma Music, a radically different interface for music production, or Prismatic for post and radio. And each Prisma system comes with both — but it doesn't stop there.

At a breakthrough price, Prisma delivers powerful multitrack editing, real-time multitrack mixing and DSP, SMPTE (LTC and VITC), MTC, MIDI, and SCSI interfaces.

Roger Nichols summed it up this way in EQ Magazine: "*Spectral, Inc. Remember that name... Spectral is going to be the company to deal with in the DAW market.*"

So don't hold yourself back by using old tools! Call 800-407-5832 today for all the info on Prisma.



SPECTRAL

ADAT: The Next Generation

The Alesis XT



BY GEORGE PETERSEN

It's here. Slated for unveiling at AES is XT, the next generation of the Alesis ADAT. Priced less than the \$3,995 of the original ADAT, XT incorporates more than 20 new features and functions, including improved transport control with faster locate times.

Though XT may look different, it's essentially an ADAT at heart. The tape format—eight tracks on an S-VHS tape—is unchanged, and XT is fully compatible with tapes recorded on any ADAT system, including both the original ADAT and Fostex RD-8 recorders. And like other ADAT-format modular digital multitracks, XT features sample-accurate sync of up to 16 transports, for up to 128 tracks.

The XT cosmetics are striking. ADAT's flat, black front panel is gone, replaced with a brushed silver-look, extruded aluminum faceplate. Alesis has always been on the forefront of using custom display technologies, such as those used in the Q2, SR-16 and QuadraSynth, but the XT goes much further. On the left side of the unit, a large, multicolored, custom vacuum fluorescent display shows the tape locator data, meters, status indicators and other session data.

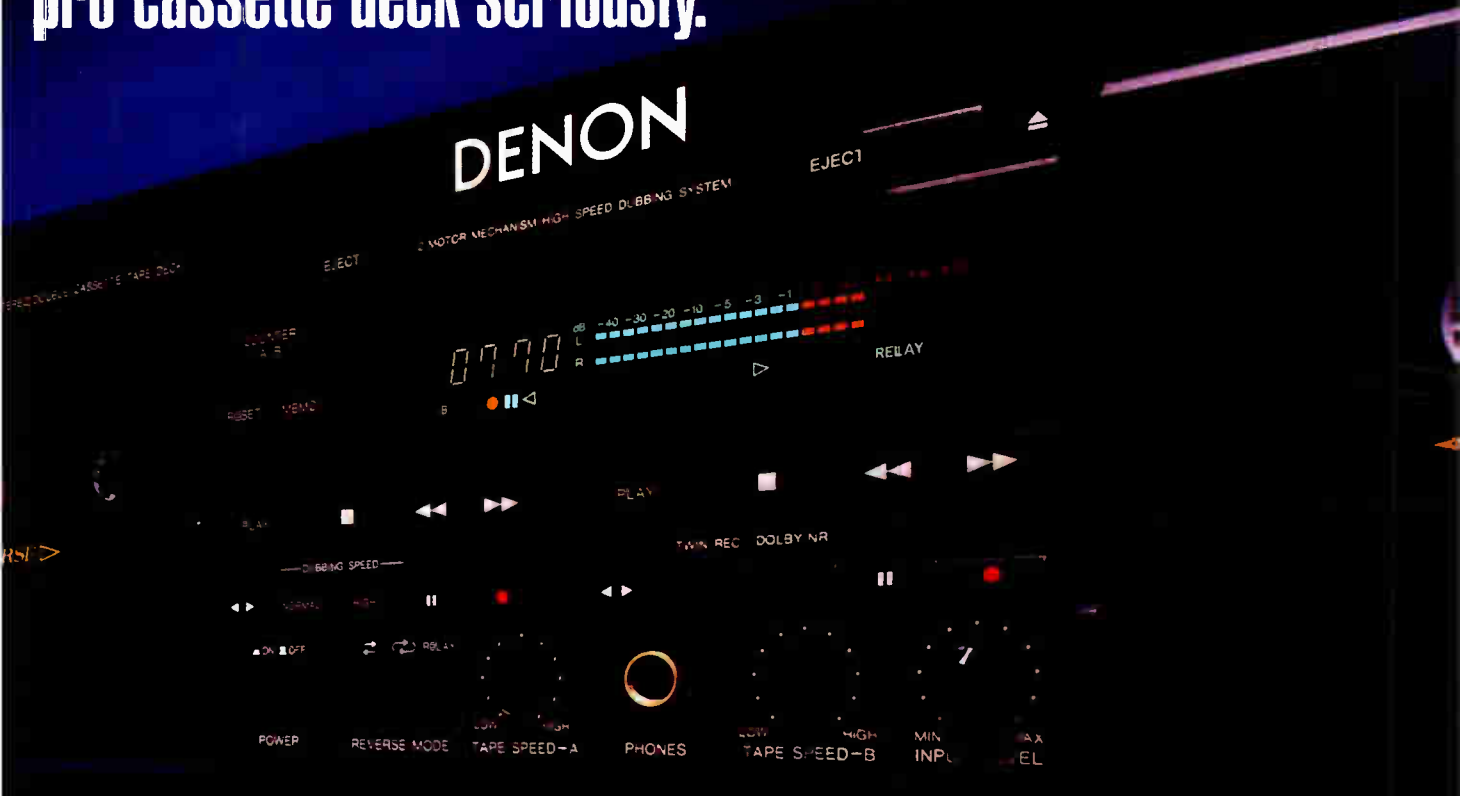
This display improves the ADAT interface, with more flexibility in customizing the

deck's display to user preferences. For example, the user now has control over meter functions: The peak hold feature can be set to momentary (two-second hold), infinite (with peak-clear switching) or bypassed entirely. Another option is the selection of hours/mins/secs and hundredths of a second, indicated in absolute or relative time—again, your choice.

Physically, it is still three units high, but it feels beefier, with a shallower depth and two scooped-out sections along each side for lifting. The front panel sub assembly attaches to a heavy, one-piece, die-cast aluminum chassis. The design objective of this central chassis block was to remove any variations in tooling of separate metal pieces by creating a rigid, single-section frame for mounting the power supply, electronics and transport components. Inside, the XT boasts new-generation, delta-sigma A/D converters and over-sampled delta-sigma DACs.

XT also increases the intelligent control of transport operations, with digital servo control of the deck and microprocessor monitoring of the braking and motor action. The basic transport is the same but significantly faster in terms of the wind speeds: In Wrapped mode, the original ADAT shuttled at

One company still takes the pro cassette deck seriously.



DN-770R

DJs!
Now
available
with
independent
dual
outputs
(DN-770RM)

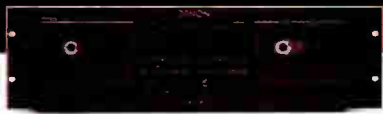
In this digital audio era, many companies have forgotten how important the analog cassette deck is to professional applications. Well, one company never forgets the professional—DENON.

Denon's new **DN-770R Bi-directional Twin Output Dubbing Cassette Deck** is proof positive. This dual deck has all the features you'd expect, such as high speed dubbing and ultra fast auto-reverse, plus a few you've only dreamed of, like two independent variable speed controls to change tempo or match vocal ranges.

Haven't you ever wished you could use your dual-deck machine as two separate decks? With the DN-770R, you can by recording on one while playing back on the other.

The DN-770R gives you all the features you should expect, but most often don't get, such as a long-lasting amorphous tape head, memory rewind, and Dolby HX Pro™. Add relay recording and playback to these features and you'll see—the reason Denon takes professional cassette decks seriously is because we take the professional seriously.

© 1988 Denon Corporation. All rights reserved.



DN-770R TWIN OUTPUT DUBBING CASSETTE DECK

See us at AES Booth #1056

Denon Electronics Division of Denon Corporation (USA), 222 New Road, Parsippany, NJ 07054 (201) 575-7810

DENON
The Industry Standard.

USE READER SERVICE CARD FOR MORE INFO

After comparing the cost of a **PARAGON** to the competition...

Just how has the Paragon earned its reputation as one of the finest high-end consoles ever built?

Could it be our *patented* RMS compressor/limiter and parametric noise gate, generously provided for each input? Is it our legendary high voltage mic preamps? Or maybe the Paragon's famous four-band parametric EQ with peaking and shelving on *every* band that separates us from a host of lesser consoles?

It could be our new **Stereo Input Modules**, each featuring two high voltage mic preamps, stereo four-band EQ and **stereo gate and compressor** in one channel module, giving the engineer maximum control over the stereo signal.

Regardless, it would seem that the price of a console with such an enviable reputation and full array of mixing electronics would be prohibitively expensive.

But in fact, quite the opposite is true.

For under \$74,000 our standard 40 channel (56 input) Paragon comes **fully equipped with over \$30,000** of state-of-the-art signal processing equipment, boasting circuit architecture so advanced it can't be found on any other console, at *any* price. The Paragon solves the problems associated with multiple racks of outboard processing used with other consoles by eliminating all of the extra wiring, interfacing and troubleshooting.

Our free brochure clearly details all the features that make the hand-assembled Paragon such a spectacular desk, and explains why the

Paragon remains the console of choice from the Hollywood Bowl to the Grand Ole Opry to constant live tours throughout the world.

Call us at ATI today for a quote, a free Paragon brochure or free analysis with valuable information comparing the Paragon to any other console.



you'll find there's really no comparison.



For Quotes, **FREE** brochure or **FREE Analysis** comparing the **Paragon** to any other console:

410-381-7879 (PH) 410-381-5025 (fax)

Manufactured exclusively by Audio Toys Incorporated, 17C Mendenhall Court - Columbia - MD - 21045

SEE READER SERVICE CARD FOR MORE INFO

approximately 10-times play speed. According to Alesis, the XT shuttles at about 40-times play speed. Applying a little math, this would reduce the wind speed on a 60-second commercial spot from six seconds to approximately 1.5 seconds, a significant improvement. On a three-minute pop tune, the XT's wind time would be in the five-second range. Once you've used an XT, you probably won't want to go back to a standard ADAT.

On the rear panel, the 1/4-inch, unbalanced, -10dBV connectors have been replaced with RCA jacks, while the 56-pin Elco connector—with eight channels of balanced, +4dBu I/O—is the same as the original. There is one subtle variation with XT's Elco interfacing: The outputs are now servo-balanced, so no level loss occurs when the balanced outs are connected to an unbalanced mixer. In another change, the remote meter bridge connector has been eliminated. With the availability of consoles with expanded metering capabilities, Alesis believed that the remote meter bridge option was unnecessary. Other than these changes (and a cast "Alesis" logo), everything on the back panel is similar to the original ADAT.

Nearly five years ago, when ADAT was first announced to the world, Alesis' intent was to produce a digital multitrack at an affordable \$3,995. With this goal in mind, some of ADAT's more esoteric features—such as individual track delay, digital track routing and multimachine offset—were shifted to the BRC controller. Now, with increased manufacturing efficiency, the XT includes these and 20 other new features at a price that's less than the original recorder.

Despite the added features, most of the XT's recording functions are simple and straightforward. Below the meter display are the eight track-arming buttons, but—unlike the first ADAT—the XT allows punching-in/out of any tracks while recording continues on others. This is a welcome improvement on the XT, especially for post-production applications.

The new machine now offers ten locate points, all settable on-the-fly and editable to 1/100-second accuracy. The ten locate keys also double as a numeric keypad for entering locate

CONVERT YOUR COMPUTER TO AN AUDIO TEST SYSTEM



GOLDLINE
MANUFACTURED IN U.S.A. SINCE 1961

Black Box RTA Computer Interface—Model DSPCI

Features:

- 1/2 octave Real Time Spectrum Analyzer
- Sound Pressure Level Meter
- RS232 Software to set up files
- Software to create customer reports.
- Large 80dB window
- Color or Black & White Display.
- Battery or AC powered.
- Supplied with model MK8 A microphone
- 12 volt phantom power supplied

Additional software options:

- RT60
- Loudspeaker Delay Timing
- Distortion (THD) Analysis.

Contractor prices available.
See us at AES Booth #936

Box 500 • West Redding, CT 06896 • Phone: (203) 938-2588 • Fax: (203) 938-8740

USE READER SERVICE CARD FOR MORE INFO

THINKING ABOUT TUBE GEAR?



CONSIDER THE BEST:
AKG TUBE C-12 MICS
APHEX PREAMPS
DEMETER PREAMPS
SUMMIT AUDIO
T.L. AUDIO, TUBETECH
AND FAMOUS REBUILT
NEVE, MANY OTHERS

CALL 1 800 541-9140

NATIONAL SOUND

6500 MC DONOUGH DR., NORCROSS, GA 30093

or edit points quickly from the front panel. XT's Rehearse mode allows safe, nondestructive previewing of auto-punch recording operations.

The pitch up/down buttons also double as data increment/decrement keys during editing operations, and the XT has front panel keys for selecting a 44.1- or 48kHz sampling rate.

ADAT's blinking decimal point Error Correction indicator has been replaced with a small flashing star on XT's vacuum fluorescent display. For more detailed information, a hidden mode allows monitoring the actual error count of any

tape. This feature also provides the user with a means of running objective comparisons of various tape formulations and brands.

One of the nice things about XT is how it can integrate into an exist-

ing ADAT system. If a user has one ADAT and adds an XT, not only does it provide additional tracks, but by assigning the XT as the master deck and accessing its machine offset feature, the system becomes capable of digital assembly editing. Suddenly, multiple takes of basic tracks (or instrumental/vocal takes) can be combined into one seamless

transport. Before performing a difficult punch on a vocal track, you can make a digital "safety" copy within the machine to any number of additional tracks. Previously, such functions were only accessible via the BRC.

With the debut of the XT, Alesis has added significant new performance improvements to its line of ADAT-format recorders. But perhaps more importantly, XT makes a strong statement regarding the future of the ADAT format, as well as the company's commitment to maintaining compatibility with tens of thousands of ADAT users worldwide.

The Alesis XT will be shown to the public October 6-9, 1995, at the Audio Engineering Society convention in New York City. Initial XT deliveries are scheduled to begin later this month. ■



Alesis XT Rear Panel

performance that incorporates the best sections of many takes. Additionally, data from one—or several—XT track(s) can be digitally routed and copied to a different track(s) on the XT itself or a second ADAT



1992 AIA/LA HONOR AWARD WINNER
1994 AIA/LA MERIT AWARD WINNER

studio bau:ton

PETER GRUENEISEN AIA

PETER MAURER

3780 WILSHIRE BLVD

SUITE 420

LOS ANGELES CA

213 251-9791

213 251-9795 FAX

ZURICH SWITZERLAND:

++ 41 (0)56 22 06 43

++ 41 (0)56 22 91 29 FAX

SINGAPORE:

++ 65 222-0306

++ 65 222-0124 FAX

architecture for acoustics/media



USE READER SERVICE CARD FOR MORE INFO

World Radio History

Creative control, superlative sound and uncompromising support — Lexicon's commitment to the audio professional.



STUDIO SERIES

The PCM80: the stunning new effects standard.



The Lexicon PCM80 is fast becoming the new effects standard for audio engineers the world over. And with its unique DSP engine and robust complement of features, you can be sure the PCM80's going to be around for some time.

Upgradeability is simple with a PCMCIA memory card — a genuine professional advantage. The PCM80 comes loaded with 200 stunning delay/modulation,



True plug-'n'-play: PCM-80 PCMCIA cards offer new algorithms (available soon); preset effect banks from today's masters of audio production; and RAM storage for your own sounds.

Lexicon

Heard In All The Right Places

spatial and reverb effects — and plenty of room for your own creations. The Adjust knob makes it easy to tailor any sound instantly with a single control. There's Lexicon's unique **Dynamic Patching™** along with complete MIDI, Tempo & Tap-tempo control. And there's the legendary Lexicon Sound. Try the PCM80 yourself at your Lexicon dealer. And hear today's new standard.

Contact: 100 Beaver Street, Waltham, MA 02154 Tel: 617/736-0300 Fax: 617/891-0340 E-Mail: 71333.434@compuserve.com

H A Harman International Company

USE READER SERVICE CARD FOR MORE INFO

Neumann's New Tube Mic

BY GEORGE PETERSEN

Neumann is not one of those companies that introduces a flood of new microphones each year. In fact, the company has produced only a couple of dozen models since 1928.

But tube microphones are in demand today, and Neumann's classic tube designs—such as the U47, U67, M49 and M50—are among the most sought-after prizes among studio owners, engineers and collectors. Sadly for tube mic fans, Neumann's last tube model—the U67—went out of production in 1981 (although a few were offered in a limited reissue in 1991).

Now, at the 99th AES convention in New York, Neumann will re-enter the tube mic market with the debut of the M149, a high-performance, large-diaphragm studio model. "It's not a revival of any previous mic," says Wolfgang Fraissinet, of Georg Neumann GmbH in Berlin. "This is a totally new development in terms of the electronics in combination with the shape of the microphone."

The M149 is the first microphone to offer a transformerless output combined with vacuum tube electronics. However, in the case of the M149, transformerless doesn't mean solid-state circuitry. This is no mixed-technology or hybrid approach, where a tube circuit is followed by a solid-state output stage. It's essentially an all-tube design that provides the best of both worlds: The tube front end provides warm, full reproduction, while the absence of a transformer means the avoidance of hystere-

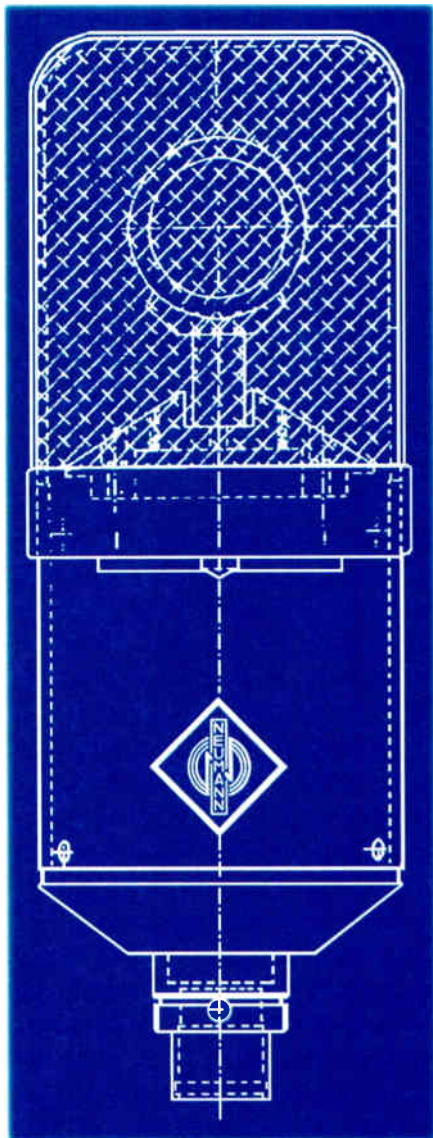
sis, core saturation and high-frequency phase shifts that can result when using an output transformer.

Development of the M149 started a year ago, but discussions on building a new Neu-

mann tube mic go back several years. "This mic came from discussions between our marketing and research staff, as well as input from our customers," Fraissinet says. "If you leave it solely up to the engineering staff, you'll end up with a mic with 800 features that costs tens of thousands of dollars."

So rather than attempt to create an all-purpose, does-everything mic, Neumann designed the M149 for a single purpose: studio vocal recording, just like the U47 and U87. With that goal, Neumann's design team started implementing the outstanding features of previous models into the M149. One of the secrets of the M149 design is the large volume of air surrounding the capsule—its shape is distinctive, with a large basket in the shape of the M49/M50 head. "There's something almost magical about how that particular grille and basket integrate with a mic capsule," notes Neumann's Uwe Sattler. "It's a combination that shouldn't be tinkered with." And in homage to the M149's lineage, it has a bright chrome grille reminiscent of the U47 "Chrome-Top." All other parts are in Neumann's distinctive

satin finish, including the mic body, which is the same diameter as the M49 but slightly longer in length, due to the complexity of the electronics.





**2:00 a.m. The band
just found the sound
they've been looking for.
Everyone's rockin'.
Except you. You're figuring
out how to tell them the
HIGH OUTPUT master
you were using just
"crapped out."**

Of course, you wouldn't be having this anxiety attack if you used new **BASF 900 maxima** High Output Mastering Tape. With 3 dB more output and 2 dB less noise than standard analogue mastering tapes, it is identical to the MOL and the signal-to-noise ratios of other high output masters. But it has the reel-to-reel reliability and consistency

of BASF 911. Low rub off. Precision-manufactured. It's classic BASF. The kind of BASF tape studios have been relying on since 1934. As you turn to face the band (gulp), you make a vow. If you survive the next ten minutes, the first thing you'll do is contact BASF, 1-800-225-4350 (Fax: 1-800-446-BASF); Canada 1-800-661-8273.

DEMAND IT.



BASF

USE READER SERVICE CARD FOR MORE INFO

Engineering.

Dave Moulton's
CD-based audio
eartraining course for
musicians,
engineers and producers.

Real musical examples, pink noise
and solo instruments; hundreds of
A/B comparisons, drills and exercises...

The Golden Ears Audio Eartraining
course will develop your listening skills
and build on those you already have.

By the time you've finished the
course, expect to be able to listen
to an equalizer switched in and out
on a recording and describe how
it is set in terms of frequencies,
cuts and boosts, **by ear alone**.
You'll be able to identify the reverb
and delay settings down to tenths
of a millisecond; compression
attack and release times;
stereophony, distortion and
amplitude changes.

"The vocal is down 3dB at 500 Hz...
the compressor on the toms needs
a much slower release..."

From the very first session with this
unique program you'll be hearing
recordings with a new degree of
understanding—all you need is a CD
player and a decent set of speakers
or headphones.

Order toll-free (24hr), fax, Email or
simply write to the address below.



Volumes 1&2 (4 CDs)

Vol.1: FREQUENCIES.

Trains you to recognize boosts
and cuts in all ten octaves of the
frequency spectrum. Progressive
drills build from simple boosts in
music to more demanding single
octave cuts in pink noise.

Vol.2: EFFECTS & PROCESSING

31 possible signal processing
changes, grouped into six families:
amplitude change, gross and subtle
distortion, slow and fast release
compression, equalization changes,
stereophony anomalies and time-
delay/reverberation settings.

Vols. 1&2 **\$120** .tax, s/h*

Volumes 3&4 (4 CDs)

Vol.3: DELAYS AND DECAYS

Delay settings from tenths of a
millisecond to whole seconds;
panning/slap/spaciousness effects
in mono and stereo, on sustained
and transient sounds.

Reverb parameters—predelays,
decay times etc. Invaluable when
creating programs.

Vol.4: MASTER FREQUENCIES

Advanced EQ. Identify cuts and
boosts to within a third of an octave
and two octave bands simultaneously
boosted and/or cut.

Vols. 3&4 **\$120** .tax, s/h*

Vols 1,2,3&4 (All 8 CDs)

\$220 .tax, s/h*

1-800-600-1543

Outside US: (213) 650-2467 Fax your orders to: (213) 650-2468 Email: KIQ@soho.ios.com

Send Check, M.O. or VISA/MasterCard details to: KIQ Productions/Golden Ears, 13351-D Riverside Drive, Sherman Oaks, CA 91423 USA
CA Residents add 8.25% Sales Tax. *Standard shipping (\$5.00 per order) 2-3 weeks. 2-day USA available at \$20 per order. Sorry, no C.O.D.s.

USE READER SERVICE CARD FOR MORE INFO

The M149's capsule ancestry goes back to the U47, which used the M7 capsule. Unfortunately, the M7 was susceptible to changes in humidity, and its PVC diaphragm had long-term stability problems, becoming harder and more brittle with age. Dealing with these problems in the late 1950s, Neumann engineers experimented with Mylar diaphragms, which were more stable and offered protection from aging. However, no reliable glues were available at the time for attaching a gold-plated Mylar diaphragm to the capsule's highly polished backplate. The solution was to use 12 screws, securing a clamping ring to hold the diaphragm at precisely the proper tension. This new capsule, known as the K47, was used in all U47s built after 1960. The M149 uses the K49 capsule, which is a hand-selected, tighter-tolerance version of the K47.

The M149 offers a choice of nine polar patterns: cardioid, wide cardioid, hypercardioid, omnidirectional and figure-8, with an intermediate step between each. The familiar thumbwheel polar pattern switch used in the U47 and U87 has been replaced with a high-quality, roller-bearing switch with a noticeable "click" when you switch between positions, so there's little chance of inadvertently changing polar patterns.

Also missing is the attenuation pad switch. According to Neumann, this feature is unnecessary with the M149, as its internal electronics cannot be overloaded by musical sound pressure levels.

The mic body terminates in a 7-pin XLR for connection to its outboard power supply, which has a standard 3-pin XLR-F output. The microphone will be delivered as a package, including an elastic suspension, the 7-pin cable, power supply and case. Speaking of the case, Neumann is said to be developing something "extraordinary" for the M149.

Initial deliveries are slated to begin around the end of the year. Meanwhile, Neumann will display a working M149 prototype at AES, so attendees can try it out and give it a listen. Pricing of the package is expected to be in the \$4,000 range.

Neumann/USA, 6 Vista Drive, PO Box 987, Old Lyme, CT 06371; 203/434-5220; fax: 203/434-3148 ■

Technomad™

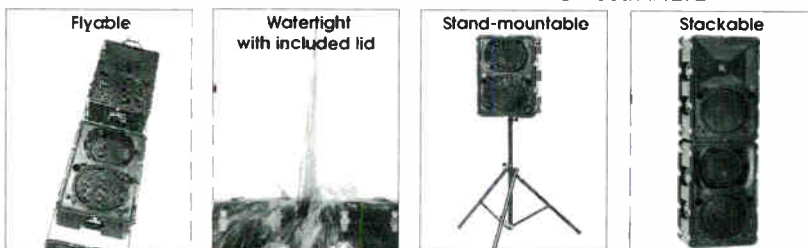
THE TOUGHEST LOUSPEAKERS IN THE WORLD.



- One-piece polymer body shrugs off impact
- Watertight with included lid.
- Molded-in colors won't crack or fade
- Recessed hardware.
- Unique non-Thiele tuning gives truer, deeper, more articulate bass than traditional designs.
- Advanced low-loss DC-tolerant crossovers
- Premium components
- Two-Year warranty

Complete line of full-range and subwoofer designs, available in vivid colors and loaded with features like large-grip handles, flying hardware, stacking interlocks, Neutrik™ jacks and stand-mount sockets. Uncompromising design and construction. Send \$5 (refundable with purchase) for video and catalog. Patents pending. Call for nearest dealer.

See us at AES Booth #1272



Technomad Inc. 340 Riverside Drive Northampton MA 01060 N:technomad@crocker.com F:413.586.5681 P:800.464.7757

USE READER SERVICE CARD FOR MORE INFO

Experience The Industry's **WIDEST SELECTION**

Why
waste time and money canvassing the country when one call to **EAR** will do it all?

If
you need complete digital workstation systems or computers and peripherals,

call **EAR** for:

- Most Extensive Selection in the U.S.
- Leasing, Buy/Sell/Trade
- New and Used, Buy/Sell/Trade

"se habla español"
15 Years of Excellence

THE DIGITAL COMPANY

EAR™ PROFESSIONAL AUDIO/VIDEO
2641 E. McDowell Phoenix, AZ 85008 602.267.0600

AVID **OPCODE**

APPLE **DIGIDESIGN** **OTARI**

APOGEE **FOSTEX** **PANASONIC**

AKAI **IBM** **ROLAND**

LEXICON **TASCAM**

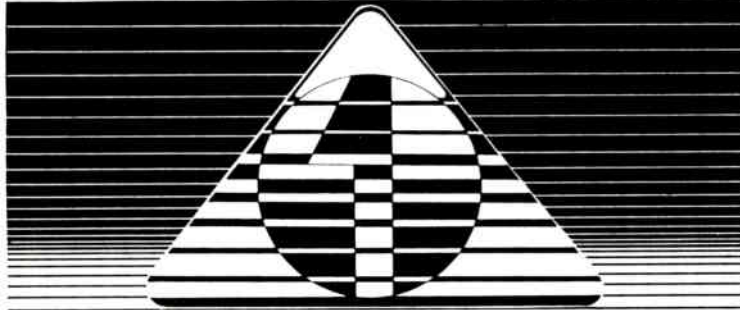
MARANTZ **YAMAHA**

MARK OF THE UNICORN

Studio PROJECTS



Symbols of Life in the World of the Pro[®]



Media Recognition System



Media Recognition System



Component Digital



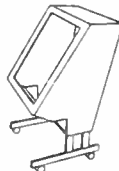
Hi8



SONY

- PCM~800
Hi8 DTRS Digital 8 Track
- PCM~2600 & DTC~A8
New 20 Bit SBM DAT Recorders
- PCM~7010
SMPTE Time Code DAT Recorders
- VIDEO Recorders
Time Code & Standard
- VIDEO Monitors
View The Future With SONY
- Microphones
- Headphones
- Signal Processors

PROJECT ONE A/V



E-mu Systems



- PCD~225 & 600
CD Writer's & Media
- DARWIN
Hard Disk Digital 8 Track

MARANTZ Professional

- New CDR~620 CD Recorder For Both Worlds
- CD Players With Digital I/O and Pitch Control
- Pro Cassette Decks Tough, Clean Mean Machines

PROFESSIONAL MEDIA



Fostex

- HD~8 Digital WorkStation
New 8 Track Hard Disk Recorder With Mixer
- RD~8 ADAT
The Serious SMPTE ADAT
- D~5 Studio DAT
Very Pro & Priced Right
- D25, D30, PD2, PD4
The Serious SMPTE DAT
- XR~3, XR~5, XR~7
New 4 Track Multitrackers
Priced Right & Loaded.
- HEADPHONES

Your ONE Source Studio Project Center[®]

• In Stock at One derful price's •

Hardware • Processories[®] • Racks • Connections • Ideas • Advice

- Express Shipping From Stock
- 30 Day Price Protection
- 10 Day Money Back Guarantee
- No Lemon Exchange Policy

- Discover One of HOLLYWOOD's Best Kept Secrets. Since 1980
- Prompt, Reliable, Kind, & Knowledgeable
- Call For Current Line Card, With Over 1500 Items We Got You Covered

We Also Stock The Largest Selections Of Audio • Video • Data Recording Media On the Planet.

Order Toll Free @ 1 800 818 - 8986

From L.A. 818 / 753-8273 or 213 / 464-2285
24 Hour FAX Lines 818 / 753-9054 or 213 / 464-1858
Email 01@projectone.com • WEB projectone.com
Hollywood • 6669 Sunset Blvd. Hollywood CA 90028
Valley • 10627 Burbank Blvd. North Hollywood CA 91601



PROJECT ONE A/V



**We Ship Anywhere
Sorry No COD'S**

by Ty Ford

OKTAVA MK 219 AND MK 012 MICROPHONES

Evaluating new microphones is always great sport. Part of the sport is wondering what application the manufacturer had in mind. Then there's trying to tell the difference between a design feature and a disguised limitation. In this case, the evaluation was made even more interesting by the fact that these were Russian microphones manufactured by Oktava.

Unless you've been doing session work on the other side of the Iron Curtain, or maybe in Cuba, you wouldn't have run into Oktava, even though the company has been making microphones since 1947. The factory is in Tula, a few hundred kilometers south of Moscow. The fact that the list price for the MK 219 is \$549, and the MK 012 set is \$649, admittedly made me more than a little

skeptical. In an effort to evaluate as fully as possible the sound of these mics, I tried them in different studios, with different mic pre's and in different applications.

THE MK 219

The MK 219 is a cardioid-only condenser with switchable 10dB pad and LF roll-off. The grille and mesh around the capsule are very sturdy. Although we didn't try, these seem to be tough enough to withstand occasional drumstick hits. Frequency response is quoted at 40 to 16k Hz, with 11mV/Pa sensitivity and 200-ohm output impedance, but it has a peak at 4 kHz that gives it a slightly edgy sound.

The gold-plated diaphragm requires phantom powering from 12 to



We're Plugged In!



Replace your studio doors and windows with high performance acoustical components from **Acoustic Systems**.

SoundSecure Plug-in Doors are available in a variety of sizes and sound isolation levels. Single or double leaf design and several window options are offered.

SoundSecure Plug-in Windows are also available in an assortment of sizes and performance levels with the same commitment to quality.

800/749-1460

415 E. St. Elmo Rd., Austin, TX 78745
512/444-1961 FAX 512/444-2282

ACOUSTIC SYSTEMS

USE READER SERVICE CARD FOR MORE INFO

52 volts. The mounting hardware is simple and easily bent. The ring-shaped end slips over the base of the mic and is held in place by a threaded collar. In a trans-Atlantic phone conversation with the distributor, A.S. McKay, I was assured that new, sturdier mounting hardware is in the works. The MK 219 is supplied with mounting hardware and comes in a foam-lined plastic box with a frequency response readout, a thirteen-page manual with circuit diagrams written in Cyrillic and a four-page English translation.

The 10dB pad and highpass switch are easily accessible. In flat position, the response rises 4 dB from 100 Hz to 1 kHz. At 3 kHz, the response rises another 2 dB to a plateau between 3 kHz and 6 kHz. From there, the top end rolls gently off until 15 kHz, crossing 0 dB at about 17 kHz. Low-end response is a bit loopy from 100 Hz down to 50 Hz, and at 40 Hz takes a 9dB/octave ride down to 10 Hz. With the high-pass filter switched in, roll-off starts at 600 Hz, crosses 0 dB at 300 Hz and maintains a 6dB/octave slope until 60 Hz.

Using API 512B discrete mic preamps, I compared the MK 219 to an AKG C-414 and a Neumann U87 on a voice-over session. The MK 219 was less open-sounding on top than either of the other two mics. The MK 219 bottom is more like the U87 than the low bottom of the 414, but slightly thinner. The result is a mic that sort of sounds like a U87 but doesn't go as far down or up and has a peakier midrange.

While speaking into the mic with headphones on, I noticed a slight metallic sound. However, when my "read" was recorded into the AMS AudioFile and played back on JBL 4311 monitors, I couldn't hear the metal. Later, at another studio, someone else mentioned that the mic sounded a bit metallic. I began to wonder if this was the result of resonance in the two-part clam shell design of the metal body, the metal mesh wind screen, some artifact created by sound bouncing around inside the capsule or ferric residue from the can of green beans I ingested for dinner.

Another unique property of the MK 219 was its proximity effect. There was none until you got within

MANHATTAN
PRODUCTION MUSIC

355 West 52nd St. New York, NY 10019 Sixth Floor
800-227-1954 or 212-333-5766 in NY state
212-262-0814 FAX

PRODUCTION MUSIC IN A CLASS BY ITSELF



If you feel like

we've met before,

it was probably

in your dreams.

Imagine, for a moment, you enter your studio. As you begin to work on your latest masterpiece, you become more creative. More productive. And the world becomes your oyster.

If any of this sounds familiar, you're either having another nocturnal vision at R.E.M. speed or you've been working on a Studioframe™, the most intuitive system you can get your hands on.

With Studioframe, you'll have the confidence of single screen editing, so all the information you need will be on screen at bullet speed. It also comes with 8-16 or 24 track record/play simultaneous outputs and the DSC-100 Edit Controller, our dedicated user interface. All of which allows you to become one with your machine — not to mention the creative process.

We could go on about Studioframe, but it would be a lot more productive if you simply tried one for yourself. And stop dreaming about it. For more information or a demonstration, call (619) 727-3300 ext. 3038 or FAX us at (619) 727-3620.

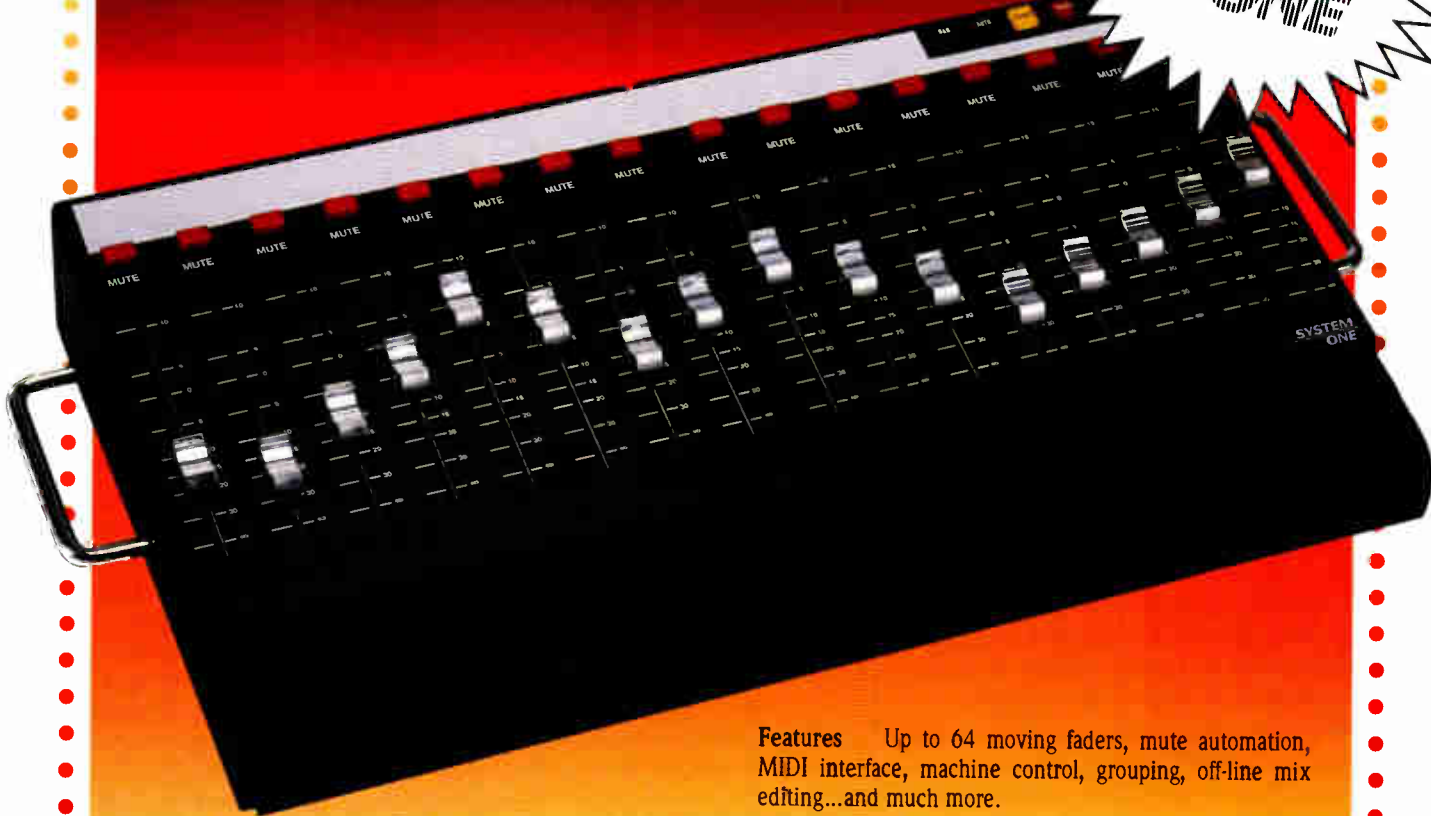


Studioframe™ by TIME LINE

London, New York, Los Angeles and a place called Vista.

Your dream... *an affordable* moving fader automation package ...is reality with Uptown's *NEW*

~~SYSTEM ONE~~



The *New System One* from Uptown is a self-contained package with real moving faders carrying audio that patches into your mixing console. Any console. Just set it on the mixer (or keyboard stand, or coffee table, or whatever), plug it into the inserts, turn on the computer, and you are in business. Change an ordinary board into a state-of-the-art mixing console in five minutes.

Automate all of your rooms with one unit. Patch into just the channels that need automation. If you don't like your console, change it, but keep your moving faders. Or, take the faders to another studio. Also automates DAWs instantly, via MIDI.

The new System One uses the same powerful Uptown mixing software that hundreds of users around the world rely on for mixing records, commercials, TV and movies. There is even a live performance version of the software available for road use.

Features Up to 64 moving faders, mute automation, MIDI interface, machine control, grouping, off-line mix editing...and much more.

Specs 10-bit fader data, frame-accurate moves, time-code based, unlimited mix storage to hard disk, repeated insert points, and no VCAs.

Price Complete package, including computer, is under ten grand for a 24-channel system.

System One...serious moving-fader automation that doesn't cost a fortune.

US Distribution by Group One

516-249-1399 NY

310-306-8823 LA

303-581-0400

FAX 303-581-0114

UPTOWN AUTOMATION SYSTEMS, INC.

See us at AES Booth #1124



four inches of the mic. The difference between backing off of the U87 and the MK 219 was dramatic: As you moved away from the U87, there was a very smooth sense of distance, while at a distance of two or three feet, the MK 219 sounded like it was across the room.

In comparisons with the AKG 414 in cardioid position, I found the MK 219 had a much wider high-frequency polar response, so although the MK 219 didn't have the HF response of the 414, it picked up a lot more of what it did hear.

It occurred to me that, on voice, the MK 219 should sound like a Sennheiser MD-421. Plugging both into a Mackie 1604, and moving the 421 EQ ring one click from "M" to "S," I recorded the same script into my Orban DSE-7000 workstation. Apart from the obvious level adjustments needed to balance the more sensitive MK 219, the voice tracks were sonically indistinguishable.

MK 012

The MK 012 set consists of a body with a threaded removable in-line 10dB pad and three small screw-on condenser capsules featuring cardioid, hypercardioid and omnidirectional characteristics. Frequency response is quoted at 20 to 20k Hz, and all three capsules are extremely flat. Sensitivity is 10mV/Pa. The MK 012 likes 48V phantom power and has an output impedance of 300 ohms. The kit fits in a nice foam-lined wooden box. You also get a simple but effective pinch-clamp with standard mounting threads. There's also a C-ring suspension mount, but the rubber bands and mic clip are substandard. Again, distributor A.S. McKay assured me that a new suspension mount is in the works.

The MK 012 system was a major surprise. It is so sensitive to low frequencies that, when pressed to my chest, it picked up my heart and lung sounds quite easily, even with the 10dB pad on. The construction of the body and capsules is sturdy, although the chrome capsule screens appear more fragile. The capsules rely on a single-conductor center pin on their bottom side that fits into a spring-loaded socket on the pad and body to make their connection. The return path is the body itself.

The cardioid and hypercardioid capsules were almost, but not quite, as transparent as the Neumann U87, but with a smaller sweet spot and not quite the high-frequency response. If you imagine a spectrum, on the left end of which is the Neumann U87 and on the right end of which is the AKG 414, the cardioid and hypercardioid capsules of the MK 012 sit just to the left of the U87. I know that's not on the spectrum, but that's where they are. The MK 012 omni capsule was the best. At Flite Three in Baltimore, where part of the test took place, engineer/producers Lou Mills, Frank "Four" Ayl

and I could not tell the MK 012 from the U87 in omni pattern.

Although the MK 219 is somewhat susceptible to popping, the MK 012 capsules are extremely sensitive. Even using a pop filter and placing the mics to the side or above is no guarantee of a pop-free recording. Moving the mic in a slow arc ruffled the diaphragms.

I next headed to Oz Recording, where engineer/producer Steve Palmieri and drummer Jim Ralph had a Yamaha Power Recording kit set up. The kick had a 12-inch hole in the front head and 2-inch Sonex covering the bottom of the shell.

UNCLE'S STEREO

NEW YORK'S ORIGINAL ELECTRONICS DISCOUNTER

Phone: 1-800-978-6253 Fax: 1-212-343-9142

SPEAKERS	CASSETTE DECKS
CELESTION MP1 Highest Rated... CALL!	SONY TCWA7ES Dual Auto Reverse... CALL!
JBL THX System... CALL!	SONY TCWA9ES Dual Record... CALL!
ATLANTIC TECH FULL LINE IN STOCK!	NAKAMICHI DR1... BEST PRICE!
ADVENT HERITAGE Tower Spkr... CALL!	NAKAMICHI DR3 Audiophile... CALL!
KEF Q70 Tower Speakers... CALL!	SONY TCK615 3 Head... CALL!
PINNACLE AC650 Book Shelf... CALL!	SONY TCWR665 Pitch Control... CALL!
NHT SUPER ZERO... CALL!	ONKYO TAWR414 Dual Deck... CALL!
VELODYNE VA-1012 Power Sub... CALL!	AIWA ADS-950 Dolby-S... CALL!
CAMBER LS7 Top Rated... CALL!	YAMAHA KXW282 Best Buy... CALL!
NHT SW2P Power Sub Woofer... CALL!	TECHNICS RSTR575 Double Deck... CALL!
ADS MS-3 Power Sub Woofer... CALL!	DENON DRM740 3 Head... CALL!
BIC V12 Top Rated... BEST PRICE!	
INFINITY MICRO II Spkr. System... CALL!	
RECEIVERS	CD PLAYERS
YAMAHA RXV2090 New AC3... CALL!	TECHNICS SLPD1010 MASH... CALL!
YAMAHA RXV690 80Wx3 + 25Wx2... CALL!	DENON DCM340 5 Disc Carousel... CALL!
YAMAHA RXV590 75Wx3 + 20Wx2... CALL!	DENON DCM460 5 Disc Carousel... CALL!
CARVER FULL LINE IN STOCK CALL!	NAD 513 3 Disc Carousel... CALL!
NAD AV716 A/V Pro Logic... CALL!	ONKYO DXC220 5 Disc Carousel... CALL!
PIONEER AC3... IN STOCK!	YAMAHA CDC555 5 Disc Changel... CALL!
DENON AVR2500 Highest Rated!... CALL!	NAKAMICHI MB4 5 Disc Carousel... CALL!
NAKAMICHI RE3 Audiophile... CALL!	DYNACO CDV1 Vacuum Tube CD... CALL!
JVC RXV-817 A/V Pro Logic... CALL!	SONY CDPCA9ES 5 Disc Carousel... CALL!
TECHNICS SATX-1010 THX... CALL!	SONY CDPCA7ES 5 Disc Carousel... CALL!
ONKYO TXSV-727 Pro Super Buy... CALL!	SONY CDPC365 Play & Change... CALL!
ONKYO TXSV-525 Pro Best Choice... CALL!	SONY CDPC445... CALL!
ONKYO TXSV-919 Pro Best THX... CALL!	NAKAMICHI MB1 Music Bank... CALL!
SONY STRGX800ES 90Wx3 + 30Wx2... CALL!	
SONY STRGX900ES 100Wx3 + 30Wx2... CALL!	
HARMON KARDON FULL LINE CALL!	
DAT DECKS	SEPARATES
JVC XPD1 PRO No SCMS... BEST PRICE!	CARVER TFM35X Power Amp... CALL!
SONY DTC60ES Home DAT... CALL!	B&K FULL LINE BEST PRICES!
SONY TCD-D7 Portable DAT... CALL!	LEXICON CP3+ THX Processor... CALL!
PANASONIC ALL MODELS IN STOCK!	HARMON KARDON FULL LINE CALL!
TASCAM CALL FOR BEST PRICE!	ACURUS A-150 Power Amp... CALL!
SONY MDS302 Mini Disc Recorder... CALL!	DYNACO FULL LINE IN STOCK!
SHARP RXP1 Portable DAT... CALL!	
MINI SYSTEMS	
	DENON D-700 Best Mini System... CALL!
	YAMAHA CC-90 3CD Changer... CALL!
	AIWA NSX-V70 100W + 100W... CALL!
	AIWA NSX999 120W x 2... CALL!
	AIWA LCX70 7CD 25W x 2... CALL!



FOR PRICE & ADVICE WE'RE VERY NICE!

UNCLE'S STEREO

Everything In Electronics For Less!

581 Broadway, New York, NY 10012 212-343-9111 Fax: 212-343-9142 Mon-Sat 10-7 Sun 11-5:30

216 West 72 St., New York, NY 10023 212-721-7500 Fax: 212-721-7587 Mon-Sat 10:30-7:30 Sun 11-5:30

Not responsible for typographical errors. All prices subject to change without notice. Shipping is non-refundable. A restocking fee may apply on returns. Consumer Affairs Lit. # 0904418. © 1995 Uncle's Stereo Inc.

International & Canadian Orders Welcome!

New York's Largest Blank Tape Dept.!

OPEN 7 DAYS

THE HOME THEATER & HI-FI SPECIALISTS!

NAKAMICHI • PIONEER • ADCOM • BROTHER • HARMAN KARDON

USE READER SERVICE CARD FOR MORE INFO

by Paul Potyen

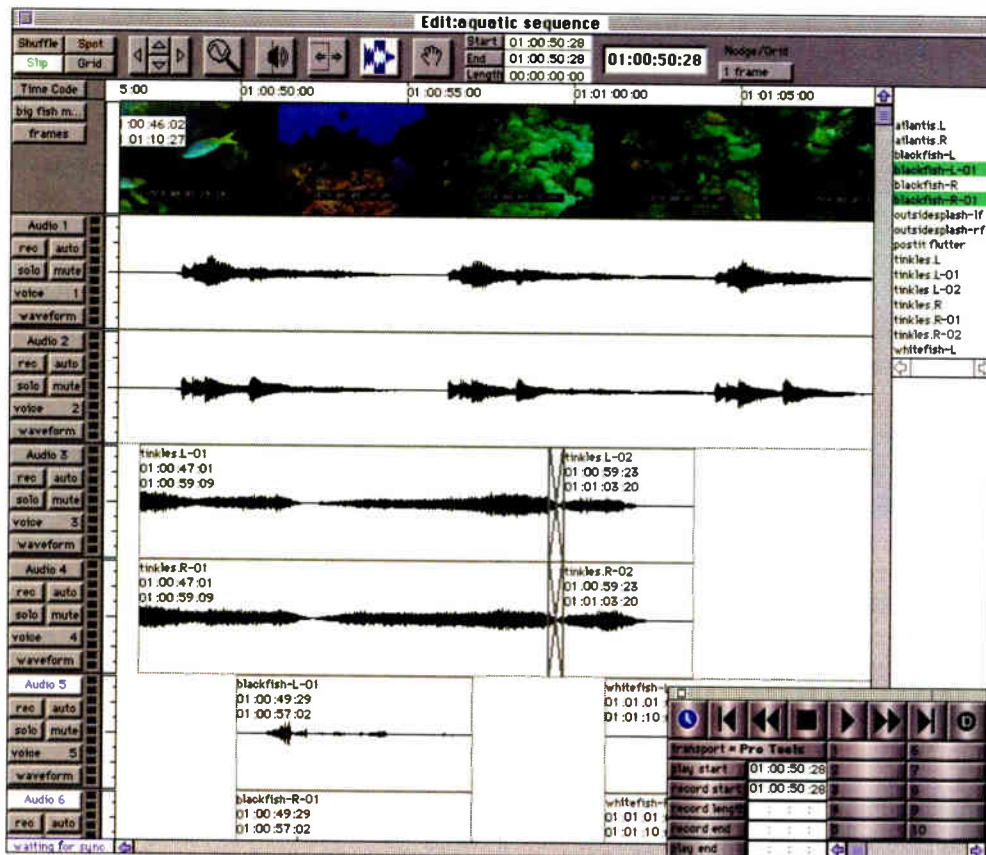
DIGIDESIGN PostView 3.1 PLUG-IN FOR PRO TOOLS

Our first exposure to PostView (*Mix*, March '94) was a sneak preview of an enhanced version of Digidesign's Pro Tools II digital audio recording and editing system for the Apple Macintosh. Designed for working with audio in the post-production environment, the original PostView was actually sold as a stand-alone application that incorporated its extra features into the standard Pro Tools code. With the development of Pro Tools III (see "Pro Tools III Field Test," *Mix*, April '95), PostView is now offered as a plug-in module for

Digidesign's new TDM mixing and DSP plug-in environment.

INSTALLATION AND CONFIGURATION

The PostView package consists of three components: an installer disk, a Mac-to-Sony 9-pin serial control cable and a user's guide. In order to use PostView, you'll need a Pro Tools III Core System or Pro Tools 442 (I-series) Core System; Pro Tools version 3.1 software or higher; a NuBus-equipped Centris, Quadra, 7100 or 8100 Macintosh with at least 16 MB of RAM; a 12-inch or larger



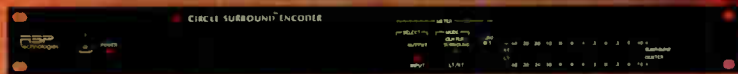
PostView's edit window, showing the new "picon" track. The transport window (lower right) now lets the user switch between Pro Tools as the master transport and an external device as master.



Don't Mess Surround.

There's a lot of confusion about surround sound recording these days, and as a project studio owner you don't want to mess around with the wrong format. ∞ Cinema surround is fine for the movies, but what about your music? Now you can record with the world's finest music surround sound system, Circle Surround™ from RSP Technologies. ∞ Our patent pending intelligent process will enable you to position instruments, vocals, sound effects and so on, anywhere in the circle in conjunction with a four, or five, speaker surround system. Complete smooth panning of the entire 360 degree sound field is possible. ∞ Circle Surround™ uses no artificial ambience effects, and no schemes to mess up your original source material. Just the best surround sound process available for the most dramatic and realistic music and audio/video surround productions. ∞ Compatible with exist-

ing surround systems, Circle Surround™ will even dramatically improve performance of those typical cinema surround systems. ∞ So put your music, your soundtrack, your audio/video production, in good hands with Circle Surround™ and leave the popcorn at the movies. Give us a call, or visit your RSP Technologies dealer and quit messing around when it comes to surround.



See us at AES Booth #362

RSP
Technologies

2870 Technology Drive ∞ Rochester Hills, Michigan 48309 ∞ (810) 853 · 3055

World Radio History
USE READER SERVICE CARD FOR MORE INFO

SOUND CHECK



Alan Parsons & Stephen Court

The Professional Audio Test Disc

Mastered by Mobile Fidelity Sound Lab

Sound Check was designed as a universal tool, one which *anyone* with a serious interest in sound—whether amateur or professional—would find beneficial and easy to use.

Originally released in Europe in 1993, *Sound Check* is now considered an indispensable aid by sound engineers, record producers, hi-fi enthusiasts, musicians, broadcasters, equipment installers, sound reinforcement personnel—the list goes on.

What's on the *Sound Check* disc? A total of 92 essential tracks in all: Test tones—yes—but also dry, unprocessed instrumental and vocal recordings, sound effects (one or two of some repute—the *Chieftain Tank* recording brought down the ceiling at one demonstration), some of the best-sounding finished products to be found, along with utilities like time code and a musical tuning reference.



Sound Check is available at your local record, audio and hi-fi store. To locate a dealer near you or, if you prefer to order direct, call 1.800.423.5759.

"It goes without saying that high standards of quality and meticulous attention to every detail in the recording were paramount in our minds during the making of the project. It is therefore particularly appropriate that Mobile Fidelity Sound Lab—with their unrivaled reputation for recordings of the very highest quality—have released this special audiophile version of the *Sound Check* disc."

- Alan Parsons & Stephen Court

ULTRADISC II™
—The GAIN System—

mobile fidelity sound lab
a division of MFSL, Inc.

105 Morris Street • Sebastopol, CA 95472 • 800-423-5759 • In Canada call 800-267-1216 • WWW URL address: <http://gnn.com/gnn/ustmfsi>

USE READER SERVICE CARD FOR MORE INFO

color or grayscale monitor; System 7.1 or later; and QuickTime 1.6 or higher (QuickTime 2.0 is highly recommended).

As already mentioned, PostView can be used with digital video or in synchronization with an external video deck. If you plan to use digital video, Digidesign recommends the use of a third-party video capture card—such as Radius VideoVision—with a separate color monitor, and a hard disk attached to the Mac SCSI bus for storing QuickTime video. (Pro Tools audio files must be stored on a separate drive attached to the Digidesign bus.) If you wish to use PostView to control an external video deck, you need a SMPTE-to-MIDI converter, the supplied 9-pin cable and a Sony 9-pin or V-LAN-compatible external VTR. (A time-code reader card must be installed in VTRs using the 9-pin protocol.) In addition, most audio post facilities use house sync to resolve all their decks and workstations accurately. In such situations, a Digidesign SMPTE Slave Driver and/or VideoSlave Driver is recommended for resolving your PostView system.

For this evaluation, we used an Apple Macintosh Quadra 840AV with 24 MB of RAM, System 7.5 and a 16-channel Pro Tools III system. We did not have access to a third-party video card, but we were able to use the 840AV's internal video abilities to get a good feel for the way PostView handles QuickTime movies. For machine control, we used a Panasonic AG-7750 deck, which uses Sony 9-pin.

The software installation process is pretty automatic—similar to that for Pro Tools. After installation, you are required to authorize your PostView software by inserting the master diskette the first time you open Pro Tools.

DIGITAL VIDEO IMPROVEMENTS

As with the first version of PostView, the new plug-in offers synchronization with digital video via QuickTime movies, as well as machine control of external video/audio transports via Sony 9-pin and Videomedia V-LAN protocols. Although the most obvious change over earlier PostView versions is its integration into existing Pro Tools III systems, there are others. Significant improvements have been made in the way that dig-

ital video is handled. There is now a video "picon" track for session's QuickTime movie. When you zoom in on a video track, the size of each picon remains the same, but there are more picons "per second" displayed. It makes for quick and easy navigation to different scenes in a long video sequence, and frame-accurate viewing of small sections of a sequence. The combination of QuickTime 2.0 and improvements in PostView software have resulted in substantially better video playback performance and editing accuracy than with previous versions of PostView.

Unlike some other applications that provide QuickTime video capture, such as Adobe Premiere, PostView is designed to be a professional level audio editing system. So digital video is imported into your session, and once there, is not editable. However, you can offset your movie track to make the window burn of your video consistent with your session time. You can also scrub on a movie track to achieve results similar to scrubbing an audio track. Scrubbing the movie track does not cause audio to play, but scrubbing on an audio track causes the video to scrub as well.

Another new feature in this version of PostView is "Movie Zoom," which uses pixel doubling of a QuickTime Movie captured at 320x240 pixels blown up to 640x480 on a 640x480-pixel computer monitor (or any NTSC/PAL video monitor that is being driven by your video capture card). Finally, an "Optimize Movie Playback" feature in the Display menu lets the CPU sacrifice updating of the edit and mix windows in favor of smoother video playback.

MACHINE CONTROL

Setting up for machine control is possibly the most complex part of configuring a PostView system. It not only involves setting several parameters in the PostView software (machine control port, protocol, machine online, post-roll and pre-roll amounts), but correctly setting up your external transport to operate in Remote mode using the correct protocol.

Once you are set up, Version 3.1 of PostView lets you easily toggle between offline and online playback, as well as master/slave configurations—all from the PostView trans-

—CONTINUED ON PAGE 356

3M MEGA

Attention to emerging **Data** technologies and **Reliability** make 3M the #1 supplier of **Data Media** on the planet.

COMPACT
disc
Recordable

Digital
Data
Storage
Media Recognition System

D-Eight

MO
REWRITABLE

MEDIA

No other Company offer's you more Formats and accessories backed by the most professional State of the Art, Manufacturing, R&D and Customer Service in the industry. *Very Serious*

DAT
Digital Audio Tape

DTRS
DIGITAL TAPE
RECORDING SYSTEM

986

Recommended by Alesis
for ADAT™ Recorders

MASTERS

That's why the most demanding artists engineers & Producers trust 3M for predictable Success.



VISIONARY

3M

In stock at *Onederful* price's.
your One Source for

3M Authorized Dealer
Audio and Video Products Division



PROJECT ONE A★

Call 818 / 753-8273
Us @ 213 / 464-2285

Toll Free 818-8986
800

USE READER SERVICE CARD FOR MORE INFO



WHILE IT TAKES APPROXIMATELY
4 MILLION YEARS FOR A LUMP OF COAL
TO TURN INTO A DIAMOND,
STUDIO CONSOLE TECHNOLOGY WILL
EXPERIENCE A SIMILAR METAMORPHOSIS
DURING 4 DAYS IN OCTOBER.

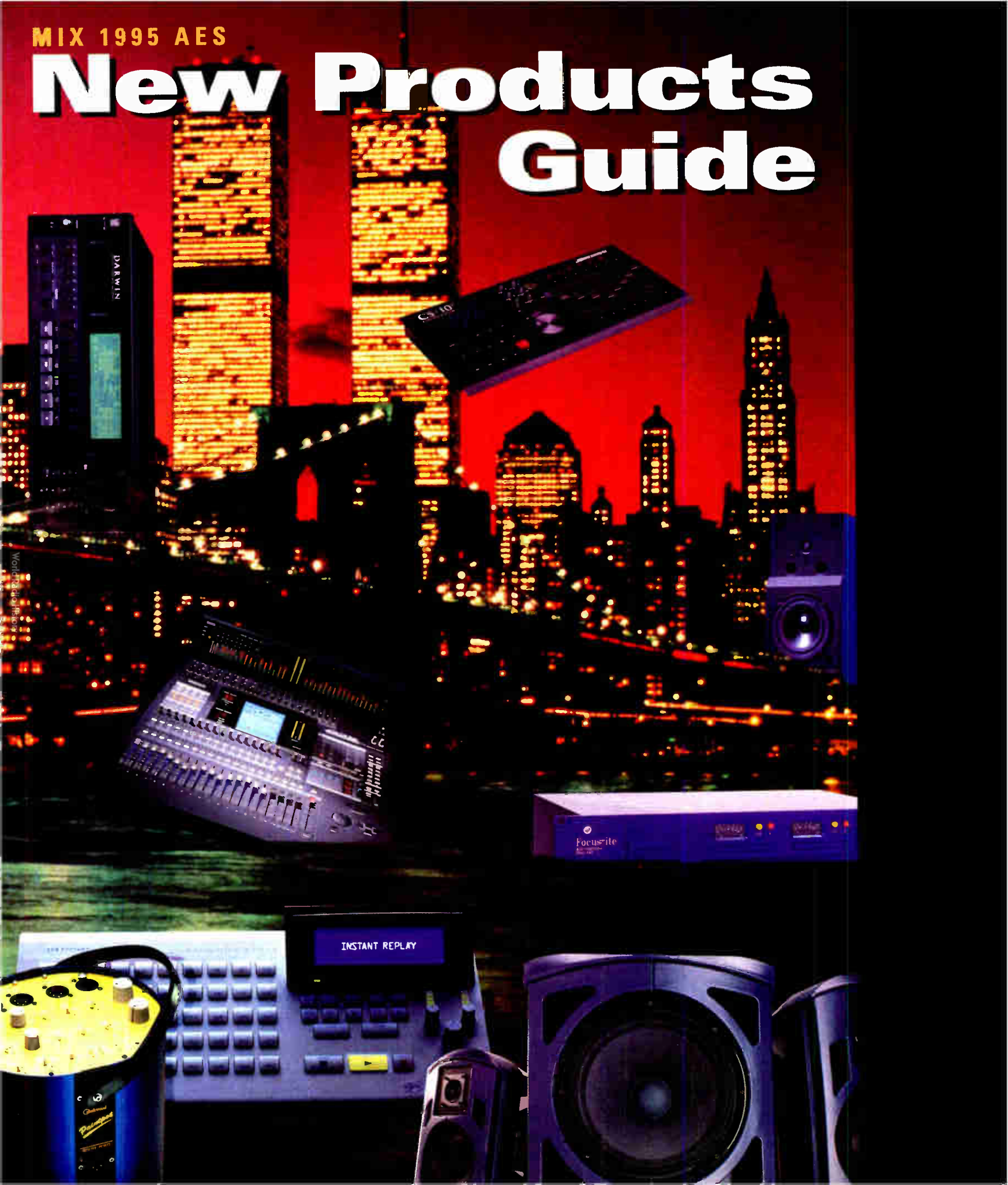


Check out Booth 144 at the AES Show for a first look at our revolutionary new digital console. **SONY**

Copyright 1977 Sony Electronics Inc. All rights reserved. Reproduction in whole or in part without Sony's written permission is prohibited. Sony is a trademark of Sony.

MIX 1995 AES

New Products Guide



World's Best Photo

THE MIX 1995 AES NEW PRODUCTS GUIDE

C o n t e n t s

Welcome to *Mix's* 18th Annual New Products Guide. In this year's edition, we focus on products that were introduced (or were shipping for the first time) in the four months prior to—and including—new introductions at the 99th Audio Engineering Society convention in New York. For those who plan to attend, here's some of the tasty new technology that will be served under the bigtop at Manhattan's Jacob Javits Convention Center from October 6-9, 1995. If you can't make it to AES in person, don't despair: We'll provide complete coverage of all the show highlights in future issues. —George Petersen

All of the product information presented here was supplied by manufacturers. Specs, prices and availability may change, so contact the companies directly for more information.

PAGE	SECTION
280	AC Power Products
280	Acoustical Materials
281	Amplifiers
282	Automation, Sync & Control
283	Cables & Connectors
285	Computer Hardware/Software
286	Digital Audio Workstations
289	Loudspeaker/Monitoring Products
294	Microphone Products
297	Mixers
300	Music Products
302	Recording Devices
304	Recording Media/Tape
305	Signal Processing
313	Test Gear
314	Other Products

COVER PHOTO: MANHATTAN SKYLINE MARVIN E. NEWMAN/IMAGE BANK PHOTO COLLAGE: KAY MARSHALL

AC POWER PRODUCTS

ETA Systems PD10VR/PD10VRS

ETA microprocessor-controlled AC line regulators use incoming voltage from 80V to 150V for a full 15-amp (1800W), 117±3V regulated output. These single-rack-space units are EMI/RFI filtered and spike/surge-protected with a four-function digital voltmeter and remote turn-on access. Models PD10VR and PD10VRS (4-stage sequential) are designed to resolve AC line voltage irregularities by providing clean, stabilized, conditioned power to all sensitive electronic audio/video equipment. Ten other models available.

1532 Enterprise Pkwy.
Twinsburg, OH 44087
Phone 216/425-3388; Fax 216/425-9700



Furman PL-PRO

Furman's new 20-amp/2400-watt PRO Series microprocessor-controlled power conditioners provide the industry's most comprehensive protection from AC power-related transient voltages, noises, and wiring faults. Flashing LEDs indicate marginally high or low incoming voltages; automatic shutdown occurs before extreme voltages (under 80V or over 140V) can damage your equipment or

your PRO. The PL-PRO also features a three-color LED line voltage meter and new, smoother-gliding light tubes.
30 Rich St.

Greenbrae, CA 94904
Phone 415/927-1225; Fax 415/927-4548

Juice Goose Rackpower 320

The only power distribution device designed to eliminate ground loop hum caused by insufficient primary AC ground systems. Ten switches on the front of the unit lift the AC ground on each of ten outlets on the back. A ground fault interrupt circuit terminates operation in the event of unsafe levels of ungrounded electric power. List price: \$279. Includes full AC filtration and spike protection and a BNC connector on the front for a gooseneck work light.

7320 Ashcroft, Ste. 104
Houston, TX 77081
Phone 713/772-1404; Fax 713/772-7360

Tripp Lite Isobar Audio-Video

Six-outlet premium surge suppressor features gold-plated "F" connectors to protect televisions, satellite receivers, and cable boxes from spikes and surges present on the coaxial line. Also features diagnostic circuit indicators for protection working, line ok and line fault, an all-metal case, and a lifetime warranty with up to \$25,000 of equipment protection insurance to repair or replace connected equipment if damaged by a surge or direct lightning.

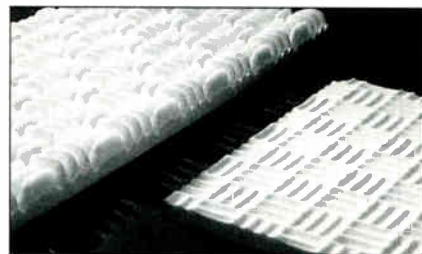
500 N. Orleans
Chicago, IL 60610
Phone 312/755-5401; fax 312/644-6505
E-mail tripplite@mcimail.com

ACOUSTICAL MATERIALS

RPG Foam SoundWaves

RPG introduces its first acoustical foam products manufactured from Class A Melamine foam, which meets National Life Safety Codes. RPG fire-safe foams will be comparably priced to flammable urethane foams. The initial linear product line, called SoundWaves, is based on patent-pending, two-sided, nesting surface topologies that utilize a variable-depth air cavity to minimize foam and optimize sound absorption. SoundWaves offers an aesthetic new look, fire safety, economy and excellent sound absorption.

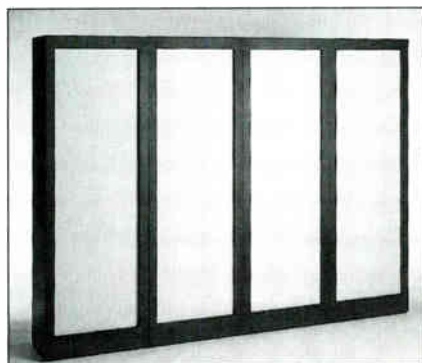
651-C Commerce Dr.
Upper Marlboro, MD 20772
Phone 301/249-0044; Fax 301/249-3912



Sonex Classic and Valueline

Sonex Valueline and Classic are two new Class 1, fire-rated sound-absorbing acoustic foams. They are fiber-free with NRC-70 to NRC-80. They are available in natural white and painted colors of blue, beige, charcoal and brown. Valueline is available in 2x4-foot sheets in 1.5-, 1¼- and 2.5-inch thicknesses. Sonex Classic is available in 2x4-foot sheets

in a 2-inch thickness. UPS shippable.
 Dist. by: Acoustical Solutions Inc.
 2720 Enterprise Pkwy, Ste. 101
 Richmond, VA 23294
 Phone 804/346-8350 or 800/782-5742; Fax 804/346-8808



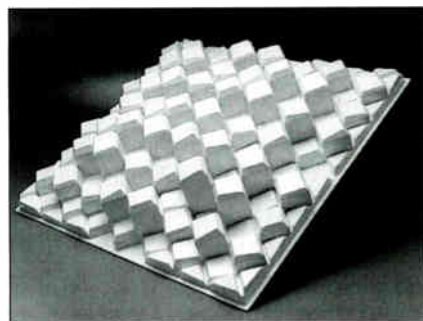
System Analysis SWALS

Studio Wavelength Absorbing Linear Structures (SWALS) absorb on a linear basis and at an exceptionally high dB level, performance achieved through a nine-layered use of materials of different densities. The SWALS are suitable for crosstalk control, isolation "booth," and room resonance control applications. SWALS come standard with durable laminate finishes in black or white Formica and unbleached muslin. Available in 4-, 5-, and 6-foot heights and custom sizes. Prices start at \$750 and include a 5-year warranty.

System Analysis W.A. Bags

Wavelength Absorbing Bags consist of inner layers of 3.5 inches of mineral fiber encased in perforated vinyl bags. Offering near-linear absorption in low-, mid-, and high-frequency spectra, W.A. Bags can be used individually or connected to cover a whole wall. Lightweight and portable, the W.A. Bags' durable construction facilitates temporary and permanent acoustical treatment scenarios. Color options include black, brown, and white. Prices from \$125, five-year warranty included.

PO Box 2246
 Tempe, AZ 85280
 Phone 602/940-0129; Fax 602/940-0179
 E-mail cyn@silicon.com



Systems Development Group Model C

Molded of 1/4-inch thermoplastic and weighing under five pounds, Art Diffusor Model C panels are an ideal solution when space is limited, meet a full Class A fire rating, are UPS shippable, and ready to install in a textured white finish. Model C-CM panels may be installed in a 2x2-inch T-bar grid in place of ceiling tiles. Model C-WM panels are easily wall-mounted with construction adhesive.

5744 Industry Lane, Ste. J
 Frederick, MD 21704
 Phone 800/221-8975 or 301/846-7990; Fax 301/698-4683

AMPLIFIERS

Bryston 5B-ST Pro

The 5B-ST Pro is a multichannel amplifier designed for use in 5- or 7-channel surround installations. The 5B-ST can be connected in 2- or 3-channel configurations, for three channels of 120 watts or one 400-watt and one 120-watt channel. Distortion is less than 0.007% (20-20k Hz) and S/N is greater than 108 db below full output. Retail price is \$2,295.

106 W. Lime Ave., Ste. 207
 Monrovia, CA 91016
 Phone 800/673-7899; Fax 818/359-9672

Crest Power Processing System

CKS Series for low-impedance applications: four models from 50 to 400 WPC at 8 ohms, three additional models rated 800, 1,100, and 1,400 WPC at 2 ohms. CKV Series: five models offering transformerless outputs from 50 to 800 WPC into constant voltage (70.7V) distributed lines. Remote sequential turn-on/off and PowerSave™ are standard. Can be configured as multifunction processors using three rear-panel plug-in module bays and C-Card modules (programmable).

100 Eisenhower Dr.
 Paramus, NJ 07652
 Phone 201/909-8700; Fax 201/909-8744

Fender Pro Audio SPA Series

Fender Pro Audio's SPA Series power amps feature an advanced high-efficiency, multirail, dual-channel design. Including four different models, the SPA Series features a D-sub accessory port option for computer remote control and monitoring. XLR, 1/4-inch, and barrier strip inputs, and Speakon®, 1/4-inch, and binding post outputs are provided. Other features include an audio insert loop for signal processing, power sequencing, headphone jacks (select models), and switchable Deltacomp™ limiting.

7975 N. Hayden Rd., Ste. C-100
 Scottsdale, AZ 85258
 Phone 602/596-9690



Furman HA-6

The single-rackspace HA-6 Stereo Headphone/Monitor Amplifier Power Conditioner/Light Module provides 20 clean watts per channel to six stereo headphone outputs, each with its own volume control. The new HA-6 features Furman's unique toroidal transformer for the quietest possible performance in the studio. It also provides switches for two sets of stereo speakers, overload and signal-present LEDs, groundlift switch, provisions for remotely located volume controls, and automatically switches to mono when the right channel is not used.

30 Rich St.
 Greenbrae, CA 94904
 Phone 415/927-1225; Fax 415/927-4548

Hafler Trans-Nova P-7000 DIABLO

Power rating: FTC (20-20kHz less than 0.1% THD) 350 watts/channel into 8 ohms; 500 watts/channel into 4 ohms; 1,000 watts bridged mono into 8 ohms. Frequency Response: ±0.1 dB, 20-20k Hz; +0/-3 dB, 0.2-200k Hz. Input connectors: XLR and 1/4-inch. Output connectors: five-way binding posts (banana). Height 3 1/2 inches (8.9cm). Width 19 inches (48.3 cm). Depth 15 inches (38.1 cm), including XLR connector clearance. Weight: 36 lbs. Price: \$1,799.

546 S. Rockford Dr.
 Tempe, AZ 85281
 Phone 800/366-1619; Fax 602/894-1528



Neva Audio PA 5002 BG

Neva Audio stereo power amplifiers are hand-built in St. Petersburg, Russia. Featuring modular construction and discrete circuitry, they employ passive cooling, a two-level power supply, and zero quiescent current for efficient operation. Continuous average output power, both channels driven, 1kHz 1% THD: into 8 ohms = 350 watts/channel; 4 ohms = 500 watts/channel; bridged mono into 8 ohms = 1,000 watts. Frequency range: 5-60k Hz (-3 db, Pout=1W). Retail: \$1,295.

Dist. by Audionet
 Apartado 5358
 36200 Vigo, España.
 Phone 34/86/481155; Fax 34/86/482065 or 86/234935

Pacific Innovative Electronics KHS-450(B)

New dual-supply lower feedback version of KHS-450 stereo amplifier. Specifications: 175 watts/channel into 8 ohms, 5% THD, -5 dB, 16-150k Hz). Product features six-position balanced input attenuator for exact phase and level tracking between channels. Neutrik "combo" XLR-TRS input and "speakon" output connectors. List price: \$2,535.

10840 Vanowen St.
 North Hollywood, CA 91605
 Phone 818/761-8393; Fax 818/761-9139

QSC Powerlight 4.0

Featuring Powerwave Switching Technology, the new Powerlight 4.0 delivers 1,400 W/ch into 4 ohms or 2,000 W/ch into 2 ohms (typical 1kHz/1% THD ratings) from a 3-rackspace chassis weighing only 30 pounds. The amp features ultra-low noise (-105dB unweighted), high efficiency (less than 14-amp draw during normal 4-ohm operation) and excellent bass response below 20 Hz.

1675 MacArthur Blvd.
 Costa Mesa, CA 92626
 Phone 714/754-6175; Fax 714/754-6174
 E-mail 76702.2635 @compuserve.com

Renkus-Heinz P2800

A high-reliability, dual-channel power amplifier, the P2800 delivers 500 watts/channel into 8 ohms, 750 watts/channel into 2 or 4 ohms and features dual toroidal power transformers and a high-linearity, low-feedback design that provides exceptional transient response. Includes plug-in facilities for associated controller modules to reduce rackspace requirements and to lower system cost. Controller modules feature a unique adaptive limiter that provides protection without introducing distortion into the system.

17191 Armstrong Ave.
 Irvine, CA 92714
 Phone 714/250-0166; Fax 714/250-1035

TOA P-1000 Input Modules

The LB-101X and LB-101X-C are two new plug-in input modules for the P-1000 Series amplifiers. Both LB-101X and LB-101X-C can provide electronically balanced input signals, interface with XLR connectors, 1/4-inch jack, and screw terminals, feature send/return insert loops, and can be used with an optional input transformer. Model LB-101X-CA features a 10:1 compressor. Suggested retail price for each module: \$*78.

TOA P-1000 EQ for CD Horns

Two new accessory units for TOA's DF-102 and DF-103 crossover modules provide equalization for the company's entire line of CD horn/driver combinations. Model numbers DF-104-U1 and DF-104-U2 can be quickly attached to either DF crossover module via a plug-in connection. The applicable accessory board is then affixed to the module with two provided screws. Suggested retail price for DF-104-U1 or DF-104-U2 is \$74.
601 Gateway Blvd., Ste. 300
South San Francisco, CA 94080
Phone 415/588-2538; Fax 800/733-9766.

AUTOMATION, SYNC AND CONTROL

Aardvark AardSync

Aardvark introduces its newest digital audio sync generator for Digidesign users. It uniquely combines and exceeds the features of Digidesign's video and SMPTE slave drivers. Works with a variety of video, timecode and audio frequency standards, USA or European. The generator provides video lock, full LTC, VITC and MTC integration, LTC and VITC generation and SMPTE burn-in. Greater stability, lower jitter and supports all pull-ups and pull-downs. Retail: \$1,395.
202 E. Washington
Ann Arbor, MI 48104
Phone 313/665-8899; Fax 313/665-0694

Adams-Smith SuperController Update

The SuperController/Machine Controller, a version of the Supercontroller/Editor, integrates all necessary functions to control and synchronize any audio or video transport or workstation. The SuperController/Machine Controller supports all standard industry protocols and provides eight RS-422 serial ports, two MIDI ports for MIDI Machine Control, a bi-phase port for film devices, four GPI outputs for triggered devices and a programmable word-clock output for absolute speed control of digital audio products.
34 Tower St.
Hudson, MA 01749
Phone 508/562-3801; Fax 508/568-0404

Brainstorm SA-1 Timecode Analyzer

The SA-1 is a powerful analyzer designed to quickly and accurately identify timecode problems. It monitors video phase and reports errors such as dropouts or repeated frames. The front panel includes a timecode reader and a four-digit frame rate counter. A comprehensive report can be printed through its serial port. The SA-1 is the same analyzer as the one found in the Brainstorm Distripalyzer, repackaged in a portable enclosure.

Brainstorm SR-3 Timecode Repair Kit

The SR-3 is a regenerator designed to repair bad timecode. Its three main functions are to eliminate dropouts, reduce jitter, and correct video phase. The SR-3 is user-friendly, repairing most problems automatically, without complicated settings. Its front panel includes a large timecode reader display and LEDs to identify format and video phase. The SR-3 can also generate all standard formats, referenced to internal crystal or external video.
Dist. by Audio Intervisual Design
1155 N. La Brea
West Hollywood, CA 90038
Phone 213/845-1155; Fax 213/845-1170

George Massenburg Labs Mac Interface

We are now delivering the GML/Macintosh Interface for the GML Console Automation System. Advantages to this new system include superb graphical interface and pull-down menus that are quick and easy to learn and use; command

line interface maintaining traditional access method for longtime GML users; inexpensive, standard Macintosh computer, peripherals and video monitors for automation system control, and mix storage and backup replaces dated components; and a new GML/Motorola 68040 "A" processor increases the speed of every function—offline editing functions made faster by four to eight times.
7821 Burnet Ave.
Van Nuys, CA 91405
Phone 818/781-1022; Fax 818/781-3828



JL Cooper CS-10²

The CS-10²™ is the definitive control surface for Pro Tools, Spectral, Sonic Solutions, SADIE and other digital audio/video workstations. It provides access to transport, automation and digital signal processing functions. It features controls that look and feel like a tape recorder transport. A jog/shuttle wheel offers precise positioning and effortless scrub editing, while eight, smooth tracking, 100mm long throw faders control automation functions, and six rotary controls provide convenient DSP access.

JL Cooper dataSYNC2

dataSYNC2-MIDI Synchronizer for the Alesis ADAT. The dataSYNC2™ connects to your ADAT and provides timecode to drive sequencers and workstations without wasting a track. dataSYNC2 improves on the original design by including MIDI Clock with Song Position Pointer with variable tempo and meter. Now with bidirectional MIDI communication, you can use MIDI Machine Control to address ADAT's functions right from your computer.
12500 Beatrice St.
Los Angeles, CA 90066
Phone 310/306-4131; Fax 310/822-2252

Mackie Ultra Universal Automation System

Big studio quality and capabilities at an affordable price. The package comprises the Ultra-34 (VCA Pack), Ultramix Software (for the Macintosh), and the UltraPilot Fader Pack. Mackie Designs' automation package makes available a high-quality and flexible mixing automation package that is compatible with virtually any mixer and computer.
16220 Wood-Red Rd., N.E.
Woodinville, WA 98072
Phone 206/488-6843; Fax 206/487-4337
E-mail mackoids@aol.com



Midiman Video Syncman

Video Syncman is a universal timecode translator that supports VITC, Longitudinal Time Code, and MIDI Time Code and has a built-in screen burner. Features include built-in MIDI merger and built-in MIDI control port. Longitudinal timecode signal level can be set using trim pot on the back of the unit, which is half-rack size, perfect for rack mounting. Includes M2U remote control software. \$699.95 retail.

236 W. Mountain St., Ste. 108
Pasadena, CA 91103
Phone 818/449-8838; fax 818/449-9480
E-mail ID#75300-3434



Neve Encore

Based on the Pentium Processor and running under Windows NT, Encore is the world's most powerful console automation system. Encore converges the development paths of the company's various automation packages. User-selectable modes provide instant familiarity for users of other mainstream systems. It is available on new V Series consoles and Logic 2 and can be retrofitted to replace Flying Faders. The icon driven graphical interface can be set up to closely follow Capricorn syntax.
Billington Rd.
Burnley, Lancashire BB11 5UB UK
Phone 44/1282/457-011; Fax 44/1282/39542



Tech 21 MIDI Mouse

The MIDI Mouse footcontroller is rugged, compact (3.5 x 4.5-inches), user-friendly, and powered by a standard adapter or a 9V battery. MIDI masters and novices can easily access 128 patches on any of the 16 selectable MIDI channels. A "stomp-box" format features 3 footswitches: "Active/Search" alternates between two modes; "Up" and "Down" change patches sequentially or scroll to a desired location, depending on mode. Suggested list price: \$125.
1600 Broadway
New York, NY 10019
Phone 212/315-1116; Fax 212/315-0825

Uptown Automation System One

Uptown's System One is a low-cost, self-contained, full-featured moving-fader automation system that patches easily into the insert points of any mixing console. Available in 8-, 16-, 24-, and 32-channel packages (two systems may be linked for 64-channel automation), each package is equipped with a PC computer and Uptown's successful software-based 990 System. SMPTE/EBU-based and frame accurate, all faders and mutes can be continuously updated each frame.
6205 Lookout Rd., Unit G
Boulder, CO 80301
Phone 303/581-0400; Fax 303/581-0114

CABLES AND CONNECTORS



A.P. Audio Patchbay/Cable Tester

The RPM44SC is a 44-point, modular 1/4-inch patchbay. A built-in cable tester checks continuity for both stereo and mono 1/4-inch cables. LEDs confirm separate contact for Tip, Ring, and Sleeve. The patchbay section features the same modules found in the Re'an 48-point RPM48S model. Re'an modules boast solid nickel silver contacts and nylon-fiberglass connectors, rated for over 10,000 insertions. List price: less than \$200 (TBD).

Dist. by Ace Products

1334 C. Ross St.

Petaluma, CA 94954

Phone 707/765-6597; Fax 707/765-6682

AudioWorks™ Cables

DataLink™/MicLink™/SpkrLink™/PwrLink™ are balanced and single-ended digital, microphone, speaker and power cables to be used where ultimate sound quality is required. Ultimate topology and assembly techniques, combined with advanced QC, proprietary ElectroScan™ treatment and WaveGuide™ burn-in and a listening evaluation enable AudioWorks cables to outperform all others. From \$270 pro net.

12440 Moorpark St. #11

Studio City, CA 91604-1260

Phone 818/766-9101; Fax 818/505-0149

Canare AES/EBU Cable

Designed specifically for digital audio transfers, Canare now offers 110-ohm twisted pair cables in 2-, 4- or 8-channel snakes.

Canare Impedance Transformer for Digital

Canare now offers high-quality impedance transformers for converting 110-ohm AES/EBU twisted-pair lines to 75-ohm BNC coaxial.

531 5th St. A

San Fernando, CA 91340

Phone 818/365-2446; Fax 818/365-0479

Clark 800 Series Digital Audio Cable

A new series of AES/EBU digital audio cable. Features include 24 AWG shielded twisted pairs and foil bonded to jacket for single strip. Available configurations: 801 single pair, 802 ribbon stereo, 804/808/812/816 superflexible multichannel snakes. All components in snakes color-coded and numbered with overall shield and drain. Matte black PVC master jacket. All 800 Series are UL type CM or CL2 rated.

1355 Armour Blvd.

Mundelein, IL 60060-4401

Phone 800/222-5348; Fax 708/949-9595

Deltron Channel Identification System (CIS)

Deltron has developed the Channel Identification System for easy channel identification and is the first manufacturer to implement this new standard in its XLRs. Like the resistor color-coding system, CIS is based on numbers with complementary colors, allowing for distinctive coding of up to 100 channels. Channel numbers are recognizable at a glance, even at a distance. Each number is engraved in the respective color-coding ring or button.

Dist. by DGS Pro-Audio

PO Box 170426

Arlington, TX 76003

Phone 800/292-2834; Fax 817/473-7712



Gotham Cable Multipair Digital Audio Cable

Four multipair AES/EBU 110-ohm digital audio cable types are available: GAC 4, 8, 10, and 12. Based on the GAC-2/1 AES/EBU cable, the new cables feature Gotham's exclusive double "Reussen" shield. Two opposing, spiral-wound, bare copper shields provide cable flexibility and tight electrical performance tolerance. Two nonconducting strands in the core maintain the correct geometrical position of the two conductors even when the cable is bent, ensuring constant impedance.

Dist. by DGS Pro-Audio

PO Box 170426

Arlington, TX 96003

Phone 800/292-2834; Fax 817/473-7712

Demeter
amplification

Cutting Edge
Tube and
Solid State
Design Technology
Provide A
Combination Of
Sound, Quality
And Value
Unequaled
In The Industry.

Available
Spring 1996

Introducing The H Series From Demeter Amplification



Innovation with tubes since 1980

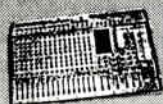
Demeter 2912 Colorado Avenue - N#204 - Santa Monica, CA 90404
Factory 310 829 4383 - Facsimile 310 829 3755
See us at AES Booth #1045

USE READER SERVICE CARD FOR MORE INFO

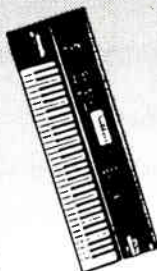


SPEIR MUSIC

Dallas, Texas



- **GIANT** Inventory
– New and Used
- **Over 30 Years**
in Business!
Buy with Confidence!
- **CALL NOW**
for the Best Deal Anywhere!



800 • 219 • 3281

1207 S. Buckner / Dallas, TX / 75217 / 9-6 M-F

USE READER SERVICE CARD FOR MORE INFO

Sync problems?



**“Here lies analog PLL...
Put to rest by AardLock™”**

- Unstable, jittery clock?
- Missing a sampling rate?
- Limited number of outputs?
- Slow lock time (or no lock at all)?

Put all of your sync problems to rest and switch from analog PLL technology to **AardLock™**. Call us now to discover why major facilities like Sound One are using **AardSync** – the revolutionary digital audio sync generator.

*Check out our work!
AardSync was used to sync the
20-bit sound for the motion pictures
Just Cause and Apollo 13*



Aardvark

Re-engineering Digital Audio

202 E. Washington Ste. 306 Ann Arbor, MI 48104 Phone (313) 665-8899 fax (313) 665-0694

AES NEW PRODUCTS GUIDE 1995

Lightwave Fibox IMS-Tx and IMS-Rx

The IMS is a single-package solution for fiber-optic transmission of digital and analog video, plus a combination of AES digital and analog audio plus data. This is the most flexible Fibox transmission system ever! Compatibility is maintained with the existing modular Fibox series. All parts are shipping by July 15, except the analog video interface; expect delivery on this module by first quarter '96.

Lightwave DATI-SL and DATO-SL

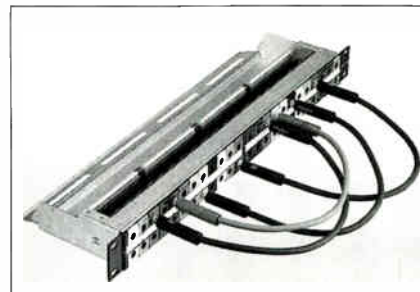
The Data modules are additional interfaces for the Fibox digital fiber-optic transmission systems. These modules are specifically for data and control signals, i.e. RS-422/485, RS232, MIDI, SMPTE timecode, and switch closures. The data modules, in conjunction with the Fibox transmission systems, provide fiber-optic transmission of the above signal types.

900 Jackson St., #700
Dallas, TX 75202
Phone 214/741-5142; Fax 214/741-5145

Mosses & Mitchell TT Jacks/Patchbays

Mosses & Mitchell sets the standard of excellence for audio engineers solving intermittent patchbay problems. Self-cleaning contact blades are made of palladium and nickel-silver, and solid brass jack sleeves provide rugged durability for longer life. Mosses & Mitchell TT audio jacks/patchbays will improve your sound and enhance all your broadcasts and recordings. Used by Sony, SSL, Neve, Soundcraft, Record Plant, Ocean Way, Grass Valley, etc.

Dist. by Marshall Electronics
5649 Mesmer Ave./PO Box 2027
Culver City, CA 90230
Phone 310/390-6608; Fax 310/391-8926
E-mail Lmargoeix.netcom.com



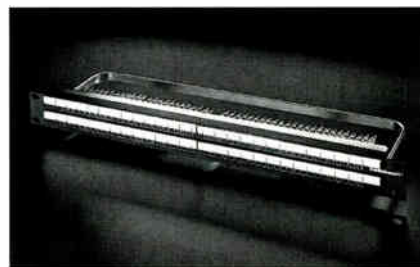
Neutrik Easy Patch

48-point 1/2-inch longframe patch panel featuring removable colored tabs for quick channel identification, programmable normaling (full, half, parallel), and solderless wire hook-up through the use of rear-connecting, spring-force push-terminal blocks.

195 Lehigh Ave., Ste. 1
Lakewood, NJ 08701
Phone 908/901-9488; Fax 908/901-9608

Switchcraft TTP96

Switchcraft's rugged, steel-framed TTP96 Jack Panel comes with corrosion-resistant nickel-plated jacks, a cable



tie bar, and extra-wide labeling strips. Available in three jack configurations: full normal, half normal and open circuit panel. Gold switching contacts for long-term reliability in normal through connections. Fanned solder terminals make soldering connections easier. Offset ground terminal simplifies common ground bus connections. List price is \$297 to \$232, depending on jack configuration. 5555 N. Elston Ave. Chicago, IL 60630 Phone 312/792-2700; Fax 312/792-2129

Whirlwind Active Concert Series

Top-quality multichannel active mic splitter system, available in 32x10, 42x10, 48x10 and 56x10 configurations; custom output configurations available. Each input feeds an active four-way split (1 direct, 3 active isolated) with gain control on one output and 3-LED signal presence metering. Active circuitry eliminates reflective mic loading caused by multiwinding transformers. Level-controlled output is ideal for "direct to digital" recording. Typical outputs are Whirlwind MASS connectors and/or XLR. 99 Ling Rd. Rochester, NY 14612 Phone 716/663-8820; Fax 716/865-8930

Wright G-2 Terminator Cable System

Wright Microphones and Monitors Inc. has just introduced the G-2 terminator cable system for all pick-up based instruments. The G-2 provides proper termination for guitar pick-ups, etc., as well as allowing very long cable runs, eliminating the need for wireless units. The unit is powered by two 9-volt batteries and will run approximately one year without replacement. The list price is \$64.95. 2091 Faulkner Rd. N.E. Atlanta, GA 30324 Phone 404/321-3886 or 800/478-3886; Fax 404/636-7738

COMPUTER HARDWARE AND SOFTWARE

Applied Concepts Lazer Link III

The Lazer Link III fiber-optic extender allows up to 4,000 feet of SCSI length! Available in single-ended, narrow, these SCSI extenders support a maximum data rate of 10 MB/sec and do not require additional software for installation. Lazer Link III is transparent to your system (no SCSI ID required). Call today for more information. 9130 S.W. Pioneer Ct. Wilsonville, OR 97070 Phone 503/685-9300; Fax 503/685-9099 E-mail aconcepts1@aol.com

Cedar Audio ProDSP/R-20

Recognizing the need for a suite of true 20-bit I/O audio restoration packages, Cedar has developed the ProDSP/R-20 to host all of Cedar's 32-bit De-Scratch, De-Crackle, De-Hiss and azimuth correction processes. The ProDSP/R-20 is an ISA-standard board that fits in a single 16-slot in suitable PCs or compatibles and offers 20-bit AES/EBU and S/PDIF audio I/O. List Price: \$7,425. Dist. by Independent Audio 43 Deerfield Rd. Portland, ME 04104-1805 Phone 207/773-2424; Fax 207-773-2422

Cool Breeze ProSchool Interactive

The first in a series of interactive CD-ROMs designed to provide basic education in the operation of DAWs. Topics in Volume 1 include the basics: computers, MIDI, digital audio, signal flow, session procedures. In-depth sections on synchronization and system upkeep, featuring Digidesign's Pro Tools, Sound Tools, SampleCell and Development Partners. Extensive glossary of technical terms, and the ability to "launch" example applications. Mac CD-

ROM and 040 processor or better required. PC version forthcoming. 2041 Riverside Dr., Ste. 122 Columbus, OH 43221 Phone 614/481-4000; Fax 614/486-4690 E-mail schmigman@aol.com

Gefen Systems M&E Pro

M&E Pro is an SFX and production music database that organizes, searches for, and locates effects on CDs in only seconds. This new software is fast, PowerPC native code-compatible, and network-compatible. M&E Pro was developed to take advantage of new compilers and new techniques to give you features demanded by emerging technologies for Mac computers. Includes all the SFX and production music databases you own. 6261 Variel Ave., Ste. C Woodland Hills, CA 91367 Phone 800/545-6900 or 818/884-6294; Fax 818/884-3108

InVision CyberSound FX

Fifteen easy-to-use audio plug-ins for Adobe Premiere. Add life, uniqueness, and clarity to Premiere soundtracks. Each plug-in comes with multiple templates created by professional audio engineers. Features effects like chamber reverb, small and large hall, shelf and parametric equalizers, compressor, chorus, flange, phaser, delay, multitap delay, pitch shifter, dynamic filter, normalize, and tremolo. Allows you to enhance and customize audio tracks like never before. 2445 Faber Place, Ste. 102 Palo Alto, CA 94303 Phone 415/812-7380; Fax 415/812-7386

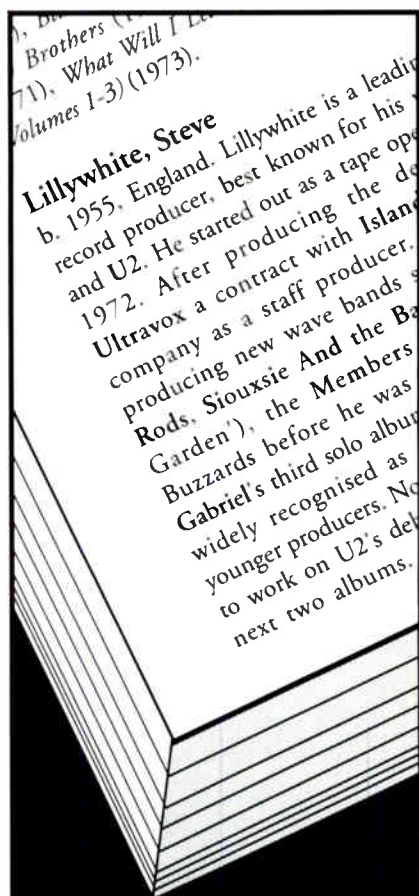


Mark of the Unicorn Digital Performer 1.6

Digital Performer 1.6's new features include Pro Tools III support (up to 48 channels), the Mixing Board™ virtual console for integrated TDM™, MIDI, and digital audio mixing and effects, built-in digital video window, real-time MIDI output processing including velocity compression, MIDI Machine Control, SMPTE synchronization, zoomable waveform display with any number of tracks in one window, and much more. \$895 list, \$295 upgrade from Performer or competing sequencer.

Mark of the Unicorn Unisyn™

Unisyn provides the most comprehensive MIDI editor/librarian features available for Windows. Supports over 212 MIDI devices, including Alesis Quadrasynth, Roland JV-1080 and SC-88, the entire Korg X & i series, Yamaha ProMix 01, E-mu Morpheus and Ultra Proteus, Ensoniq DP-4+, KAT DrumKat 3.5 and more. Generates entire banks of new sounds using Blend&Mingle and Randomize. Includes only the banks and patches you need in studio "snapshots" for fast loading. 1280 Massachusetts Ave. Cambridge, MA 02138 Phone 617/576-2760; fax 617/576-3609



WISH WE COULD SHOW YOU MORE OF :

THE GUINNESS ENCYCLOPEDIA OF POPULAR MUSIC

THE DEFINITIVE GUIDE TO BANDS, EVENTS, RECORD COMPANIES, AND, YES, EVEN PRODUCERS.

TO GET THE "BIG PICTURE" CALL US AT:
1-800-221-2123
IN NY: 1-212-689-9200
e-mail:
grove@grovestocktn.com
GROVE'S DICTIONARIES
STOCKTON PRESS

USE READER SERVICE CARD FOR MORE INFO



**ONLY THE BEST!
A GLOBAL NETWORK OF
THE FINEST RECORDING
STUDIOS**

BERKELEY
Fantasy Studios

CHICAGO
Chicago Recording Company

DALLAS
Dallas Sound Lab

HONOLULU
Audio Resource Honolulu

LOS ANGELES
A&M Studios
Conway Recording
Westwood One - Mobile

MEMPHIS
Arden Recording

MIAMI BEACH
South Beach Studios

MINNEAPOLIS
Paisley Park Studios

NASHVILLE
Masterfonics

NEW YORK
Right Track Studios
River Sound

PHILADELPHIA
Remote Recording Services

SEATTLE
Bad Animals Recording

**PLUS 25 MORE IN EUROPE,
AFRICA, AUSTRALIA, and the
FAR EAST!!!!**

**For more information
call: (213) 465-7697
fax: (213) 465-7793
or see our new www page:
<http://www.worldstudio.com>**

AES NEW PRODUCTS GUIDE 1995

OSC Metro 3.0

MIDI sequencing program. New features include groove quantizing, drum grid, 960 pulses per quarter note, variable clock. MIDI bank select messages now supported. List price: \$275.
480 Potrero Ave.
San Francisco, CA 94110
Phone 415/252-0460; Fax 415/252-0560

Pinnacle Apex

Apex magneto-optical (MO) drive offers 4.6 Gigabytes per removable cartridge, a lower cost per megabyte than an equivalent capacity magnetic hard drive. Apex far surpasses the coming industry standard of 2.6GB MO drive capacities at much lower cost. With optical, users enjoy the advantages of removable media, and cost per megabyte continues to decrease as cartridges are added. Apex is compatible with both 2.0GB MO drives and Pinnacle's 4.6GB media.



Pinnacle RCD-1000 V.212E

RCD-1000, the industry's most affordable half-height recordable compact disc system, serves as three drives in one. As a CD recorder, the RCD-1000 records CDs in half the time of previous single-speed systems. As a double-speed CD-ROM player, it reads thousands of educational, multimedia or audio CDs. And with Pinnacle's backup utility, RCD-1000 replaces tape backup, providing a more reliable solution and fast random-access to your data.

19 Technology
Irvine, CA 92718
Phone 714/789-3000; Fax 714/789-3150

Ricoh RS-1060C CD Recorder

Double-speed compact disc recorder/player has a 512kb data buffer in a compact half-height external unit that supports all recording formats. Reads digital audio directly from audio disc and transfers to workstation. Plays audio CDs. Unique dust-proof design for years of reliable service. Software support from many companies, including Digidesign MasterList CD. List price \$2,395.

3001 Orchard Pkwy.
San Jose, CA 95134-2088
Phone 408/432-8800; Fax 408/432-9266
E-mail: 75554.1134@compuserve.com

Sonic Foundry Sound Forge 32-Bit Windows

Sound Forge for 32-bit Windows provides all the features available in the 16-bit version with increased performance provided by 32-bit Windows operating systems. Sound Forge allows you to open over 50 audio windows at once and drag and drop audio sections for fast mixing or creating loops and regions. Sound Forge features include dynamic compression, noise gating, pitch change, envelope editing, EQ, and reverb. Retail list price is \$595.

Sonic Foundry NR Plug-In

The Sonic Foundry noise reduction plug-in is designed to analyze and remove background noise such as tape hiss, electrical hum and machinery rumble from sound recordings. It does so without removing any of the source material by using a "noiseprint" to distinguish between un-

wanted noise and the desired signal. Also included is a click removal module which detects and removes clicks and pops for use in the restoration of vinyl recordings. Retail price: \$249.

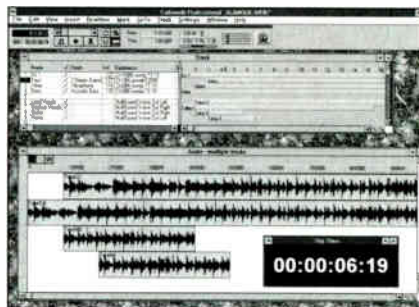
100 S. Baldwin St., Ste. 204
Madison, WI 53703
Phone 608/256-3133; Fax 608/256-7300.



Synclavier EditView 4.0

EditView 4.0 is the high-speed audio editing software for music, sound effects, and dialog that can be mastered quickly and used on a variety of hardware platforms from different manufacturers. Instead of long menus, tiny icons, and screen clutter, EditView presents an intuitive tape-style display for fast one-step edits.

Rivermill Complex
Lebanon, NH 03766
Phone 603/448-8887; Fax 603/448-6350
E-mail info@synclavier.com



Twelve Tone Cakewalk Pro 4.0™

The leading professional MIDI sequencer for Windows now includes integrated multitrack digital audio recording and editing, pattern-based sequencing, support for SMPTE/MTC and MIDI Machine Control, the CAL programming language, an improved Piano Roll view, 96 assignable faders for real-time mixing, enhanced notation with guitar chords and dynamic markings, groove quantize with DNA support, a 256-bank system-exclusive librarian, and much more.

PO Box 760
Watertown, MA 02272
Phone 617/926-2480; Fax 617/924-6657

DIGITAL AUDIO WORKSTATIONS

Avid AudioVision/AudioStation V3.5

The AudioVision editing system family introduces V3.5 on the Avid Media Processor, based on Macintosh PowerMac 8100 technology and numerous digital signal processing (EQ) and editing feature enhancements. Avid has also released the AudioVision and AudioStation digital player/recorder models for environments where digital or analog tape recorders or magnetic dubbers are currently used for audio transfers, playback, mixing and dubbing. One Park West, Metropolitan Technology Park
Tewksbury, MA 01921
Phone 508/640-6789; Fax 508/640-1366

Digidesign Pro Tools V3.2/ProControl

Pro Tools V3.2 software supports ProControl, a modular hardware surface that adds high-quality tactile mixing and editing to Pro Tools III. ProControl interacts with Pro Tools via a touch screen and up to 32 assignable moving faders, shaft encoders and LCDs, breaking the barrier between software-based DAWs and dedicated mixing surfaces. Pro Tools V3.2 also supports FDDI networking, stereo file auditioning and background file copying. U.S. list price: \$6,995. 1350 Willow Rd., Ste. 201 Menlo Park, CA 94025 Phone 415/688-0600; Fax 415/327-0777

Digital Audio Labs V8™

The V8 is a multitrack digital audio workstation for the IBM. The V8 can be configured for up to 16 real tracks. The architecture is highly modular. DSP modules can be added for real-time signal processing. I/Os are user-configurable. Analog I/Os are available from two inputs and outputs to 16 inputs and outputs. Digital I/Os include S/PDIF, AES/EBU, and ADAT and DA-88 interfaces. 14505 21st Ave. N., Ste. 202 Plymouth, MN 55447 Phone 612/473-7626; Fax 612/473-7915

E-mu Darwin

Darwin is a stand-alone random-access recorder offering screen-based digital audio workstation (DAW) style recording/editing capabilities, tape-based system ease of use, and a price point competitive with ADAT and DA-88 modular multitrack digital recorders. Darwin features nondestructive playlist-style editing, audition edit mode, tape machine-style punch in/out with footswitch control, rehearse function, 40 instantly recallable locate points and multiple levels



of Undo/Redo. Suggested retail price: \$3,195. PO Box 660015 Scotts Valley, CA 95067 Phone 408/438-1921; Fax 408-438-8612

Fairlight USA Dali 2T

Fairlight's Dali 2T provides high-quality digital audio processing, working both as a real-time digital signal processor and a digital storage processor. It performs high-quality time compression/expansion, varispeed and varipitch to stored audio, four-band EQ with dynamic range and level processing and nondestructive 2-track editing with crossfades. 3855 Hughes Ave., 2nd Fl. Culver City, CA 90232 Phone 310/287-1400; Fax 310/287-0200

Genex Research Ltd. GX2000

The GX2000 is a 2-track, 24-bit MO disk recorder using ISO standard optical media and is capable of using lossless data packing to increase the amount of audio recorded on a disk. A timecode reader/generator is included as standard. Options include 20-bit A/Ds and D/A's and SFC. All functions are accessible from the front panel. The product is shipped with Windows-based remote-control software. List price: £9,750.

Genex Research Ltd. GX5000

The GX5000 is a 5-track, 24-bit MO disk recorder using ISO standard optical media and is capable of using lossless data packing to increase the amount of audio recorded on a disk. The GX5000 is supplied in a compact 3U, 19-inch rackmounting case. Options include 20-bit A/Ds and D/A's and SFC. All functions are accessible from the front panel. The product is shipped with Windows-based remote-control software. United House, North Rd. Islington, London N7 9DP UK Phone 44/171/609-6151; Fax 44/171/609-6151 E-mail genex.demon.co.uk

Merging Technologies Pyramix™

The Pyramix Virtual Studio is a PC-based workstation that combines multichannel digital audio mixing, recording, editing, and effects processing. Featuring a multitasking graphical interface running under Windows 95, Pyramix supports the ADAT optical I/O format, Open Media Framework Interchange, 32-bit DSP processing, CD-R mastering, and Lossless Real Time Coding™. Pyramix also allows users to custom design virtual studio routing. An Eventide effects option is slated for release in early 1996. 11440 W. Bernardo Ct., Ste. 250 San Diego, CA 92127-1643 Phone 619/675-9703; Fax 619/675-9704

Micro Technology Unlimited Micro-CD

The optional Micro-CD™ software for the MicroSound workstation comes with a CD recorder cable and terminator. Micro-CD takes a project file created under MicroEditor™ and prepares the segments for CD mastering. Project flags are graphically set in MicroEditor where the track ID is

—LISTING CONTINUED ON NEXT PAGE

“...and the specified frequency response curve shall be maintained indefinitely, under all conditions.”

- Automatic Room Equalizing
- Digital Graphic EQ & RTA
- Multiple Memory Presets
- 20-Bit Digital Resolution
- Serial & MIDI Remote
- 1, 2, or 3 Channels

Impossible spec? Not anymore... Introducing the **Sabine REAL-Q™** Real-Time Adaptive Equalizer – The first EQ to adapt to changes in the audio environment and preserve your specified response curve.



SABINE™
ADAPTIVE AUDIO

Call, write, or fax for detailed information:
4637 N.W. 6th Street
Gainesville, FL 32609 USA
Tel: (904)371-3829
Fax: (904)371-7441
Fax-Back Product Info: (904)371-3544

See us at AES Booth #1158

REAL-Q 1/2 06 02 95

—LISTING CONTINUED FROM PREVIOUS PAGE

to increment, overcoming the need to understand PQ coding. Multisession writing is supported, or the disk can be fixed as a master for production or playing in any CD player.

Micro Technology Unlimited MicroEditor 2.4

MicroEditor 2.4 software for MicroSound workstations adds 60 features including: onscreen fader, one-click record and pause, autocreated files, 300 element peak meters and solo view waveform editing, nonlinear fades instantly compute every sample, normalize one segment or all independently or as a project, delete edits, analyze the waveform and adjust to be undetectable and trigger record to timecode while playing. A multimedia driver supports 15 sample rates and AIFF format files. Retail: \$125, free with contract.

PO Box 21061
Raleigh, NC 27619-1061
Phone 919/870-0344; Fax 919/870-7163

OSC Deck II Version 2.5

Digital hard disk recording workstation. 24 tracks of playback on a PowerMac 8100. Built-in real-time signal processing technologies. Adobe Premiere plug-in format, allowing you to use third-party signal processing programs, including Q2 from K.5 Waves. List price: \$399.

480 Potrero Ave.
San Francisco, CA 94110
Phone 415/252-0460; Fax 415/252-0560
E-mail osc@applelink.apple.com

Philips Digital Workstation

The Digital Workstation is a cost-effective and versatile production tool for the digital recording and editing of music and speech in bit-reduced form. It is available in OEM module form or as a complete system. The complete system includes all the modules integrated into an optimized PC, making it a plug-and-play unit. Software is included.

c/o Mackenzie Laboratories Inc.
1163 Nicole Ct.
Glendora, CA 91740
Phone 800/423-4147; Fax 909/394-9411

Roland DM-800 Accessories

New accessories for the DM-800 8-track recorder/editor include the DIF-800 interface, which allows for digital transfers between ADAT or DA-88 with the DM-800. It also provides RS-422 control, with the DM-800 either as slave or master. Other accessories include a roll-around stand, hard shell travel case, wrist rest and an extensive tutorial training video.

7200 Dominion Circle
Los Angeles, CA 90040
Phone 213/685-5141; Fax 213/726-3267



SADiE Octavia

The Octavia modular multitrack and post-production digital audio editing system features 20-bit A/D and D/A converters. The system comprises one or more Octavia units, each providing eight channels of audio input/output and can be expanded for extra storage, processing power, and audio I/O channels. Up to ten Octavias can be chained to provide 80 channels of full digital and analog I/O, and 1.3

Gflops of processing power.
1808 West End Ave., Ste. 1119
Nashville, TN 37203
Phone 615/327-1140; Fax 615/327-1699

Solid State Logic Axiom APS

The Axiom Preparation Station (APS) provides for cost-effective program preparation through shared access to Axiom's DiskTrack. APS features audio recording, editing and prelay for up to 24 hard disk tracks (selected from up to 128 tracks available with DiskTrack); video recording to hard disk; audio conforming and reformatting to standard EDLs; and shared access to Axiom's inputs and outputs. Open media interchange allows for import and export of audio in AIFF and .WAV formats.

320 W. 46th St.
New York, NY 10010-8398
Phone 212/315-1111; Fax 212/315-0251

Sonic Solutions Sonic System V2.3

The Sonic System is the world's leading workstation for high-powered DSP editing, mixing and processing. Configurable from two channels of 24-bit digital I/O up to 96 channels, the Sonic is also the most flexible workstation. Applications include CD mastering, multitrack recording, audio post-production, multimedia and radio broadcast. Options include integrated Quicktime video, high-speed real-time networking between systems and NoNOISE sound restoration. Systems start at \$2,995.

101 Rowland Way, Ste. 110
Novato, CA 94945
Phone 415/893-8000; Fax 415/893-8008
E-mail info@sonic.com

Soundscape SSHDR1

Fully expandable to 128 tracks, this is an 8-track, IBM-based hard disk-recording and editing system. 24-bit processing with true 18-bit outputs (crystal), uses standard I.D.E. drives for data storage, .WAV format file transfers. Hardware options to be released within next six months include direct ADAT, DA-88, Sony interfaces, VITC/LTC/Super-clock-Wordclock I/O, 8 I/O 20-bit, 8 I/O 18-bit, full DSP functions.

705A Lakefield Rd.
Westlake Village, CA 91361
Phone 805/495-7375; Fax 805/379-2648
E-mail 74774.1337@compuserve.com

Spectral AudioEngine 2.5

Spectral's flagship audio workstation, the AudioEngine 2.5 adds networking, audio file conversion for multimedia authoring, OMF compatibility and cross-platform digital audio production to the AudioEngine's extensive feature set. Also new is machine control via industry-standard Sony nine-pin serial connection for easier and faster editing to picture and operational integration with nonlinear video.

18800 142nd Ave. N.E.
Woodinville, WA 98072
Phone 206/487-2931; Fax 206/487-3431

Studer Editech VideoMix/CD Press

Editech's VideoMix brings online quality nonlinear video recording and playback into the Dyaxis II family platforms. A Video track in the Edit Desk permits recording and playback of audio and video simultaneously. Synchronization is precise and instantaneous. CD Press for Dyaxis enables mastering of Dyaxis projects, including mixer automation, program crossfades and dynamics, directly to writable compact disk via SCSI. An Event editor with full PQ support is added to the Dyaxis Edit Desk.

1370 Willow Rd., Ste. 201
Menlo Park, CA 94025
Phone 415/326-7030; Fax 415/326-7039



Orders . . .
Large & Small, We Have It All!

All models of RECORDING PRODUCTS in stock.
Wholesale distributors of: **SONY**

- Broadcast audio and video tape
- Complete cassette packages
- Prepackaged cassettes
- Bulk cassettes in custom lengths
- Audio/Video duplication
- Computer data media
- Splicing and leader tape
- Assorted reels and boxes

Call for Quote

(800) 854-1061

(619) 277-2540
or Fax orders (619) 277-7610



ADVANCE
Recording Prods.

8859 Balboa Ave. Ste E
San Diego, CA 92123

USE READER SERVICE CARD FOR MORE INFO

Dealers come
& Dealers go...
**One Pro
Audio
Company
has been
tops for
40 years
and going
strong.**
*Put our strength
to work for you.*



San Francisco • Oakland
V:415-775-1316 F:673-8663
V:510-652-1553 F:652-6575

TimeLine Studioframe

New software upgrade that adds OMF file compatibility and network sound server capability to the Studioframe digital audio workstation system.

2401 Dogwood Lane
Vista, CA 92083
Phone 619/727-3300; Fax 619/727-3620

LOUDSPEAKER AND MONITORING PRODUCTS

Apogee Sound Inc. ACS

The ACS Series sets new standards for the installation/contractor market. The cabinets are constructed with multiply Baltic birch, contain steel-reinforced rigging points and are finished with a durable polyurethane paint. The ACS Series represent Apogee's debut line of "processor-optional" loudspeakers. When used, the ACS Processor is fully expandable and can operate four separate cabinets from a single unit. Offering a wide range of performance characteristics, the ACS Series can compete effectively where cost/performance issues are sensitive.

1150 Industrial Ave.
Petaluma, CA 94952
Phone 707/778-8887; Fax 707/778-6923

Bag End ELF-P18

The ELF-P18 self-powered subwoofer offers low-frequency response down to 8 Hz in a 3-cubic-foot enclosure. System accepts Left, Center and Right signal inputs, combines them to drive the built-in ELF integrator and 400-watt power amp, and provides an adjustable three-channel highpass line level output for front monitor speakers. Amplifier and driver are optimized for maximum output and low distortion. ELF technology is licensed from Long/Wickersham Labs.

Bag End Sapphire ST-2

Sapphire ST-2 Time-Aligned™ P.A. loudspeaker system provides extraordinarily high output and fidelity in a very compact package. Featuring a 1.5-inch high-compression driver with a 40x50-degree high-frequency waveguide and a single 12-inch high-efficiency cone driver, the wedge shaped system includes built-in hardware for flying in arrays and angle cut for floor monitor applications. TimeAlign specification and trademark licensed from E.M. Long Associates.

Box 488
Barrington, IL 60011
Phone 708/382-4550; Fax 708/382-4551

CMCI Oracle MX Wireless Monitors

Circuits Maximus Company Inc. is debuting the Oracle MX wireless monitor system, a stereo Hi-VHF in-ear transmitter/receiver package. The 1U rackmount transmitter and compact belt-clip receiver give the performing artist complete control of the monitor volume anywhere onstage. The Oracle MX tunes to one of 200 channel choices, contains built-in limiter circuitry, operates on 9-volt battery power, and is easy to set up and maintain. List price: \$1,995.

9017-B Mendenhall Ct.
Columbia, MD 21045
Phone 410/381-7970; Fax 410/381-5025

D.A.S. ND-8/K-8 HF Drivers

Developed using Neodymium magnet technology, the ND-8 uses the latest-generation titanium diaphragm that will fit on all 2-inch models. Frequency response extends from 500-20k Hz. Its main features are high magnetic energy, high coercive force and high temperature resistance. Its sintered neodymium magnet and adjacent pole pieces are chromium-coated to guarantee long life under adverse conditions. The ND-8 driver weighs 4.650 kg and handles 150 watts program.

—LISTING CONTINUED ON NEXT PAGE

DELTRON GOTHAM

INTERCONNECTS MAKE SWEET MUSIC

AUDIO CABLES

- 2,3,4 & 7 conductor microphone cables
- Double Reussen shielded
- AES-EBU digital cable
- Analog or digital multipair cable

CONNECTORS

- Color coded XLR's
- Professional 1/4" plugs
- Universal panel mount XLR's
- Industries broadest range of RCA's



DGS
PRO-AUDIO
Deltron/Gotham
US Sales & Stocking Warehouse
Arlington, TX 76003

SOUND CONNECTION SOUND PERFECTION

Come See Us At
AES
Booth #573

For more information call

800-292-2834

USE READER SERVICE CARD FOR MORE INFO

FIRST CALL

Why do world-class producers and studios call us first for digital transfers, digital editing, audio rentals and service?

WE'RE THE DIGITAL SOURCE

DAT, Sony 3348/24, Mitsubishi X-880 and X-86HS (96 kHz) mastering decks—we own 'em all. Equipment breakdown? Call us for a "Special Emergency" low-rate rental replacement.

DIGITAL MASTERING, EDITING, TRANSFERS

All-digital multi-format suite with Harmonia Mundi Format Converter, Sony digital editor w/EQ.

WE'RE DIGITAL EXPERTS

Call anytime for tech support, whether you rent from us or not.

WE'VE GOT WHAT YOUR RACK NEEDS

Lexicon & AMS, Neve EQ... the latest digital and analog gear, plus hard-to-find "classics."

WE NEVER CLOSE

That's right—24 hour service.

WE SHIP WORLDWIDE

You're never too far to go digital.

DIGITAL ASSOCIATES d/b/a

AUDIOFORCE

SOUND RENTAL LOGIC

630 9th Avenue • Room 1012 • New York, NY 10036

For your **FREE** rate card, call **800/847-4123** toll free in USA (212/262-2626 in NY State) or fax us at 212/262-2632.

GET IT FAST

Don't trust your audiophile cassette duplication needs to anyone but
Progressive Music

We have the "Fastest Turn-Around in the Known Universe!"

ALL COMPLETE 4-COLOR PACKAGES..TYPESET, FILM, CHROME TAPE, FROM DAT

500 CD's + 500 CASS	2290.00
1000 CD's + 500 CASS	2865.00
500 CD's	1465.00
500 CASS	825.00



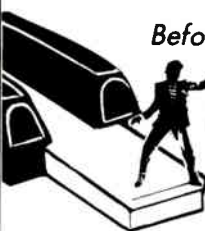
Progressive Music

2116 Southview Ave.
Tampa, FL 33606
(813) 251-8093
FAX: (813) 251-6050
Toll Free: (800) 421-TAPE

Avail.: VISA & Master Card

USE READER SERVICE CARD FOR MORE INFO

KEYBOARDS



Before You Jump...

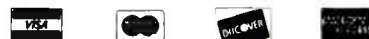
CALL US LAST!

ALL MAJOR BRANDS

- MUSICIANS
- STUDIOS
- BANDS
- SCHOOLS
- CHURCHES

- SYNTHESIZERS
- DIGITAL PIANOS
- RECORDING GEAR
- DRUM MACHINES
- SAMPLERS
- AMPLIFIERS
- MIXERS / EFFECTS

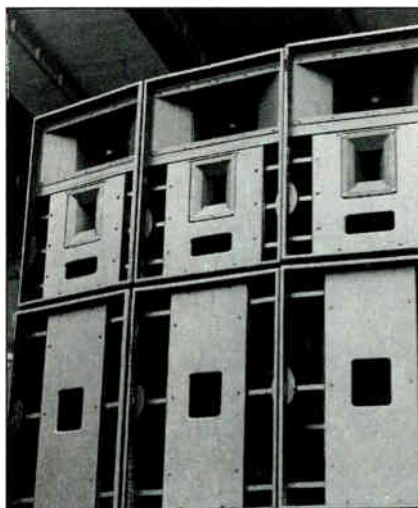
Call Us When You're Ready To Buy!



1-800-795-8493

1007 AVENUE C • DENTON, TX 76201
FAX (817) 898-8659

AES NEW PRODUCTS GUIDE 1995



Production Services LS2

High impact, high definition sound reinforcement system provides total coverage of any arena. The standard LS2 block contains 2x18-inch, 2x15-inch, 2x10-inch, 1x2-inch drivers, handling 3kW RMS at levels exceeding 135 dB. Special underhang enclosures for front fills and long throw enable total coverage arrays to be constructed. Three-way monitors and smaller systems complete the range. List price is \$7,800 for LS2 system block, \$3,600 for LS2 L/T, \$2,800 LS2U.

D1 Warelands Way Industrial Estate
Hutton Rd., Middlesbrough
Cleveland TS4 2JY, UK
Phone 44/1642/218-133; Fax 44/1642/2*8-144

Professional Audio Systems LT-2

LT-2 is a true coaxial long-throw, mid-high cabinet with a horizontal coverage of 20° and a vertical coverage of 30°. The LT-2 uses a 2-inch compression driver and a new 4-inch voice coil 12-inch co-axial loudspeaker. Requires an LT-2M electronics module for crossover, Time Offset Correction and equalization. Intended for large venues, the LT-2 measures 35 inches H, 25 inches W, 42 inches D.

2270 Cosmos Ct.
Carlsbad, CA 92009
Phone 619/431-9924; Fax 619/431-9496

Renkus-Heinz Complex Conic Systems

Complex Conic loudspeaker systems offer unprecedented dynamic range and clarity along with exceptional control. These new loudspeakers' Complex Conic Waveguide design overcomes the high-frequency coverage pattern irregularities of conventional rectangular horns, reducing audible distortion and eliminating the horn sound associated with many loudspeaker systems. Nine compact models, including two floor monitors and a miniaturized, wide-angle "under-the-balcony" system are available to cover a wide range of applications.

17191 Armstrong Ave.
Irvine, CA 92714
Phone 714/250-0166; Fax 714/250-1035

Sennheiser HD580 Jubilee

The HD580 Jubilee is a limited-edition, Open-Aire, dynamic, stereo headphone. True deep bass is replicated by a computer-optimized magnet system; triple-wound aluminum voice coils ensure clear, transparent sound. The HD580 has a 10-foot oxygen-free copper signal cable that terminates in a 1/4-inch to 1/4-inch gold-plated stereo phone



plug. Frequency response: 16-30k Hz; Sensitivity: 97 dB; Impedance: 300 ohms; Weight: 9.2 oz. Retail: \$449.

PO Box 987, 6 Vista Dr.
Old Lyme, CT 06371
Phone 203/434-9190; Fax 203/434-1759

Stage Accompany Compact Driver

The studio version of this neodymium compact driver is a high-powered ribbon speaker for all frequencies from 1-32 kHz. New mounting plate design from milled aluminum allows for mounting between 12-inch or 15-inch drivers. Stage Accompany will introduce a new studio monitor, the M-59, with the Neodymium ribbon speaker mounted between 2 SA 12-inch and 2 SA 15-inch drivers at this year's AES.

6573 Wyndwatch Dr.
Cincinnati, OH 45230
Phone 513/624-9977; Fax 513/232-8709

Studio One Monitoring Systems AM200

The Studio One AM200 is a self-amplified two-way monitor speaker system that can also be used passively. Each monitor is capable of producing 75 watts RMS. The AM200 is finished in a semi-gloss black textured paint. Product is recommended for use in recording studios, for bands, multimedia, home use, etc. Frequency response: 40-19k Hz Sens. 90 dB ±3 dB. Dim: 29.5-inch Hx14-inch Dx12.75-inch. Weight 24 lbs. ea.

PO Box 420964
San Diego, CA 92142
Phone 619/536-1148; Fax 619/536-1128



Tannoy AMS 10A

The Tannoy AMS 10A is a bi-amplified, fully active, fully powered high-output studio reference monitor. Using a 10-inch dual concentric drive unit and a sophisticated power module, the AMS 10A delivers dynamic, articulate sound with exceptional stereo imaging. The electronics do not utilize compression, ensuring transients are reproduced intact. One interesting feature of this technical marvel is its primo cool blue LED.

Tannoy AMS 210A

The AMS 210A is a fully active subwoofer utilizing two 10-inch low-frequency units and a 200-watt MOSFET amplifier. Dimensionally compact, the AMS 210A allows for ease of placement in studio applications. The sub delivers an impressive 114dB maximum output and low-frequency

extension rated at 23 Hz. The AMS 210A, like its cousin, the AMS 10A, is outfitted with the most sophisticated electronics section available in the industry today.
300 Gage Ave. #1
Kitchener, Ontario, Canada N2M 2C8
Phone 519/745-1158; Fax 519/745-2364



Turbosound Impact

Impact is a range of passive loudspeakers addressing the requirements of sound contractors. The range comprises three models: the Impact 80, utilizing an 8-inch LF driver and an HF device; the Impact 120, featuring a 12-inch LF driver and a unique 5-inch HF cone driver; and the Impact 180, an 18-inch subwoofer. All speakers are manufactured from 50% recycled materials, using a unique "foam-in-place" rotational molding process that provides an extremely durable finish.

Dist. by Audio Independence

9288 Gorst Rd.

Mazomanie, WI 53560

Phone 608/767-3333; Fax 608/767-3360



Westlake Audio Lc6.75

Backed by 25 years of experience, the new Lc6.75 studio reference monitor from Westlake Audio features state-of-the-art technology in a compact two-way system. This rugged cabinet incorporates an aligned dual port design that houses a 6½-inch polypropylene woofer and ¾-inch soft dome tweeter. Weighing in at 22 lbs. ea., the Lc6.75 delivers unsurpassed sound quality over a bandwidth of 60-18k Hz ±3 dB.

2696 Lavery Court, Unit 18

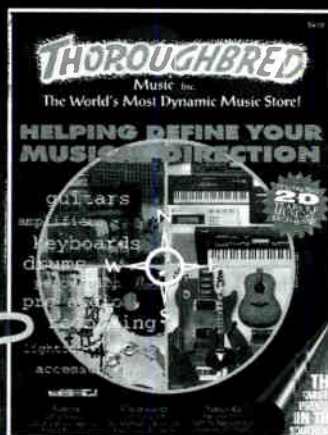
Newbury Park, CA 91320-1591

Phone 805/499-3686; Fax 805/498-2571

Woodworx Wave Series WX 12A

The Wave Series WX 12A features professional performance and superior manufacturing quality in a cost-effective enclosure. The high-quality contoured design features a baffle-integral high-frequency conical wooden waveguide with a 75° projection pattern. An internal (by-passable for bi-amping) crossover splits the full-range signal between a 12-inch low-frequency, high-power woofer and a full-sized high-performance compression driver. Available versions include trapezoid and slant floor monitors.

music for the holidays



GUITARS, BASSES, AMPS, KEYBOARDS, AUDIO, LIGHTING, DRUMS & ACCESSORIES



1(800)800-4654

THOROUGHbred
MUSIC INC.

The World's Most Dynamic Music Stores!

Call for our **FREE**
1995 Catalog!

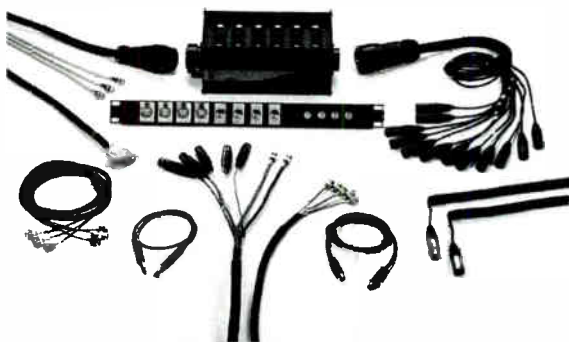
IN FLORIDA DIAL (813) 855-9644 OR FAX (813) 881-1896 MAIL ALL CORRESPONDENCE TO PO BOX 8009, TAMPA, FL 33674-8009

USE READER SERVICE CARD FOR MORE INFO

More Reasons to Choose Gepco

Distributor for:

- ADC
- Kings
- Neutrik
- Switchcraft
- AMP
- EDAC
- ...and many more



Cost-effective. Quality Crafted. Your choice of cable type, length and color from our extensive selection. Delivered to you on time. Gepco manufactures custom cable assemblies, audio and video snakes, breakout boxes, panels, patch bay wiring harnesses, direct boxes and prepackaged cable assemblies for point-of-sale display. All Gepco cable and custom products are made in the U.S.A.

1-800-966-0069

Ask your Gepco sales representative for a free catalog
Cable, Connectors and Custom Products


See us at AES Booth #964

GEPco INTERNATIONAL, INC. 2225 W. Hubbard, Chicago IL 60612
Phone: 312-733-9555 1-800-966-0069 Fax: 312-733-6416



We build studios where true sound lives

Spaces that



ARCOUSTICS, INC.
ARCHITECTURE + ACOUSTICS

720 Greenwich Street, Suite 2C,
New York, New York 10014
212-727-9645 • Fax 212-206-7320

AES NEW PRODUCTS GUIDE 1995

Woodworx MAX Series 8.0

The MAX Series 8.0 low-frequency speaker system complements the MAX 1.5A, 2.5A and 3.5A high-power professional series of full-range trapezoid loudspeakers. It features dual high-excursion 18-inch components, a double-thick baffle board, contoured road-proven enclosure design, and a detachable caster plate for easy mobility. Response linearity is consistent throughout the bottom 2 octave frequency range.

402 Edwardia Dr.
Greensboro, NC 27409
Phone 910/855-5600; Fax 910/855-1488



Wright WFM III

Wright Microphones and Monitors Inc. has just introduced the new WFM III 8-inch Near Field Monitors, boasting frequency response from 60-20k Hz, with imaging and phase coherency unmatched in the marketplace. The unique cabinet design minimizes interior and exterior reflections, and the low-loss crossovers are hand-matched. The new semi-gloss, granite finish blends well with any decor. The list price is \$995 per pair.

2091 Faulkner Rd., N.E.
Atlanta, GA 30324
Phone 404/321-3886 or 800/487-3886; Fax 404/636-7738

MICROPHONE PRODUCTS

AKG MicroMic II Series

The MicroMic II Series of miniature condenser microphones will be introduced at AES. From a clip-on sax mic to a new head-worn vocal mic, these new AKG products offer realistic sound, in a package that virtually disappears. 8500 Balboa Blvd.

Northridge, CA 91329
Phone 818/894-8850; Fax 818/830-1220

Allegro Sound 6072M Mic Tube

Plug-in upgrade for vintage and modern tube mics. Three grades available to cover all performance requirements: (1) 6072M tested for microphonics, shorts, Gm + in-mic noise tests, \$50; (2) 6072M/PR tested as above plus curve-trace and listening evaluation, half of the noise of 6072M, \$100; (3) 6072M/PR+ tested as above plus special selection, state-of-the-art, call for price. 12AX7B™, 6DJ8B™, EL-34/HD™, KT-88 and other tubes also available.

12440 Moorpark St., #11
Studio City, CA 91604-1260
Phone 818/766-9101; Fax 818/505-0149



Azden Performance Series 31XT

The Azden 31XT converts any dynamic microphone with an XLR to wireless operation. Adjustable audio level accommodates various microphones. Superb frequency response and wide dynamic range reproduce each mic's true sound without coloration. Power on/off, audio mute, status LED complete the array of onboard controls for operational ease. The 31XT is available on ten different VHF channels, including traveling frequencies. Complete systems come matched with Performance Series receivers and start at \$405 list price.

147 New Hyde Park Rd.
Franklin Square, NY 11010
Phone 516/328-7500; Fax 516/328-7506



Beyer MCE 83

The new MCE 83 is a high-quality studio condenser microphone with supercardioid characteristics, giving excellent isolation from off-axis sound sources. The mic's response characteristics provide a clear, sophisticated sound, and it will handle sound pressure levels up to 138 dB, making it suitable for a wide variety of instruments, as well as for vocal applications. The all-metal construction of the MCE 83 provides outstanding durability in the most demanding of environments.

Beyer U600 UHF

The beyerdynamic U600 wireless system is the newest product in a range of advanced UHF radio systems. Incorporating switchable frequency selection, access to 64 channels in one TV channel in 4 groups of 16 makes this the most frequency-agile system available. A unique "grip" tone signalling system eliminates interference by locking channels to associated transmitters. Operating parameters and transmitter battery condition are displayed at the base station and via a Windows-based PC system. 56 Central Ave.

Farmingdale, NY 11735
Phone 516/293-3200; Fax 516/293-3288

Bruel & Kjaer 4033 Compact Omni

Type 4033 uses the same condenser microphone capsule as the types 4004 and 4007 but is fitted with a high-performance thick film preamplifier in an ultrasmall microphone housing, via a small lemo-connector. The cable can be disconnected from the housing. On-axis response from 40-40k Hz ± 2 dB. 143dB SPL handling capability. Omnidirectional pickup pattern. Flexible connection possibilities.

Bruel & Kjaer 4023 Compact Cardioid

Type 4023 use the same condenser microphone capsule as the types 4011 and 4012, but in an ultracompact housing fitted with a high-performance, thick film preamplifier. The cable can be disconnected from the housing via a handy lemo connector. On-axis response from 40-20k Hz ± 2 dB. 145dB SPL handling capability. First order cardioid pickup pattern with extremely smooth off-axis response. Ultracompact design for all high-quality recordings on-camera.

Dist. by TGI North America
300 Gage Ave. #1
Kitchener, Ontario, Canada N2M 2C8
Phone 519/745-1158; Fax 519/745-2364



Curtis Technology AL-1 Tube Mic System

Matched stereo pair of tube condenser microphones with a stereo 19-inch rackmount power supply for \$1,950. The tube in each microphone is a 12AU7 and the diaphragm size is 1 1/4-inch. Each mic comes with a shock-mount holder. These mics outperform more expensive mics for voice and acoustic instrument recording.

1300 Rock St.
Rockford, IL 61101
Phone 815/229-8604

Groove Tubes MD3

The Groove Tubes Audio MD3 side address microphone combines a multipattern, large-diaphragm condenser capsule with a high-grade, low-noise dual-stage vacuum tube condenser circuit. The single diaphragm of the MD3 capsule is just three microns thin, is made from gold sputtered Mylar, and is hand-tensioned to exacting specifications. An innovative sensitivity control allows the engineer to reduce the capsule's sensitivity up to 20 dB without changing the sound.

12866 Foothill Blvd.
Sylmar, CA 91342
Phone 818/361-4500; Fax 818/365-9884



Microtech Gefell M900/M910

Vocalist's condenser microphone featuring larger diameter pickup capsule of totally new design. Excellent polar pattern control and smooth frequency response, state-of-the-art electronics with active balanced output. 48-volt

phantom powering. Built-in pop suppression filter. Low sensitivity to handling noise. Price: \$995.

Dist. by G Prime Ltd.
1790 Broadway #402
New York, NY 10019
Phone 212/765-3415; Fax 212/581-8938



Middle Atlantic Gob Stop

Easy to use, affordable and effective, the new Gob Stop microphone popscreen from Middle Atlantic/RACK accessories is designed to eliminate extraneous microphone "P-pop." Featuring a double nylon screen, which keeps airborne particulates from using your microphone for a landing zone, the Model GS popscreen is additionally equipped with a slim-line gooseneck and all necessary mounting hardware, including a mic stand mounting clamp outfitted with a non-marring tip. Suggested retail price: \$37.

5390 Gabbert Rd.
Moorpark, CA 93021
Phone 805/532-2170; Fax 800/645-7809.

Mikrofon-M MKE 13-H

MKE13M studio condenser microphones provide exceptional performance at an unbelievable cost. The high-quality, wide range cardioid pattern is perfect for use in recording studios, concert halls, and theatres. Frequency range: 31.5-20k Hz; Powering 12-52 V. Size 21mm (diam) x114 mm. Weight 90g.

Dist. by Audionet
Apartado 5358
36200 Vigo, Spain
Phone 34/86/481-155; Fax 34/86/482-065 or 86/234-935.

Oktava

The Oktava MK219 large-diaphragm and MK012 3-capsule condenser from Russia deliver great value in true condenser microphones. The MK219 is a fixed-pattern cardioid mic employing an extremely thin, gold-plated diaphragm, and is eminently suited to everything acoustic, from string instruments to vocal/voice-overs. The MK012 condenser uses interchangeable capsules to provide a choice of cardioid, hypercardioid and omni pickup patterns. Prices way below performance.

Dist. by Harris Allied
PO Box 1487
Richmond, IN 47374
Phone 317/962-8596; Fax 317/962-0671

Ramsa WX 400 Wireless

Ramsa's System 400 wireless microphone systems virtually eliminate external noise, interference, dead spots and drop outs via simultaneous multichannel operation of 49 preprogrammed UHF-TV channels. A Phase Lock Loop (PLL) Synthesizer System monitors and adjusts carrier frequency, assuring exacting tolerances. The product line includes: the WX-RP458 microphone and the WX-RP401.

—LISTING CONTINUED ON NEXT PAGE

Spectrum Analysis

SONIC FOUNDRY

USE READER SERVICE CARD FOR MORE INFO

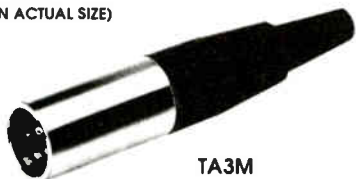
Switchcraft®

TINI Q-G® Miniature Connectors

These high-quality audio connectors are miniature versions of the full-size Q-G line. They are ideal for use with miniature microphones, wireless beltpacks, instrument pickups, and anywhere space is too tight for conventional microphone plugs. Features are: positive latch lock, secure cable strain relief, integral flex relief and nickel finish. Available in 3 to 6 contact styles.



TA3F
(SHOWN ACTUAL SIZE)



TA3M

For Immediate Delivery and Competitive Pricing on the Tini Q-G, or any of Switchcraft's Audio or Video products, Call:



CAL SWITCH
California Switch & Signal, Inc.
[800] CAL-SWCH
225-7924

"Distributor
of the
Decade"

USE READER SERVICE CARD FOR MORE INFO

AES NEW PRODUCTS GUIDE 1995

—LISTING CONTINUED FROM PREVIOUS PAGE

402, and 404 receivers (featuring up to four receivers in one rackspace); WX-ZP490 UHF band booster antenna; and WX-ZP490 distributor.

6550 Katella

Cypress, CA 90630

Phone 714/373-7277; Fax 714/373-7903

Sanken CSS-5 Stereo Shotgun

The CSS-5 shotgun stereo combines superb shotgun performance with stereo capability in a lightweight mic under 12 inches long. In Mono mode, the CSS-5 functions as a shotgun microphone with excellent low-frequency definition. In Normal mode, the CSS-5 becomes a "stereo shotgun" that maintains accurate stereo-localization along with precise directional hypercardioid focus. The Wide mode expands the stereo image to 140° for cinematic ambience and SFX.

1155 N. La Brea Ave.

West Hollywood, CA 90038

Phone 213/845-1155; Fax 213/845-1170

Sennheiser Drum Set MD504

The Drum Set MD504 is a complete drum-miking kit. Four MD504 compact microphones, ideal for miking snares and toms, and four MZH504 drum clamps are packaged in a compact, rugged case. There are also foam cutouts in the case for the optional MD421-U (kick) and ME64/Kh (cymbal) microphones and their mounting clips. The set is an ideal touring mic system for a complete drum kit.

PO Box 987, 6 Vista Dr.

Old Lyme, CT 06371

Phone 203/434-9190; Fax 203/434-1759



Shure LX Wireless System

The LX wireless microphone system is a VHF system that improves upon the contractor-trusted L Series. Occupying only a half-rackspace, the LX4 MARCAD® diversity receiver comes complete with both single and dual rackmounting hardware. The device's proprietary MARCAD (Maximum Ratio Combining Audio Diversity) circuitry maintains a constant vigil over received signals and combines them in optimal proportions. Suggested retail prices for LX Wireless diversity microphone systems begin at less than \$700.

222 Hartrey Ave.

Evanston, IL 60202-3696

Phone 708/866-2542; Fax 708/866-2353

Soundfield SPS 422 Studio System

The new system SoundField SPS 422 Studio System is designed specially for "main microphone" recording studio applications. The competitively priced SPS 422 Studio System consists of a multicapsule array microphone and 1U processor, allowing the engineer total parameter ad-



ATHAN CORPORATION

NEW IMPROVED PARTS for OTARI MACHINES

MTR-90 • MX-80 • MX-70 • MTR-12 • MTR-10 • MX-5050

PLUS—

- MOTOR REFURBISHMENT
- HIGH GRADE PRECISION BEARINGS
- PARTS FOR AMPEX, STUDER & MCI MACHINES

See us at AES Booth #844

Call (415) 589-5206 for more information.

50 SO. LINDEN AVE., #10 • SOUTH SAN FRANCISCO • CA 94080

justment from a control room listening position. List price of the new system SPS 422 will be announced at the AES exhibition in New York.
Dist. in USA by QMI
25 South Street
Hopkinton, MA 01748
Phone 508/435-3666; Fax 508/435-4243



Vega SU-620 Wireless

Synthesized UHF wireless microphone system, with Dynex® III audio processing, bodypack and handheld transmitters with 50-milliwatt RF output. Can be factory-set (or set by properly equipped dealer) on any frequency in 524-806 MHz UHF band, with internal adjustments. Suggested list price (T-625 bodypack transmitter, R-622 receiver, LM-206X lapel mic) for SU-620 BPM system: \$2,287.
9900 E. Baldwin Pl.
El Monte, CA 91731-2294
Phone 818/442-0782; Fax 818/444-1342
E-mail 73513.1417@compuserve.com

MIXERS

Amek System 9098 RCMA

The Amek/Rupert Neve RCMA remote-controlled microphone amplifier allows Rupert Neve's microphone amplifiers to be located remotely, eliminating the need to send mic level signals over long distances. Parameters are digitally controlled, either from the RCMA front panel or the remote control unit. Each RCU allows up to 64 mic channels (8 RCMA devices) to be operated together to provide a complete microphone input section. An optional 20-bit digital output is available.
10815 Burbank Blvd.
North Hollywood, CA 91601
Phone 818/508-9788; Fax 818/508-8619



Cooper CS 104 'ENG' Mixer

Features include four mono input channels (linkable for stereo applications), analog meters with limiter threshold LEDs, channel prefade listen, Jensen transformer coupled inputs and outputs, and multiple balanced and unbalanced output connectors. Powering options: eight internal 'AA' cells or external DC. Frequency response: 20-20k Hz better than $\pm .05$ dB. THD+N: 20-20k Hz better than .01% (.005% typ.). EIN: 20-20k Hz better than -128 dBu (150 ohm source). List price: \$3,500.
31952 Paseo de Tania
San Juan Capistrano, CA 92675-3919
Phone 714/248-1361; Fax 714/248-5256



Crest Century Series GTx

Century Series GTx front-of-house mixing console incorporates such features as a comprehensive daylight-view meter bridge, eight discrete aux sends, discrete bus assignment switching, enhanced EQ with mid-frequency bandwidth switching and variable highpass filter control, separate insert send and return connectors on each input with front-panel switching, and selectable true LCR panning.
10-0 Eisenhower Dr.
Paramus, NJ 07652
Phone 201/909-8700; Fax 201/909-8744

Crookwood Console Brick

Crookwood's world debut of their Console Brick system, a radical, digitally controlled analog console system, will be of interest to all. Using predefined building blocks, you specify the console architecture and features you require, be it a minimal 8-channel desk for classical work or a 256-channel fully featured mega film desk. The top class analog circuitry offers digital slaying specifications, with analog musicality, controlled as standard by a small assignable control surface.
The Old Police House, Station Hill
Cookham, Berkshire, SL6 9BS UK
Phone 44/1628/528-026; Fax 44/1628/531-959

D&R Orion LCRS Console

The Orion LCRS in-line format 16-bus console offers four-band sweep EQ on the channel; two-band sweep EQ, aux sends, and automated mute on the monitor section. Aux. sends (8 per module) can be split between channel and monitor. MidiFade automation is optional for \$1,500. D&R's PowerVCA (\$8,500) or PowerFade (\$15,000) moving faders can be installed later. Price: less than \$35,000 for 32x16x32 with 12 stereo returns.
Rt. 3 Box 184-A
Montgomery, TX 77356
Phone 409/588-3411; fax 409/588-3299

Euphonix CS 2000F

Digitally controlled audio mixing system for multiformat and multiple stem film/TV post-production. System can be configured for single or multiple operators with four to 48 multiformat mix buses that can handle stereo to 8-channel re-recording. Each fader has full film panning, and the system can be supplied with 8-channel film monitoring system with bus/tape switches for each stem. Joystick panner also available. Prices from \$100,000.
11112 Ventura Blvd.
Studio City, CA 91604
Phone 818/766-1666; Fax 818/766-3401

Fender Pro Audio MX-5200 Meterbridge

The MX Meterbridge is an accessory to the popular MX-5200 Series line of mixing consoles. The unit features eight VU meters that monitor four submasters, stereo masters, mono output, and switchable PFL/AFL outputs, including four aux sends and two stage monitor sends. One size meterbridge fits all 5200 Series 16-, 24-, or 32-channel models. The MX-5200 Series family offers sound quality and professional features unique to consoles in this price range.
7975 N. Hayden Rd.
Scottsdale, AZ 85258
Phone 602/596-7121

Noise Reduction

Plug Into

Spectrum Analysis

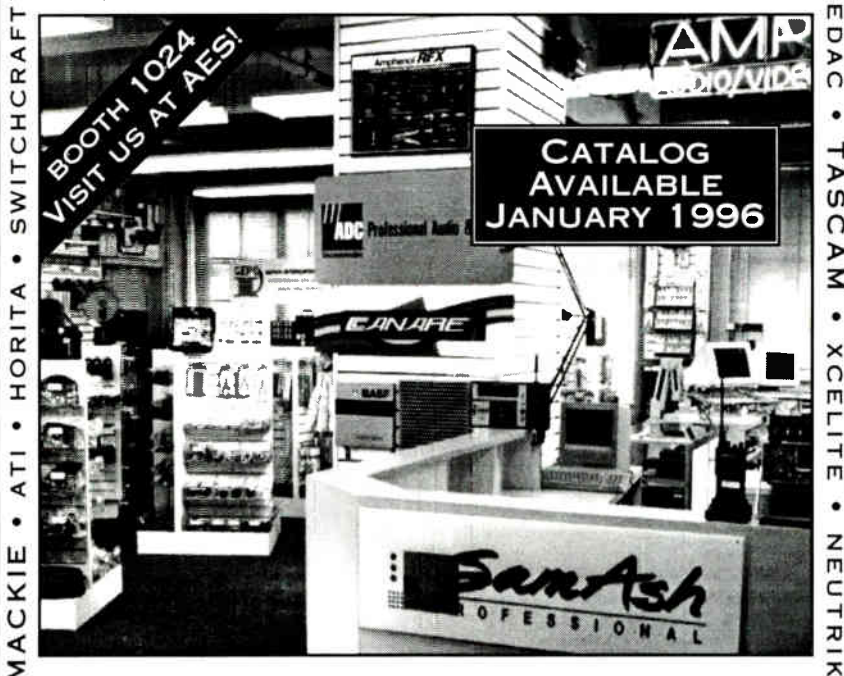
SONIC



FOUNDRY

See us at AES Booth #1083

USE READER SERVICE CARD FOR MORE INFO



Sam Ash Professional Parts & Accessories is dedicated to serving the Broadcast, Recording, Video, Sound-Contractor and Home Studio markets. We have an in-depth inventory for all your audio and video needs and we will be pleased to accommodate your special orders. Our experienced and knowledgeable sales staff is ready to serve you and technical assistance is available. Same day shipping is available for orders placed before 3:00 pm and back-orders and special orders for hard-to-find items are routinely handled.

SAM ASH PROFESSIONAL PARTS DEPARTMENT

723 7TH AVE (AT 48TH STREET) 9TH FLOOR, NEW YORK
(212) 302-5114 • FAX: (212) 302-5744

USE READER SERVICE CARD FOR MORE INFO

Mackie Designs SR 24•4

Features: true 4x2x1 bus with 20 mic/line and 2 stereo line inputs; hi and low shelving and mid sweep EQ on channels 1-20; high and low shelving and high and low mid peaking EQ on stereo chs. 21-24. All channels have DL, -20dB signal present, and mute/solo (PFL/AFL) LEDs. Four subs are balanced, double bussed and pannable. Six independent balanced aux sends with masters; four stereo aux returns. Retail: \$1,599.

16220 Wood-Red Rd. N.E.
Woodinville, WA 98072
Phone 206/488-6843; Fax 206/487-4337
E-mail mackoids@aol.com

Malcolm Toft Associates Series 990

The Series 990 is an in-line development of the highly popular Series 980 split-monitor console. It features the same 4-band equalizer on each input (switchable to monitor) and is available in frame sizes of 32, 40, 48 and 56 inputs. The console provides 24 balanced group buses (plus direct to tape from each channel), eight aux buses, Penny & Giles faders on monitor and channel, Mosses and Mitchell patchbay, optional moving fader automation.

The Old Farmhouse, Ash Hill Rd.
Hampshire GU12 6AD UK
Phone 44/25/231-8700; Fax 44/25/234-5546

Midas XL42

The Midas XL42 is a rackmounting, dual-channel creative equalizer incorporating 4-band parametric EQ with mic/line preamplifiers and 48V phantom supply. Each channel has input, output, and pan rotary controls, 10-segment LED metering, plus a switchable insert send and return point. The ability to "daisy chain" multiple units allows the creation of custom mixing consoles.

Walter Nash Rd.
Kidderminster, Worcs DY11 7HJ UK
Phone 44/1562/741-515; Fax 44/1562/745-371

Midimam MicroMixer 18

MicroMixer 18 is a quiet, small line mixer that has 12 channels with gain, pan, dual send controls and clipping LED; six additional channels of straight left and right inputs; left and right auxiliary returns; a mono return; stereo headphone jack and level controls, all in a single height, half-rack space. Retail: \$299.95.

236 W. Mountain St., #108
Pasadena, CA 91103
Phone 818/449-8838; Fax 818/449-9480

Millennia Media Mixing Suite

Intended for critical recording applications, such as live-to-stereo acoustic, symphonic music, the Mixing Suite® is a GML-compatible, 4u rackmount line mixer featuring high-accuracy discrete hybrid summing amps and precision Vishay potentiometers, 20x2 architecture with four stereo aux sends, stereo solos, rumble filters, calibration oscillator, and True-Mute® engineer's talkback amplifier. Headroom exceeds +32 dBu, bandwidth -3 dB from 3-350k Hz, THD+N less than ten parts per million.

9624-C Kiefer Blvd.
Sacramento, CA 95827
Phone 916/363-1096; Fax 916/363-9506
E-mail preamps@aol.com

Neotek Multimedia Module

Neotek's Multimedia Module provides multichannel, multiformat monitoring in 6, 3+2, 5.1, LCRS, stereo and mono formats for three loudspeaker systems. It has mute, dim, level and processor insertion across all channels and an integral subwoofer filter. For all Neotek consoles or as a 1U rack unit.

1154 W. Belmont
Chicago, IL 60657
Phone 312/929-6699; Fax 312/975-1700
E-mail neotekcorp@aol.com

DCE
DAVID CARROLL ELECTRONICS, INC

*THE COMPLETE
SYSTEMS INTEGRATOR*



Sony Music Studios' Mixing Room C

- ◆ SYSTEM DESIGN
- ◆ INSTALLATION
- ◆ CUSTOM FURNITURE
- ◆ PRO AUDIO SALES
- ◆ PARTS
- ◆ SERVICE AND REPAIR

◆ CUSTOM FABRICATION INCLUDING DIGITAL AUDIO WORKSTATION CABLES

COME SEE US AT AES BOOTH #1610

David Carroll Electronics, Inc
3219 Pierce Street
Richmond, CA 94804

Phone (510) 528-8054
Fax (510) 526-1982
CA CONTRACTOR #695762



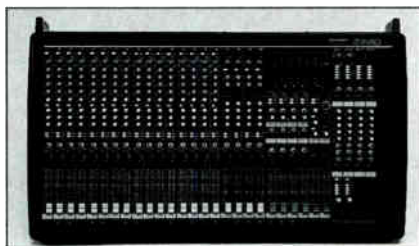
Otari Status

The Status digitally controlled analog console features dual input architecture, consolewide image recall, fader grouping, snapshot automation and fader and mute automation. Options include moving faders, dynamics, stereo input modules. Track buses, aux sends can be sourced from either the mix or channel path; stereo bus can be sourced from all paths simultaneously. Each path features highpass filter, insert point and direct output. Frame sizes for 24, 32, 40 and 48 dual-input modules available.

378 Vintage Park Dr.

Foster City, CA 94404

Phone 415/341-5900; Fax 415/341-7200



Ramsa WR-C4500 Series

Ramsa's WR-C4500 Series consoles include 12-channel WR-C4512 (8 mono/4 stereo inputs) and 24 channel WR-C4520 (16 mono/4 stereo inputs) models. Each 4-bus model offers an additional left and right output, 4x8 matrix and four aux sends with an additional channel direct output. 12-segment/3-color VU meter and LED bar graph. The consoles feature over 20dB headroom and a separate grounding system for minimal crosstalk.

6550 Katella

Cypress, CA 90630

Phone 714/373-7277; Fax 714/373-7903

RSP Project X

Digital mixing console featuring complete automation, DSP functions including four-band parametric EQ, HUSH NR, compression, phase reversal, gating, high and lowpass filtering at every input. Direct connection to digital I/O of ADAT or TDF-type recorders. Expandable, 20-bit conversion with 24-bit processing, 100mm faders, complete metering standard. Internal assignable effect processors. Separate rack-housed mic pre's, power supply, and central processor.

2870 Technology Dr.

Rochester Hills, MI 48309

Phone 810/853-3055; Fax 810/853-5937

Shure SCM810 Automatic Mixer

Built to provide seamless automatic mixing capabilities in an easy-to-use, value-oriented package, the SCM810 automatic mixer is an 8-channel device that is compatible with virtually any professional microphone or line-level signal. To minimize poor audio quality caused by multiple open microphones, the SCM810 is equipped with Shure's patented IntelliMix™ circuitry, which automatically activates only those microphones in use. The SCM810 auto-

matic mixer has a suggested retail price of \$1,650.

222 Hartrey Ave.

Evanston, IL 60202-3696

Phone 708/866-2542; Fax 708/866-2353

SSL Axiom Digital Film Dubbing System

The Axiom film dubbing system is a fully configured, digital dubbing console suitable for work in all formats: DTS, SDDS, Dolby SR*D, HDTV, Dolby Surround, Dolby Stereo, Stereo and Mono. Features include: dynamic automation of surround panning on all channels; flexible routing across four 8-track stem mixes; one, two and three-operator configurations; 96 hard disk audio tracks per operator; comprehensive film dubber/machine control; console/editor networking; support of Open Media Interchange.

Springhill Rd.

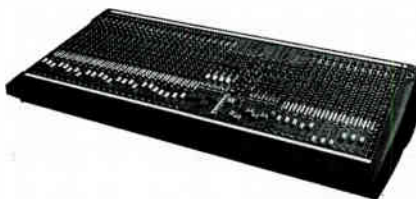
Begbroke, Oxford, OX5 1RU, UK

Phone 44/1865/842-300; Fax 44/1865/842-118



Soundcraft DC2020

DC2020 video post audio console features include: moving fader automation; sync to SMPTE, MTC and video; dedicated machine control of popular audio and video recorders; four-band semi-parametric EQ. DC2020 provides integrated computer control of console configuration snapshots, mixing functions and overall project management. The DC2020 may be configured in 24-, 32- and 40-input frames; fully integrated cinema surround monitoring and patchbay available as options. Prices begin at \$31,950.



Soundcraft K3 Theatre

Designed specifically for use in live drama productions, the K3 Theatre offers eight module options and five output configurations. Frame sizes from 16 to 48 inputs, with eight aux sends, four stereo returns, semi-parametric EQ, discrete routing and input/output metering, and optional 12x8 matrix. Console control and communication system provides scene-set automation for 128 mute groups. Unique linear datafader manipulates external effects via MIDI. Prices start at \$13,295.

8500 Balboa Blvd.

Northridge, CA 91329

Phone 818/894-8850; Fax 818/830-1220

Soundtracs Topaz Macro

Soundtracs Topaz Macro mixer provides 10 mono and two stereo inputs, plus two stereo effects returns into a stereo output. Ideal for touring bands, fixed installation, larger keyboard configuration mixing, and MIDI-based recording, it benefits from 3-band EQ, full PFL facilities, and linear faders on all channels and master outputs. Leading UK publications have already hailed it as a "blissfully simple...no-nonsense piece of hardware" and a "better contender for your money."

Sound Forge Plug-Ins

A great "app" just got better.

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

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

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

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

SONIC



FOUNDRY

100 South Baldwin, Suite 204, Madison, WI 53703, Tel: (608) 256 3133 Fax: (608) 256 7300, CompServe: 747741340 or GO SONIC, Internet:sales@foundry.com, Sound Forge and Sonic Foundry are trademarks of Sonic Foundry, Inc. Other products mentioned are trademarks of their respective manufacturers.

USE READER SERVICE CARD FOR MORE INFO

Soundtracs Topaz Mini

The Topaz Mini from Soundtracs is a compact and cost-effective mixer ideal for a number of applications, including



small bands and combos, small clubs, conferences, keyboard mixing and stereo recording. It provides four mono and four stereo inputs, plus two stereo effects returns, into a stereo output, no-compromise 3-band EQ as well as PFL is included on this very comprehensive little mixer. Unit 21-D, Blenheim Rd. Longmead Industrial Estate Epsom, Surrey KT19 9XN UK Phone 44/181/388-5000; Fax 44/181/388-5050

Spirit Live 4 Mark II

The Spirit Live 4 Mark II provides numerous additional features over its first-generation brother, including 10x2 A/B matrix output derived from four subgroups including Mix, four full-featured mute groups, phase reverse switch on every mono input, "Ultramic Plus™" preamp, which provides improved sound and 66 dB of gain range, custom designed mic preamp pot, 4-band EQ with two sweepable



mids on mono inputs, EQ In/Out, six aux sends and more. 8760 S. Sandy Pkwy. Sandy, UT 84070 Phone 801/566-8800; Fax 801/566-7005



Yamaha 02R Digital Console

The Yamaha 02R offers 24 analog inputs and 16 digital tape returns for a total of 40 inputs. Outputs include eight digital bus outputs, eight digital direct outputs, eight aux sends, and four card slots accommodating ADAT, DA-88, R-DAT, AES/EBU and Yamaha Y2 format signals. Features include: 20-bit A/D converters; real-time automation with instant reset of all console parameters; limiter compressor/gate on every input channel and output bus; and two internal effects processors. 6600 Orangethorpe Ave. Buena Park, CA 90622-6600 Phone 714/522-9011; Fax 714/739-2680

He brought order to the anarchy of multiple formats...

See Otari's new UFC-24 convert the most ornery digital audio formats, up to 24 channels at a time, in...

SHOWDOWN AT THE FORMAT CORRAL

★★★★

Transfer 1 to 24 channels to/from virtually all professional digital audio formats...ADAT-Optical/RADAR, TDMF-1, SDIF-2 and PD (AES/EBU optional).

☆☆☆☆

User-definable routing of input to output channels with 6 user presets. Link two UFC-24s for 32 or 48 channel transfers!

★★★★

Affordable! So many formats, so little cost.

AN **OTARI** PRODUCTION

Otari Corporation U.S.A.
Phone: (415) 341-5900, Fax: (415) 341-7200
L.A. Sales: (818) 972-3667
S.E. Sales: (615) 255-6080

Otari Inc. Japan
Phone: (81) 4-2481-8626, Fax: (81) 4-2481-8633

Otari Deutschland GmbH Germany
Phone: (49) 2159-52861/62/63,
Fax: (49) 2159-1778

Otari Singapore Pte. Ltd.
Phone: (65) 254-2211, Fax: (65) 254-4272

©1995 Otari Corporation

team **OTARI**

See us at AES Booth #706

Call your Otari dealer or 415-341-5900 for more information. And don't forget to ask for a large poster of this ad!

MUSIC PRODUCTS

Akai S2000 Sampler

Priced at \$1,195, this pro 16-bit sampler features 32-voice polyphony; 2MB of onboard RAM (expandable via standard SIMMs); SCSI port for attaching hard disks or CD-ROMs; reads S1000/3000, Roland and E-mu libraries; stereo outputs; and 3.5-inch disk drive. Options include an eight analog output and S/PDIF I/O expansion board \$299; and SampleVerb, a 4-bus assignable processor card for on-board multi-effects. 1315 Lancaster Avenue Ft. Worth, TX 76102 Phone 817/336-5114; Fax 817/870-1271



Alesis QS6 64-Voice Expandable Synthesizer

The QS6 is equipped with a 61-note semi-weighted keyboard that provides aftertouch, velocity and release velocity for total control. Its 8 MB of sound ROM are used to produce 640 programs and 500 multitimbral mixes. The

QS6 provides true 64-voice polyphony to reproduce the most complicated musical sequences and thickest synth layers. The QS6 accepts the same PCMCIA expansion cards as Alesis' other synth products, the Quadrasynth Plus Piano and the S4 Plus. Retail price: \$1,099.

3630 Holdrege Ave.
Los Angeles, CA 90016
Phone 310/558-4530; Fax 310/836-9192

Fishman Powerbridge

Piezo-equipped stainless-steel replacement bridge for Stratocaster- and Telecaster-style guitars unleashes acoustic spectrum and creates new sound possibilities via blend capabilities. Accessories available. HT-100P "Tele" style hardtail bridge assembly: chrome \$179.95; black or gold \$199.95. VS-100P tremolo bridge assembly: chrome \$249.95; black or gold \$259.95.

340D Fordham Rd.
Wilmington, MA 01887
Phone 508/988-9199; Fax 508/988-0770

Gefen EFX Library

The EFX guns sound effects library from France, distributed exclusively by Gefen Systems, features many types of weapons, including pistols, revolvers, shotguns, rifles, carbines, submachine guns, automatic rifles, rocket launchers, and Howitzers. All SFX are digitally recorded in stereo and are guaranteed perfectly monophonically compatible. The EFX catalog also includes a picture of each weapon with the year of release, so you don't have to be "ex-CIA" to find the sounds that fit.

6261 Variel Ave., Ste. C
Woodland Hills, CA 91367
Phone 800/545-6900 or 818/884-6294; Fax 818/884-3108

KAT DK10 Studio Kit

The DK10 Studio Kit is KAT's answer to the studio owner looking for an inexpensive and compact, easy-to-use MIDI drum setup. The kit includes the DK10 pad controller (featuring new "Finger Friendly Software" version 1.4 for ultimate sensitivity), the new top KAT bass drum trigger footswitch, KF-1 hi-hat footswitch, and all mounting hardware and stand. Plug this into any MIDI sound module, and you're ready to play.

KAT Trap KAT 2.0 Software

To further KAT's highly acclaimed trap KAT pad controller, KAT has introduced version 2.0 "Studio Software." This new user-installable chip enables the user to name each of the 24 user kits, has new built-in grooves, additional tap tempos, and preset kit setups for the KAT Kits CD-ROM.

53 First Ave.
Chicopee, MA 01020
Phone 413/594-7466; Fax 413/592-7987



Korg Trinity DRS

The Trinity Music Workstation DRS (Digital Recording System) Series includes four keyboards, each equipped with a 60,000-note, 16-track MIDI sequencer. An optional recording board enables the 61- and 76-note instruments to record directly to an external hard drive and provides S/PDIF I/O, 4-track playback, automated levels and panning, and MIDI sequencer synchronization. ADAT-compatible optical digital and SCSI interfaces are available as field retrofits. Retail is \$3,599.

Korg Prophecy

The Prophecy Solo Synthesizer is capable of creating and combining synthesized models, including physical modeling,

—LISTING CONTINUED ON NEXT PAGE

MASS

Modular Acoustic SubSpace
...the un-Studio

See us at AES
Room #1E04
with KRK
Monitoring Systems

**at the mic...
with QSF booth**
Boosts ambience in the mic nearfield. Diffuses and absorbs the wall bound reflections.
A new recording tool that improves the recorded signal to room noise ratio at the mic.

**at the mix...
with ATTACK wall**
Soffit loads nearfield monitors and midfield mains. Damps and diffuses wall reflections.
A new recording tool that improves the playback signal to room noise ratio at the mix.

From the manufacturer of TUBE TRAPS™ - Applied Acoustics-Research, Design & Development

**- call now -
1-800-ASC-TUBE**

ASC ACOUSTIC SCIENCES CORPORATION

USE READER SERVICE CARD FOR MORE INFO

ESP

EASTERN STANDARD PRODUCTIONS, INC.
37 JOHN GLENN DR.
BUFFALO, NY 14228
(800) 527-9225 • (716) 691-7631
FAX (716) 691-7732

COMPACT DISCS
CD - ONE-OFFS
DIGITAL EDITING & MASTERING
HIGH SPEED CASSETTE DUPLICATION
REAL TIME CASSETTE DUPLICATION
CUSTOM LOADED BLANKS
PRINTED CUSTOM BLANKS
GRAPHIC DESIGN AND PRINTING
AUTHORIZED 3M DEALER

**CALL TOLL-FREE
800-527-9225
FOR A FREE BROCHURE**

—LISTING CONTINUED FROM PREVIOUS PAGE

analog, and Variable Phase Modulation (VPM). This new 37-key solo synthesizer can generate sounds ranging from vintage analog synthesizers through physical models of actual acoustic instruments and has pitch and modulation wheels, a dynamic ribbon controller, an arpeggiator, and dynamic effects with real-time effects control. Retail: \$1,599.

89 Frost St.

Westbury, NY 11590

Phone 516/333-9100, ext. 245; Fax 516/333-9108

E-mail korgusa.com

Kurzweil DMTI Interface

For use with Kurzweil's K2500 Series instruments or as a stand-alone digital audio converter, the DMTI is designed specifically to interface with non-Kurzweil digital audio systems in their native formats at selectable sample rates and full 16-bit resolution. The 1U rackmount DMTI transfers data between the K2500 and Alesis ADAT and Tascam DA-88 in their native formats, and interfaces to other digital audio equipment via AES/EBU and S/PDIF standards.



Kurzweil K2500 Series

The K2500 Series integrates state-of-the-art synthesis, sampling, effects, sequencing, advanced file management, true 48-note polyphony, and V.A.S.T. processing in one instrument. Available as 3U rackmount modules (K2500R & K2500RS), 76-note semi-weighted keyboards (K2500 & K2500S), and 88-note fully-weighted keyboards (K2500X & 2500XS), the K2500's new soundsset, advanced synthesis and sampling, sequencing, and effects help you take a project from concept to completion entirely within the K2500 environment.

1336 Alondra Blvd.

Cerritos, CA 90703-2245

Phone 310/926-3200; Fax 310/404-0748

E-mail kurzweil@aol.com

Manhattan Apple Trax

Apple Trax is Manhattan Production Music's brand-new library. It features a fresh new, cutting-edge sound that is indicative of today's pop music. In this library, one can hear such unique themes as a guitar trio, hot country, grunge, hip hop, and techno-pop.

355 W. 52nd St., 6th Fl.

New York, NY 10019

Phone 800/227-1954 or 212/333-5766; Fax 212/262-0814

Metro Music Hot Spots

198 30-second music beds on two jam-packed CDs. From street beats to lush orchestral compositions. From pretty to gritty, it's all here, conveniently indexed by genre/category. Each cut is referenced to the full-length version in the Metro library, so Hot Spots is a prime source of commercial beds and also serves as a pocket edition of the entire Metro Music library. Annual blanket or needledrop rates on request.

37 W. 20th St., Ste. 906

New York, NY 10011

Phone 212/229-1700 or 800/697-7392; Fax 212-229-9063

E-mail metromp@aol.com

Sealevel Systems PC/104

Sealevel's PC/104 MIDI adapter can be used to communicate with synthesizers, drum machines, and other musical devices to provide automated recording, multitrack mixing, and playback. This MIDI adapter is compatible with various DOS-based MIDI sequencing packages.

PO Box 830, 155 Technology Pl.

Liberty, SC 29657

Phone 803/843-4343; Fax 803/843-3067

E-mail sales@sealevel.com

TRF Production Music

TRF announces five new compact discs for its Image Library and two for its Bosworth library. Featuring compositions written by outstanding composers, TRF's 50,000 libraries meet the demands of those who produce and create for television, radio, film, video, and multimedia. All compact discs are \$20 and can be received on approval. Call for a free demo and a rate sheet on per-use licensing or inexpensive annual blanket licenses.

747 Chestnut Ridge Rd.

Chestnut Ridge, NY 10977

Phone 914/356-0800 or 800/899-MUSIC; Fax 914/356-0895

Whirlwind Mic Eliminator

The Whirlwind Mic Eliminator accepts an input signal from a guitar, preamp or amplifier "speaker out" and converts it to a balanced, low-level signal. The Mic Eliminator differs from existing speaker emulators by producing the sound of the mic plus speaker, instead of just the speaker, and provides special frequency contouring to replicate the on- and off-axis sound of a miked guitar speaker. Heavy extruded aluminum box. Phantom or 9V battery power.

99 Ling Rd.

Rochester, NY 14612

Phone 716/663-8820; Fax 716/865-8930

RECORDING DEVICES

Denon Electronics DN-1100F

The DN-1100F is a rackmount MiniDisc recorder that includes ability to hot start up to ten tracks at a time. Great for sound effects.

Denon Electronics DN-610F

This combination CD player and auto-reverse cassette deck fits all of the features of two quality products into one 3-rackspace unit. Infrared remote control is optional.

222 New Rd.

Parsippany, NJ 07054

Phone 201/575-7810; Fax 201/808-1608



DynaTek CDM 4000

DynaTek's CDM 4000 is the top-of-the-line CD-mastering system. Components of the CDM 4000A include a high-performance 4x recorder, combined with a 4x reader, a 1.1GB SCSI multimedia hard drive, and a specially designed controller. DynaTek's CDM 4000 supports all major CD formats, including CD-DA (Digital Audio), Photo-CD, Video-CD, and

all industry-standard ISO 9660 formats. Package includes all cables, a blank disc and DynaTek DiscMaster software.

DynaTek CDM 200

DynaTek's CDM 200 is a low-cost, easy-to-use double-speed CD-recording system. Designed for self-publishing CDs or sound libraries, the CDM 200 comes complete with all necessary cables, a blank disc and DynaTek's easy-to-use, drag-and-drop software for Macintosh or Windows systems. DynaTek's CDM 200 supports all major CD formats, including CD-DA (Digital Audio), PhotoCD, Video CD, and all industry-standard ISO 9660 formats.

200 Bluewater Rd.

Bedford, Nova Scotia

Canada B4B 1G9

Phone 902/832-3000; Fax 902/832-3010

E-mail info@raider.dynatek.ca

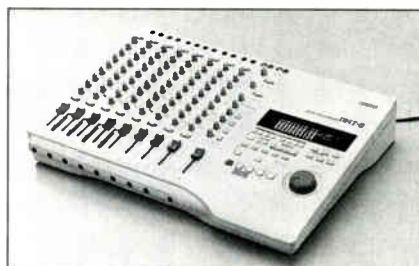
Fairlight Digital Dubber System

Fairlight's MFx digital dubber system is designed for playback of large numbers of tracks, often a requirement during mixdown sessions in film, television and music productions. Multiple 24-track audio dubbers can be controlled simultaneously from a single compact remote control, providing up to 576 tracks. The dubber provides up to 24 simultaneous channels and is able to self-synchronize to timecode at any frame rate in either forward or reverse directions.

3855 Hughes Ave., 2nd Fl.

Culver City, CA 90232

Phone 310/287-1400; Fax 310/287-0200



Fostex DMT-8 Digital Multitracker

This compact mixer/disk-based 8-track recorder/editor combo features an internal 540MB hard disk (100-track minutes of CD-quality recording) and beat/bar, absolute time or MIDI Time Code display for synchronizing to sequencers. The 8x4x2 in-line, 4-bus mixer can combine the eight digital tracks and eight external sources, and has two aux sends, two aux returns, dual parametric EQ and optical S/PDIF digital output. Retail: \$2,695.

15431 Blackburn Avenue

Norwalk, CA 90650

Phone 310/921-1112; Fax 310/802-1964

Harmonia Mundi Acustica bb104

The bb104 Tonmeister offers an advanced solution for high-resolution recording and mastering. Providing 24-bit resolution in the digital domain and true 20-bit A/D converters, the system uses two 16-bit tracks to record and play one 32-bit signal. The bb104 Tonmeister is packaged in a single 1 HU 19-inch unit that interfaces direct to popular 8-track recorders from Tascam, Sony, ADAT, and Fostex. List price: \$5,000.

D-79115 Freiburg

in den Sigristmatten 6, Germany

Phone 49/761/491-506; Fax 49/761/491-842

HHB MCA1000 Charger

Heading up an impressive AES New York exhibit is the PortaDAT range of professional portable DAT recorders, now undeniably established as the industry standard for location sound recording. HHB's continued commitment

to supporting and developing the PortaDAT range is further evidenced by the launch of the new HHB MCA1000, a 4-bay fast battery charger to complement the PortaDAT's already impressive range of powering and battery-charging options.

Dist. by HHB/Independent Audio
43 Deerfield Rd.
Portland, ME 04101-1805
Phone 207/773-2424; Fax 207/773-2422



Marantz PMD601 DCC Recorder

The Marantz PMD601 portable digital compact cassette recorder is ideal for all types of field applications. The PMD601's stationary-head design assures accurate tape-to-head contact, virtually eliminating audio dropouts, and wow and flutter. Professional features include a balanced stereo XLR mic input, digital inputs, direct telephone/fax input, and record marker functions, speeding playback and editing. The PMD601 ignores SCMS coding and will play back analog compact cassettes. List price: \$1,200.

1000 Corporate Blvd., Ste. D
Aurora, IL 60504
Phone 708/820-4800; Fax 708/820-8103



Otari DTR-8

The DTR-8 rackmount DAT recorder features 300x high-speed search, 48/44.1/32 kHz operation, and 1-bit ADCs and DACs. Up to 60 characters can be recorded at the start of each track, and start/end/skip IDs can be written and erased independently. Q-code synchronized starts allows precise writing of start IDs when recording CDs. Analog XLR and digital AES/EBU and S/PDIF I/Os and parallel remote are standard. Pro user price: \$2,000.

378 Vintage Park Dr.
Foster City, CA 94404
Phone 415/341-5900; Fax 415/341-341-7200

Pioneer D-9601 Studio DAT

HHB Communications, the world's leading independent supplier of DAT technology, has formed an exciting partnership with Pioneer. HHB will exclusively distribute Pioneer's groundbreaking new 88.2/96 kHz hi-sampling DAT recorders. The Pioneer D-9601 hi-sampling studio DAT recorder will be unveiled at the AES show in New York. Anyone believing that significant developments in digital

—LISTING CONTINUED ON NEXT PAGE

GIVE ME A SECOND!



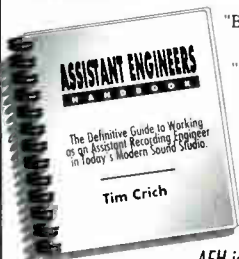
Rolling Stones Dirty Work
U2 Silver and Gold
John Lennon Live in NYC
Aretha Franklin Who's Zoomin' Who?
Bob Dylan Empire Burlesque
David Bowie Tonight
Billy Joel Stormfront
Bryan Adams Waking Up The Neighbours
Bon Jovi Slippery When Wet



**Just a Few of the Projects with Tim Crich as Assistant Engineer.
Introducing His New Book.**

ASSISTANT ENGINEERS HANDBOOK

THE DEFINITIVE GUIDE TO WORKING AS AN ASSISTANT RECORDING ENGINEER IN TODAY'S MODERN SOUND STUDIO.



"Brilliant. A major achievement. Destined to become an industry standard."
Simon Andrews - Owner, Right Track Studios, New York

"Assistant Engineers Handbook is an effective reference book of significant value."
Bob Clearmountain - Producer / Engineer - Springsteen, Pretenders

"I hope all assistant engineers get their hands on this book. It is a true and proven guide to possibly the most undefineable job ever."
Bruce Levens - Owner, Little Mountain Sound, Greenhouse Studios, Vancouver

"The most informative and hilarious book I have ever read on the subject. I gave my son a copy, and told him to go get a job."
Ed Stasium Producer / Engineer - Tea Party, Ramones

AEH is 7" x 8.5". Over 270 pages. Spiral bound - GREAT for use IN SESSION. ONLY \$29.95
Please send cheque or money order (Sorry, no credit cards) for \$29.95 plus \$3.00 S&H per copy to:
Black Ink Publishing, VMPO Box 4295 Dept M, Vancouver BC CANADA V6B-3Z7
BC residents please add 7% PST. Discounts on large orders through publisher. Thank you!

ISBN # 0-969-82230-8 © 1995 BLACK INK PUBLISHING

USE READER SERVICE CARD FOR MORE INFO



Only Dreamhire can offer the following:

The largest inventory and most extensive selection of expertly maintained, fully updated professional audio and midi equipment for rental on the planet.

The friendliest, no-nonsense personnel in the business.

The flexibility and resources to be able to tailor a quote to suit your demanding needs and tight budget.

Three worldwide 24 hour locations

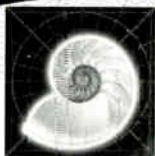
New York City: 212-691-5544 / 800-234-7536 (outside NYC)

Nashville, Tennessee: 615-321-5544

London, UK: 081-451-5544

Call now for your copy of our rate card and/or our latest list of ex-rental equipment available for purchase.

FUTURE DISC SYSTEMS



MASTERING STUDIOS

HOLLYWOOD

213/876-8733
FAX 213/876-8143



AES NEW PRODUCTS GUIDE 1995

—LISTING CONTINUED FROM PREVIOUS PAGE

audio are a thing of the past is urged to visit the HHB stand for a demonstration.

Dist. by HHB/Independent Audio
43 Deerfield Rd.
Portland, ME 04101-1805
Phone 207/773-2424; Fax 207/773-2422

Studer D424 24-Bit MO Recorder

D424-2 two-track studio recorder for magneto-optical disks (5.25-inch MO drive or similar SCSI-2 device) features basic "tape deck functionality" with front panel control, nondestructive "razor-blade" editing, compatibility with Dyaxis workstations, real-time playback with cross-fades and mixing, individual track recording/playback, selectable 16/20/24-bit linear resolution, digital scrub, serial control via 9-pin RS-422, digital I/Os and SMPTE/EBU timecode reader/generator.

Studer D741 CD-Recorder

The D741 CD-Recorder is a 2U rackmount model that can be used as a standalone CD-recorder using the analog, S/PDIF or AES/EBU digital inputs. In addition, the D741 may be controlled via the SCSI-2 interface and can be used in combination with audio workstations such as Dyaxis, in the new Studer D424-2 MO-Recorder. A SCSI interface allows writing to CD-ROM, CD-I and Photo-CD data formats.

1865 Air Lane Dr.
Nashville, CA 37210
Phone 615/391-3399; Fax 615/391-5974



Tascam DA-P1 Portable DAT

The portable DAT features 1-bit ADC/DAC; 48-, 44.1-, and 32kHz sampling frequencies; XLR inputs balanced; RCA inputs and outputs unbalanced; SCMS-free; 20dB pad; phantom power supply, backlit LCD display and S/PDIF digital I/O.

Tascam DA-20 DAT Recorder

Designed for project studios, this rackmount DAT recorder features 32-, 44.1-, 48-kHz sampling rates (both digital and analog); up to 4 hours recording in long time mode; SCMS-free recording; S/PDIF digital I/O and wireless remote control.

7733 Telegraph Rd.
Montebello, CA 90640
Phone 213/726-0303; Fax 213/727-7635

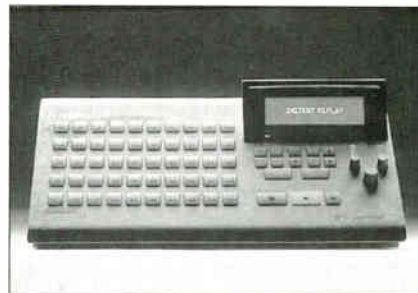
3M Digital Audio Cleaning Cassettes

3M Audio and Video Products Division introduces three new head-cleaning products designed and developed for use in professional digital audio applications. 3M™ ASD HC, 3M AHD HC and 3M DAT HC digital audio head-cleaning cassettes can be used in conjunction with 3M ASD, 3M AHD and 3M DAT digital audio mastering cassettes, respectively. 3M is also introducing additional lengths of all three digital audio mastering cassettes.

3M Center, Bldg. 223-5N-01
St. Paul, MN 55144-1000
Phone 612/736-1747; Fax 612/737-5583

360 Systems Instant Replay

Instant Replay™ is a professional digital audio recorder offering immediate access via 50 Hot-Keys™ to 1,000 stereo cuts of any length, stored on a 4- or 8-hour internal hard



disk. Cuts can be transferred via built-in D-NET™ network at up to 8x real time. Instant Replay features built-in sample rate conversion, GPI, digital and analog I/O, and a printer port. \$2,995 with four hours of storage.

5321 Sterling Center Dr.
Westlake Village, CA 91361
Phone: 818/991-0360; Fax 818/991-1360

Telex Copyette EH

The Telex Copyette EH™ Series of cassette duplicators offer four different models: the 1-2-1 Mono and 1-2-1 Stereo for making one duplicate, and the 1-2-3 Mono and 1-2-3 Stereo for making three cassettes from one master. All four models record within 2 dB of the original at 16 times normal speed. Distortion is less than one percent; signal-to-noise ratio is 45 dB. Retail: \$550 to \$2,150.

Telex Replica™

The Replica Copier is a high-performance, quality duplicator. The mono unit is capable of producing one copy from a master cassette at 16x the normal speed with distortion less than 1% and at a record level within 2 dB of the original. Other features include stop, rewind, copy, and interrupt functions, a recessed carrying handle, a removable power cord, compact size, and 7lb weight. Retail: \$425.

9600 Ardridge Ave. S.
Minneapolis, MN 55420
Phone 612/884-4051; Fax 612/884-0043

RECORDING MEDIA AND TAPE

Ampex Media 488 Hi8

Available in two audio-specific program lengths, Ampex 488 tape is designed for use in the new DTRS Hi8 modular digital multitrack recorders. Ampex 488 features an optimized dual-layered tape formulation that delivers maximum performance. The metal particle layer in the front coat allows for higher output performance, higher packing density and consistent tape-to-scanner contact, resulting in low error rates and consistent performance. Ampex 488 is available in both 60-minute and 113-minute audio program play time configurations.

Ampex Media CDR Disks

Ampex CDR recordable compact disks are conveniently available as either 63-minute/580MB or 74-minute/680MB configurations. Ampex CDRs even come with factory-printed areas for recording user information. Ampex CDRs are incredibly versatile, allowing recording of CD-Audio, CD-ROM, Extended Architecture CD-ROM XA and CD-I interactive titles. 401 Broadway M/S 22-02
Redwood City, CA 94063
Phone 415/367-2149; Fax 415/367-4132

HHB DDS90M Data DAT

HHB's market leading DAT tape, part of the company's advanced media products range, is now complemented by the DDS90M data DAT tape, which shares many of the proven design innovations first featured in HHB's audio DAT tape. Aimed primarily at the computer market, the DDS90M is on show for the first time at AES, New York.

Dist. by Independent Audio
43 Deerfield Rd.
Portland, ME 04101-1805
Phone 207/773-2424; Fax 207/773-2422

KAO OPG DAT CD-R

CD-Recordable discs manufactured to Orange Book Part II standards at 63 minutes and 74 minutes, which have up to 99 tracks allowable or 650 MB of data-storage capacity. DAT tape available in 15-, 30-, 60- and 90-minute lengths. 1857 Colonial Village Lane Lancaster, PA 17601
Phone 717/392-7840; Fax 717/392-7897
E-mail ceshleman@kaoinfo.com

Metro Magnetics Audio Pancakes

Professional audio duplicating tapes. MD Premium Ferric is ideal for both music and monaural recording. HDX Cobalt Ferric formulation provides high-frequency response necessary to record critical music. Both formulations are IEC-1.
2049 S. Hellman Ave., Ste. C
Ontario, CA 91761
Phone 909/930-2144; Fax 909/930-2148

TDK Studio Cassettes

TDK is introducing a whole new professional line of high-performance studio cassettes, including normal-bias AM and high-bias SM and SM-X. Improved formulations and rugged mechanisms ensure highest quality and durability. The company's AM cassettes are available in 30-, 40-, 60-, 90- and 120-minute lengths. SM-X is also available in the 90-minute format.
12 Harbor Park Dr.
Port Washington, NY 11050
Phone 516/625-0100 or 800/TDK-TAPE; Fax 516/625-0171
E-mail TDK@pipeline.com

SIGNAL PROCESSING

Aardvark Aardulater

Aardvark introduces the "Analog Tape Emulator." Using a DAT or a digital workstation, the device achieves the sound of an analog tape-recording by mimicking the characteristics of an analog recording, in particular its overload behavior. The overload behavior is highly adjustable, with 3 hardness settings and a pot to suit the needs of different musical material. The input and output levels are adjustable via front-panel controls. Now available. Price: \$795.
202 E. Washington, Ste. 306
Ann Arbor, MI 48104
Phone 313/665-8899; Fax 313/665-0694

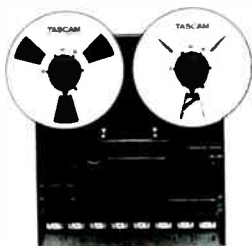


Alesis QuadraVerb 2 2.0

New version of the already powerful QuadraVerb 2 offers dozens of new effects and operational features including sampling, hard and soft overdrive, triggered panning, phase inverter, triggered flange and a new stereo Leslie effect. 100 user programs have been added, giving the QuadraVerb 2 a total of 300 onboard programs. The retail price of the QuadraVerb 2 remains \$799. Existing owners who purchased their unit before June 1, 1995, can upgrade to version 2.0 for \$30.
3630 Holdrege Ave.
Los Angeles, CA 90016
Phone 310/558-4530; Fax 310/836-9192
E-mail jmack@alesisl.com

RECORDING EQUIPMENT

—All Major Brands—



FOR STUDIOS/HOMES CHURCHES/CLUBS

- Reel to Reel Decks (2-4-8-16-24 Track)
- Cassette Decks • Mixing Boards
- Mikes • Studio Monitor Speakers
- Special Effects Units Accessories
- Digital Recording

TASCAM
TEAC Production Products



- VOLUME DEALER
- NEW & USED
- E-Z TERMS
- ALL MAJOR CREDIT CARDS
- PROFESSIONAL ADVICE

Call for pricing information.

RHYTHM CITY

1485 NE Expressway
Atlanta, Georgia, 30329
1-404-320-SALE • 1-404-320-7253
Special Pricing for Package Systems.

USE READER SERVICE CARD FOR MORE INFO

STILL THE BEST STAND ALONE CDR

the marantz cdr-610
PROFESSIONAL COMPACT DISC RECORDER



FULL RED BOOK/ORANGE BOOK COMPATIBILITY
IGNORES SCMS (SERIAL COPY MANAGEMENT SYSTEM)
MULTIPLE DIGITAL AUDIO INTERFACES
INCLUDES WIRED REMOTE
9-PIN PARALLEL (GPI) INTERFACE FOR EXTERNAL AUTOMATION
RACK MOUNTABLE
STOP/START RECORDING
RECORDS UP TO 74 MINUTES

*the dat store * 310.828.6487*

2624 WILSHIRE BOULEVARD • SANTA MONICA • CALIFORNIA • 90403
DIGITAL AUDIO TAPE RECORDERS • CD RECORDERS • MINIDISC RECORDERS • DIGITAL MULTI-TRACK RECORDERS
SALES • RENTALS • LOANERS • DUPLICATIONS • BLANK MEDIA • ACCESSORIES • ALL CREDIT CARDS ACCEPTED

CLEAN PATCH BAYS NO DOWN TIME



VERTIGO BURNISHERS AND INJECTORS RESTORE ORIGINAL PERFORMANCE TO YOUR PATCH BAYS

VERTIGO 1/4" TRS AND TT BURNISHERS:
Each used to eliminate noise caused by contamination of main contacts in normal patching situations.

VERTIGO 1/4" TRS AND TT INJECTORS:
Each allows injection of cleaning solvent in breaking contacts (normals), to eliminate intermittency that occurs when patch cord has been removed.

ONLY \$34.95 Ea. (Cont. USA) Please write for additional information and order form. Used by Professionals Worldwide. US Patent No. 4,733,678

VERTIGO RECORDING SERVICES

12115 Magnolia Blvd. # 116
North Hollywood, CA 91607
Telephone: (818) 907-5161
Fax: (818) 784-3763

USE READER SERVICE CARD FOR MORE INFO

SALE! PLUS FREE ADHESIVE!

MARKERFOAM™ ACOUSTIC FOAM GIANT 54" x 54" 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 & is proven in studios worldwide. Request Foam-Buyers Guide/Catalog, specs & free samples today. VISA, MC, AMEX, COD, PO's, QUANTITY DISCOUNTS.

**MARKERTEK JUMBO
SOUND ABSORB BLANKETS**
Heavy-duty 72" x 80" padded blankets absorb sound wherever they're hung or draped. Fabulous for stage, studio & field use. Top professional quality at a super saver price! Weight: 6 lbs. Black, \$19.99.

MARKERTEK BLADE TILES™

HIGH PERFORMANCE
LOW, LOW COST!
\$3.49 per tile, 16x16x2". America's best acoustic tile value, only from Markertek! Charcoal. Also available 16x 16x3" as shown, \$4.49 each.

MARKERSTIK™ foam adhesive. FREE with any Foam purchase in this ad! Limited offer. A \$5.95 per tube value.

SONEX
All the colors and sizes
plus great prices!

Get our FREE 149-page catalog
of over 6,000 exclusive and hard-
to-find supplies for audio & video.

800-522-2025 America's most unique
FAX: 914-246-1757 catalog for audio & video!

MARKERTEK™
4 High St., Saugerties
New York 12477 U.S.A. VIDEO SUPPLY

AES NEW PRODUCTS GUIDE 1995

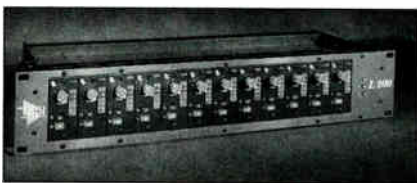
Apogee AD-8000 8-Channel ADC

The AD-8000 is an 8-channel A/D converter featuring Apogee's latest 20-bit resolution technology. Interfaces include AES and optional cards for TDIF, ADAT and other digital formats. Also included is Apogee's proprietary UV22™ coding. UV22 is used by every major mastering facility. The AD-8000 is the first in a range of products from Apogee that integrates numerous digital audio formats into a cohesive studio environment. Prices begin at \$4,400.

Apogee DA2000 DAC

The New York AES is the world debut of Apogee's newest 20-bit D/A converter based on the industry standard DA-1000E/2A. Apogee engineers have added new features, flexibility and inputs while maintaining the legendary sound quality that has made Apogee converters the reference standard for many mastering and production facilities. In tandem with Apogee's new AD-1000 A/D converter, 20-bit resolution can be maintained throughout the recording and mastering process.

3145 Donald Douglas Loop S.
Santa Monica, CA 90405
Phone 310/915-1000; Fax 310/391-6262



API L200 Rack System

The API Model L200 Series powered rack system is designed to meet the varied needs of the discriminating engineer/producer. Among the available all-discrete modules are 205 Hi-Z direct box, 212L mic pre, 215 highpass/low-pass sweepable filter 6/12dB/oct, 225 compressor (original 525 circuit), 235 noise gate/expander, 245 variable frequency de-esser, plus many more in development.
7655-G Fullerton Rd.
Springfield, VA 22153
Phone 703/455-8188; Fax 703/455-4240

ARX Afterburner Silver Series

Afterburner: dual-channel/mode compressor/limiter. Dual channel operates two independent compressor limiters. "Industry Standard" controls for compression ratio, threshold, stereo link and output. Mono mode operates single-channel, dual-band compressor/limiter. Separate dynamics control low and high frequency compression. Enhance feature restores sagging low and high frequency response of compressed material. Fully balanced in and out with -93dB S/N (A/W) ratio, .03% THD and 108dB of dynamic range. Retail price: \$659.

ARX DDP-1 Silver Series

Dual channel dynamics processor. Each channel features a Noise Gate, 1:1 to infinity compression, peak limiting, and hard-wired bypass. 27 LEDs display all channel functions and controls. Switchable Input/Output level metering, and separate gain reduction display. Stereo link for tracking compressors. Sidechain insert for frequency-sensitive compression or de-essing. Fully balanced in and out with -99dB S/N ratio, .02% THD and 107 dB of dynamic range. Retail price \$859.
9400 Culver Blvd.
Culver City, CA 90232
Phone 310/837-1380; Fax 310/837-6615

ATI (Audio Toys, Inc.) Pro6

ATI will show the Pro6 multimode audio processor, an audio processing device with an unprecedented number of audio enhancement features in a single rackspace. Based on the input module found in the Paragon console, the

Pro6 contains a high-voltage mic preamp, Hi&Lo pass filters, 4-band parametric EQ, ATI's patented compressor, gate and ducker in one unit. Extensive linking and insert facilities are provided on the rear panel. List price is \$2,399.
9017-C Mendenhall Court
Columbia, MD 21045
Phone 410/381-7879; Fax 410/381-5025



Avalon Class A Direct Box

The Avalon Ultra-Five direct box converts instrument signals and high-level speaker outputs to fully balanced pure Class A line and microphone levels. 100% discrete Class A design, six bank "tone" selector, variable gain to +32dB. Hi-cut filter to eliminate unwanted noise, headphone output, DC coupled high level balanced outputs for deep controlled bass response. -98dB noise, +30dB headroom, toroidal Class A power supply. Price: \$649.

Avalon M4 Mic Preamp

The M4 is a pure Class A, 100% discrete mono microphone and instrument preamp. Options include high voltage 130V B&K 4000 mic power supply, 48V phantom, instrument input, remote control relay selector, 20 dB gain steps, polarity reverse, variable highpass filter, -20dB Pad, very high-performance, low-noise audio electronics, Jensen balanced +30dB output transformer, separate AC power supply, VU meter, peak level indicator. Price: \$1,590.
1060 Calle Cordillera, #104
San Clemente, CA 92673
Phone 714/492-2000; Fax 714/492-4284

BSS Audio DPR-9011I

The DPR-9011I is the second generation product, offering four-band parametric EQ feeding discrete compressor/expander sections. Used to add density and definition to instruments, voice and program. New version has dual inputs for split band operation.

BSS Audio FCS-916

The FCS-916 is a single-channel microphone preamplifier/parametric equalizer. Price is \$925.
Dist. by Harman North America
8500 Balboa Blvd.
Northridge, CA 91329
Phone 818/894-8850; Fax 818/830-1220

Cedar DH-1 De-Hisser

On display at AES, the DH-1 De-Hisser removes hiss from a stereo signal without the need for an encoding/decoding process. Like Cedar's DC-1 De-Crackler and AZ-1 Azimuth Corrector (also available for demonstration on the HHB stand), the DH-1 demystifies the audio restoration process by operating in real-time and requiring little or no specialist expertise on the part of the operator.
Dist. by HHB/Independent Audio
43 Deerfield Rd.
Portland, ME 04104-1805
Phone 207/773-2424; Fax 207-773-2422

Crookwood Paintpot Recording System

There are now four models in the successful Paintpot high-quality, remote controlled mic amp system: the classic Paintpot; the new High-Voltage Paintpot, which can uniquely power 130V B&K microphones; the new Headless (remote control only) Paintpot; and the comprehen-



sive remote controller, the Control Pot. Specs: 2-ch. audiophile preamps with relay switchable phantom, filters, EQ, input impedance, 1dB gain steps, M-S decoders with full remote control. From \$2,350.

The Old Police House
Station Hill
Cookham, Berkshire, SL6 9BS UK
Phone 44/1628/528-026; Fax 44/1628/531-959

dB Technologies AD122

dB Technologies, creator of the dB3000 Digital optimizer, announces the introduction of the AD122 stereophonic analog-to-digital converter. Utilizing proprietary technology, the AD122 converts analog signals to a 22-bit digital audio datastream. The combination of superior linearity, fast and accurate transient response, extremely small quantization steps, and low noise performance enables the AD122 to produce highest-resolution digital audio. Full 22-bit operation resolves signals down to -160dB from full scale. \$6,495.

dB Technologies DA122

The new Model DA122 high-resolution digital-to-analog converter offers superb sonic quality and unmatched resolution and is the only converter able to reproduce completely the sonic capabilities of the company's Model AD122 high-resolution 22-bit analog-to-digital converter. 1155 North La Brea Ave.
West Hollywood, CA 90038
Phone 213/845-1155; Fax 213/845-1170

dbx 1650T

The dbx 1650T high-end mic pre and limiter offers a 154dB dynamic range and is a fully balanced, Class A design from input to output, utilizing no global feedback. Audio travels only through four 6992 tubes, originally designed for Russian radar, and MOSFET output. Output is balanced and floating. Maximum output level: +34dBv into 150Ω. Internal operating headroom: +40 dBv, with limiting done at the +4dB level. Gain (input to output): 117 dB. 8760 S. Sandy Pkwy.
Sandy, UT 84070
Phone 801/568-7660; Fax 801/568-7662



Anthony DeMaria Labs ADL 1500

The ADL 1500 stereo tube compressor is a 2-channel, all-tube design providing wide dynamic range with a clear, punchy, warm sound. Eight vacuum tubes give the ADL 1500 richness and depth. Features include opto attenuators for "invisible" compression, balanced in and outs, two independent channels and stereo link switch on front panel. 95 DuBois Rd.
New Paltz, NY 12561
Phone 914/256-0032

**Microphones
Signal Processing
Multitrack
Mixing Consoles
MIDI Gear
Monitors
Tape**

I NEED MORE GEAR!



Call Toll Free

800-444-5252

**grandma's
music & sound**

800 S-T Juan Tabo Blvd. NE
Albuquerque, NM 87123
505-292-0341 FAX 505-293-6184

USE READER SERVICE CARD FOR MORE INFO

JOHN M. STORYK, R.A.

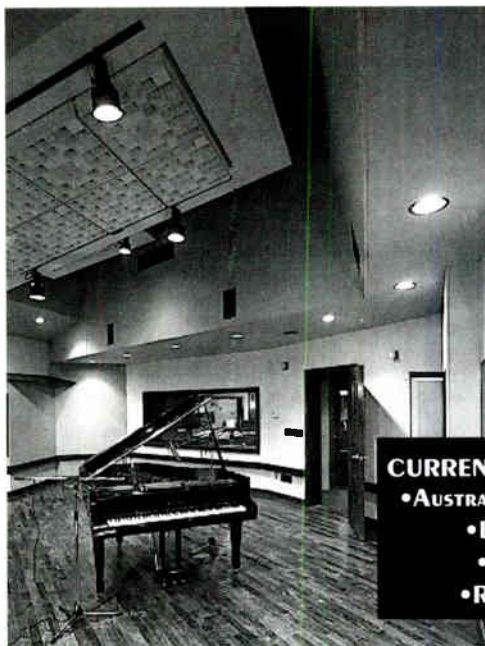


1990 WINNER
1991 WINNER
1993 WINNER
1995 NOMINEE

ARCHITECTURAL & DESIGN SERVICES

A Division of WALTERS-STORYK Design Group, New York

TEL 914 691-9300 FAX 914 691-9361 E MAIL 74021.3020@COMPUSERVE.COM



COMPLETE DESIGN SERVICES:

- Radio
- Recording
- Video Production
- Broadcast
- Performance
- Systems & Wiring
- Acoustic Measurements & Testing

CURRENT PROJECTS WORLDWIDE:

- AUSTRALIA • BOMBAY • BUENOS AIRES
- LOS ANGELES • MALAYSIA
- NEW YORK • ORLANDO
- RIO DE JANEIRO • SEATTLE

COTTON Hill Studios, ALBANY NY

Subscribe to MIX

EDICION EN ESPAÑOL



There's only one source of pro-level recording and music coverage in Spanish. *Mix-Edición en Español* gives Spanish-speaking musicians & audio pros the equipment tips & applications they need!

**Subscription
Information:
(510) 653-3307**

6400 Hollis Street #12
Emeryville, CA 94608
TEL (510) 653-3307
FAX (510) 653-5142

USE READER SERVICE CARD FOR MORE INFO

AES NEW PRODUCTS GUIDE 1995

Demeter H Series

The new H Series of pro audio equipment will consist of an EQ, a compressor/limiter, a mic preamp and a compressor/limiter and mic preamp (all in one). Utilizing tube in an innovative hybrid technology, the H Series performance will rival those of Demeter's current arsenal of pro audio gear and will retail at approximately half its price. Perfect for the project and home studio enthusiasts who long to obtain professional-sounding results.

Demeter VTCL Comp/Limiter

The new version of our dual-channel tube compressor/limiter features new calibrated front panel graphics and input level indicating LEDs for easier operation.
2912 Colorado Ave., Ste. 204
Santa Monica, CA 90405
Phone 310/829-4383; Fax 310/829-3755

DigiTech Digital Vocal I/O

The Digital Vocal I/O is an optional digital I/O plug-in card for DigiTech's Studio Vocalist vocal harmony processor. The card supports standard sampling rates of 32, 44.1, and 48 kHz. AES/EBU and S/PDIF inputs and outputs ensure compatibility. Can be clocked by external source for fully synchronized A-to-D conversion. Easy to install, the 3.75x1.75-inch panel is supplied with Studio Vocalist user interface software updates.

DigiTech MV-5 MIDI Vocalist

The DigiTech MV-5 MIDI Vocalist is a single rackspace processor designed to provide keyboard players and MIDI enthusiasts instant and natural-sounding vocal harmonies without the need for complex programming. Easy to use, up to five-part vocal harmony may be created in chordal and scalar modes with the MV-5, as well as detuning and vocoder functions. The harmony processor's MIDI implementation allows real-time control through MIDI continuous controllers.
8760 S. Sandy Pkwy.
Sandy, UT 84070
Phone 801/566-8800; Fax 801/566-7005

Drawmer 1962

First American showing of the Drawmer 1962 digital vacuum tube preamp. The 1962 caters to purists with two channels of minimum signal path and ultra low noise preamps, and can be supplied "analog-only" with the digital facility available as a retrofit slot-in module. Features that may be switched in circuit include variable tube drive for added "tube warmth," dynamic enhancement, variable high-/lowpass filters, fine-tune EQ, peak limiter, mixing facilities and many more.
Dist. in USA by QMI
25 South Street
Hopkinton, MA 01748
Phone 508/435-3666; Fax 508/435-4243



Focusrite Blue 245 A/D Converter

Focusrite's Blue 245 20-bit A/D converter is the company's first digital product. Fundamentally, the Blue 245 extends the superlative performance of Focusrite's analog signal path into the digital domain. The 245 supports AES S/PDIF and optical outputs with AES and wordclock sync. The front panel has peak metering, switchable 16-20-bit conversion at 32/44.1/48 kHz/etc. rates, anticipated price around \$3,800.

Focusrite Red 8

Designed as a high-end dual mono microphone preamplifier for vocals and instruments, the Red 8 is a perfect companion for ribbon, tube and condenser mics, as well as for direct digital recording and workstation applications. Fea-



tures include two VU-type meters, switch-selectable phantom power and phase reverse, 66 dB of input sensitivity, XLR inputs and outputs, integral power supply, incredibly low noise and balanced and floating output. Suggested list price: \$2,295.
Dist. by Group One
14006 Palawan Way #222
Marina Del Rey, CA 90292
Phone 310/306-8823; Fax 310/577-8407



Groove Tubes CL1 Comp/Limiter

The CL1s compressor/limiter couples two CL1 circuits to provide an isolated dual mono unit with optional stereo linking (ST LINK), housed in a single 19-inch RU steel chassis. The CL1 is a mono unit that occupies only one side of the chassis. The other side of the chassis is fitted with a blank face panel and reserved for an EQ1 tube equalizer option, available by the end of 1995. Retail price for CL1: \$1,095. Retail for CL1s (stereo): \$1,595.
12866 Foothill Blvd.
Sylmar, CA 91342
Phone 818/361-4500; Fax 818/365-9884



Hot House Electronic Crossover

Designed for the Hot House High Output Series monitors, the high-definition SDX is a versatile 24dB/octave audio-ophile crossover affording two- or three-way stereo, four or five-way mono and discrete four-channel bi-amp operation from a single rackspace. With ultra-high frequency or constant directivity compensation circuits and insert points standard, limiters, fully parametric 2-band EQ, low-frequency contour and infrasonic or all-pass filters are available on all individual outputs.
275 Martin Ave.
Highland, NY 12528
Phone 914/691-6077; Fax 914/691-6822

Inward Connections VACRAC

VACRAC 4000 is a modular vacuum tube processing system that can hold up to four modules. The chassis incorporates a 200% over-spec tube power supply, assuring extended bandwidth and effortless dynamics. Modules include: tube mic preamplifier, discrete EQ module, tube compressor/limiter, tube EQ module, optical tube limiter, tube instrument interface module, discrete compressor/limiter, 2-channel discrete mic preamp. Price: Chassis, \$1,295 retail; Modules, \$795-\$895 (without options).
Dist. by AXI Audio Interchange International
357 Liberty St.
Rockland, MA 02370
Phone 617/982-2626; Fax 617/982-2610

Junger d05

The digital transmission processor Model d05 is specially designed for the dynamic range processing of transmission signals considering the usual preemphasis curves. The unit has digital and analog (20-bit ADC) inputs and outputs, performs all processing including compressor and limiter in the digital domain and is easy to use. With the new adaptive spectral processing, developed by Junger Audio, one can get more loudness on the output than with conventional fixed preemphasis filters.

Junger C04 A/D/D Converter

The new A/D/D converter model C04 is an analog-digital and digital-digital converter. The C04 converts 20-bit audio signals in a format that only occupies one track of a 16-bit storage medium. The coding is without any loss of information at all and, after being decoded, the original 20-bit audio signal is re-created. This is accomplished by using the ADP-processing (audio data packing) developed by Junger Audio.

Rudower Chaussee 5 (IGZ)

D12489 Berlin, Germany

Phone 49/30/6392-6145; Fax 49/30/6392-6146

Klark-Teknik DN3698 Remote

Controls up to 98 channels (49 units) of Klark Teknik DN3600 or DN3601 equalizer. Battery-powered or AC-powered. Optional docking station allows MIDI to RS-232 conversion. Optional wireless radio link. 480x64 pixel backlit display. Full access to all DN3600 functions, including memory store/recall and curve display.

448 Post Rd.

Buchanan, MI 49107

Phone 616/695-4750 or 800/695-1010

Lexicon Dual Algorithm FX Card

Plug this into the PCM80's PCMCIA slot to add 25 new algorithms and 250 new presets. New capabilities include stereo reverb into stereo effects and vice versa; reverb and effects in parallel; dual mono-in/stereo-out processing; and independent processing of two mono signals. A digital submixer controls various effects combinations, allowing changing configurations on-the-fly, such as going from reverb to effects.

100 Beaver Street

Waltham, MA 02154

Phone: 617/736-0300; Fax: 617/891-0340

Lighthouse Digital DCA-8/OCA-ES

8x8 router for AES audio signals, expandable to 16x16. Front panel or RS-232 controllable router is a crosspoint switch for AES signals, unit has memory settings. I/O can be 110-ohm XLR or TosLink fiber. The unit is not format-dependent, and bandwidth is available up to 50 mbit/sec.

Lighthouse Digital DCV

8x8 crosspoint router for digital video signals, i.e. serial 601 or SMPTE 259m/A-D. Switching is not format-dependent and bandwidth is available to 400 mbit/sec. The unit has memory and is controllable by either front-panel or an RS-232 interface.

13451 Colfax Hwy.

Grass Valley, CA 95945

Phone 916/272-8240; Fax 916/272-8248

Manley EQ500 and EQ500MP

The single-channel EQ500 features a totally passive equalizer allowing 10dB of cut and boost in 2dB steps at 40 or 100 Hz and at 3, 5, 7, 10, or 15K. Only three high-quality passive components are in the signal path simultaneously. The EQ500MP includes a fully differential 45dB micro-

phone preamplifier. Prices are \$2,150 and \$2,850 respectively. A version of the EQ with .75dB steps (or any specified value) is available.

13880 Magnolia Ave.

Chino, CA 91710

Phone 909/627-4256; Fax 909/628-2482

E-mail emanley@netcom.com.



Miles MTI-3 TriSonic™ Imager

The MTI-3 provides a convenient, highly effective way to enhance stereo sound quality through use of three loudspeakers or clusters. The unit's patent-pending imaging process, called TriSonic™ Imaging, takes center-panned sources in the mix and reproduces them in the center channel. Side-panned sounds radiate unmasked from side loudspeakers. The result is a vastly increased optimum stereo listening area. Suggested list price: \$499.

70 N. St. Joseph

Niles, MI 49120

Phone 616/683-4400; Fax 616/683-4499

E-mail 74653.2566@compuserve.com

Mytek Digital 8TIMES20BIT

8TIMES20BIT is an 8-channel, 20-bit high-performance analog-to-digital converter. It features standard AES/EBU outputs and ext. wordclock sync. Applications include ADAT, DA-88 or DASH recording, interface for digital audio

—LISTING CONTINUED ON NEXT PAGE

NORTHEASTERN DIGITAL

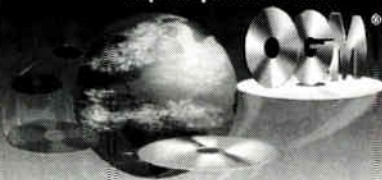


CD-AUDIO, CD-ROM, CD-PLUS
NoNoise, 1630, CD-R
(508) 481-9322, FAX (508) 624-6437

PROFESSIONAL
COMPACT DISC
PREMASTERING

Why Choose OGM

when you need music
in your productions...?



• **BECAUSE** you deal **DIRECTLY** with the creators of the music... not just a distributor.

• **BECAUSE** of OGM's repertoire, it's **Fantastic**.

• **BECAUSE** we're **COST-EFFECTIVE** without compromising **QUALITY**.

• **BECAUSE** of our **STAYING POWER**. OGM is the flagship of **OLE GEORG** who practically invented production music.



CALL: (800) 421-4163

We have a surprise for you!

OGM Production Music
6922 Hollywood Blvd., Suite 718
Hollywood, California 90028
E-Mail: ogmmusic@power.net
Internet: <http://www.OGMmusic.com>
Phone: (213) 461-2701 • Fax: (213) 461-1543

USE READER SERVICE CARD FOR MORE INFO

DECEMBER 1995

Get Up To Speed On

Mastering, Storage & Editing

▲ **Remastering
Classic Movies**

▲ **Report from A.E.S.**

▲ **TEC Awards Highlights**

Ad Close:

October 6, 1995

Materials Due:

October 16, 1995

AES NEW PRODUCTS GUIDE 1995

—LISTING CONTINUED FROM PREVIOUS PAGE

workstations and digital consoles. HIBIT16 function squeezes 20-bit onto 16-bit tape. List price: \$2,995.

Mytek Digital Workstation AD/DA

Workstation AD/DA is a high-performance analog-to-digital interface for digital audio workstations. It consists of an analog-to-digital converter, digital-to-analog converter, interface for two DAT machines and for a computer card such as Sonic Solutions, Digital Audio Labs, Turtle Beach, Triple DAT, etc., or any card with digital I/O. Sonic Performance rivals the best outboard converters on the market. Ext. sync is wordclock. Price: \$1,595.

PO Box 1023

New York, NY 10276

Phone 212/388-2677; Fax 212/686-4948

E-mail mytek@soho.ios.com

Neotek MAX

MAX is a dual mic preamp with the most headroom of any on the market. Output is +30dBu and noise is only 1/4 dB more than a cold 10-ohm resistor. A complex gain network optimizes MAX at all settings. And MAX is very affordable.

1154 W. Belmont

Chicago, IL 60657

Phone 312/929-6699; Fax 312/975-1700

E-mail neotekcorp@aol.com

Night Technologies PreQ3

The PreQ3 microphone preamplifier applies the technology of the famous Night Technologies EQ3. Offering extremely wide-frequency response, low noise, and wide dynamic range, this unit adds the unprecedented feature of selectable frequency Vari-Air™ Air Band™ control. Other features include input polarity reversal, mic/line switch, 48 V Phantom power, 20dB pad. Four independent channels in a standard 19-inch, 1U package with ergonomic layout and function display. Tentative list price: \$2,495.

1680 W. 820 N.

Provo, UT 84601

Phone 801/375-9288; Fax 801/375-9286

E-mail raventos@itsnet.com

OmniSound SSP-300

The SSP-300 Spatial Sound Processor is an automated (SMPTE lock) multichannel audio signal panner for cinema surround sound. It allows sound positioning within the sound field in real time. The motorized SSP-300 remote control unit gives the sound engineer control over sound position, divergence, elevation and level. One input and up to seven outputs for all surround sound formats. Up to 16 processors may be controlled by a single remote. \$2,495.

2413 Fifth Ave.

San Rafael, CA 94901-1005

Phone 415/457-8114; Fax 415-457-6250



Philips Sound Enhancer Pro

The Sound Enhancer Professional offers a unique combination of audio functions and features, including digital sound processor, sample rate converter, D/A converter and A/D converter. Working in the digital domain, the Sound Enhancer has good ergonomics, is easy to use and is a powerful solution for interfacing with a variety of ana-

log and digital sources and recorders.

c/o Mackenzie Laboratories Inc.

1163 Nicole Ct.

Glendora, CA 91740.

Phone 800/423-4147; Fax 909/394-9411

Rane VP 12

The VP 12 is a mic/line processor designed for broadcast applications and permanent installations. The VP 12 includes high and low cut filters, 2 bands of full parametric EQ, a signal gate, compressor, and de-esser. The VP 12 also offers gain reduction, main and aux out metering, 48 volt phantom power, input trim and dual-concentric output level controls. Inputs for mic and line level include XLR, barrier and 1/4-inch.

Rane RPE 228

The RPE 228 is a computer-controlled 2-channel, 1/2-octave EQ with high and low cut filters, and input and output level controls. The RPE 228 features a relay bypass that automatically switches in upon power failure. Windows-compatible control software will be shipped with the unit at no extra charge. There are 16 non-volatile memories, 8 of which are selectable via contact closure through a terminal block on the rear panel.

10802 47th Ave. W.

Mulkiteo, WA 98275

Phone 206/355-6000; Fax 206-347-7757

Ridge Farm Gas Cooker Tube DI

The Ridge Farm's Gas Cooker is a 2-channel impedance converter using custom-designed, dual-element vacuum tubes to transform high-impedance instrument level signals to lower matching impedance for mic or line inputs. It may also be used on line-level inserts during mixing. Carefully designed high voltage tube circuitry enables the user to vary the drive level to the output stage, precisely controlling the amount of tube coloration added to the signal. \$649.

Dist. by Tula Audio International

73 Hemenway St., Ste. 502

Boston, MA 02115

Phone 617/859-0992; Fax 617/859-0992

Rocksonics PM-4 Patchmaker

The PM-4 Patchmaker™ is a programmable audio signal router and level control. Up to 100 user-defined programs can be stored in the PM-4 and recalled via MIDI program change commands. The PM-4 has four independent digital VCAs operating on balanced -10dBV/+4dBm inputs and outputs arranged to route 1 to 4 buffered inputs to 1 to 4 buffered outputs. 1U rack chassis. Suggested list: \$399.

Rocksonics MB-3X

The MB-3X Multi-Band stereo compressor with peak limiter provides variable compression and peak limiting on three separate frequency bands for extremely transparent operation. This unit is ideal for use in broadcast, cassette duplication, CD mastering and other high-quality stage and studio applications. Switchable -10dBV/+4dBm balanced operation; tri-level gain reduction meter; variable gain, ratio, threshold, EQ, release and peak limit settings. 1U rack chassis. Suggested list: \$599.

PO Box 442

Los Alamitos, CA 90720

Phone 714/229-0840; Fax 714/229-0840

Rolls RP282 Tube Compressor/Limiter

The RP282 is a 2-channel tube compressor/limiter that provides smooth, natural compression. The unit is housed in a steel, 2-rackspace chassis with a silver anodized front panel. Each channel features an output level control, threshold, ratio, attack and release controls for the compression. The analog meters may be switched in the circuit path from the input signal path to metering the amount of gain reduction. Retail price: only \$600.

5143 South Main St.

Salt Lake City, UT 84107

Phone 801/263-9053; Fax 801/263-9068



SigTech AEC 1020 Time Domain Processor

The AEC 1020 corrects the greatest remaining source of error in the audio monitoring chain—room acoustic effects—by compensating for coloration and poor imaging caused by reflections from room surfaces and equipment. Enables engineer to evaluate actual mix, free of room response problems, assures accurate monitoring, eliminates "tweaking" to compensate for acoustic errors; saves time and architectural work—with results proved in advance. Two-channel models begin in the \$4,000 range.

24 Thorndike St.

Cambridge, MA 02141

Phone 617/491-8890; Fax 617/491-9066

Spectral Translator Plus™

Translator Plus adds four pairs of stereo AES/EBU I/O to the digital audio formats supported by the Translator. The Translator Plus is capable of real-time bidirectional digital audio translation between eight channels of any two of the following formats: ADAT, DA-88, Yamaha D2, Spectral SMDAI and AES/EBU. This gives users the opportunity to connect any of these formats to a DAT machine or external signal processor.

18800 142nd Ave. N.E.

Woodinville, WA 98072

Phone 206/487-2931; Fax 206/487-3431



SPL ProMike Preamp

This dual-channel mic preamp features servodriven technology for minimum DC-offset and a double ground-shielded PCB for pure and natural sound. ProMike offers phantom power, phase reversal, padding, two 20-digit PPM displays, highpass and lowpass filtering, 7-pin XLR connector for stereo mics, illuminated switches, 0.1% + 1% metal film resistors, and RF-proof chassis. Maximum preamplification is +72 dB. EIN is 127.5 dBu. Balanced and 2x unbalanced outputs are provided for parallel use (mic splitter).

SPL MikeMan Preamp

The MikeMan high-quality, dual-channel mic preamp features 48V phantom power, phase reversal, padding, two 10-digit PPM displays, toroidal power supply, illuminated switches, 0.1% + 1% metal film resistors and RF-proof chassis. Maximum preamplification is +72 dB. EIN is 126.6 dBu. Accepts input values up to +25.72 dB. Balanced and unbalanced outputs offer parallel use (mic splitter). Critical parts are factory-selected. Transformers are optional.

Dist. by Beyerdynamic

56 Central Ave.

Farmingdale, NY 11735

Phone 516/293-3200; Fax 516/293-3288

Summit DPC-200 Dual Comp/Preamp

A 2-channel mic, line, hi-z input vacuum tube preamp with a 2-channel "soft knee," vacuum tube leveling amplifier. A link switch is provided for stereo operation, with insert points between all sections. Jensen mic transformers are now a Summit standard. Robust Summit construction in a

—LISTING CONTINUED ON NEXT PAGE

WEST L.A. MUSIC

GUARANTEED LOWEST PRICES!

EVERY MAJOR BRAND

DIGITAL TAPE RECORDERS & WORKSTATIONS
 CD RECORDERS • HARD DISC RECORDERS • MIXING CONSOLES
 MICROPHONES • STUDIO MONITORS • MACINTOSH COMPUTERS
 SOFTWARE • KEYBOARDS • GUITARS • AMPS • DRUMS

WE'LL BEAT ANY DEAL! CALL NOW!



JEFF "SKUNK" BAXTER
 WITH FRIEND AT WEST L.A. MUSIC



BRANFORD MARSALIS
 WITH JOHN COX - PRO AUDIO DEPT.



RICK WAKEMAN
 WITH GLENN NOYES - DRUM DEPT. MGR.

"WHERE THE PROS SHOP"

Phone and Fax orders accepted. We Ship Everywhere.



"Where The Pros Shop"
WEST L.A. MUSIC
 11345 Santa Monica Blvd. West Los Angeles
 Two blocks West of the San Diego (405) Freeway
 (310) 477-1945 Fax: (310) 477-2476

ALL MAJOR
 CREDIT CARDS,
 FINANCING,
 AND LEASING.

USE READER SERVICE CARD FOR MORE INFO

RIGGING

The Next Stage

AMTS Series Modular Track Based

Loudspeaker Flying Hardware Systems

AMGS Series Modular Loudspeaker Suspension Grid

AMFS Series Modular Loudspeaker Flying Hardware Systems

ATM Fly-Ware Enclosure Bracing & Safety Hardware

ATM Fly-Ware OSR Series Swivel Ring Fittings

Rigging Hardware - General and Hard to Find

CALL OR WRITE FOR A FREE COPY OF THE 92 PAGE
 CATALOG OF RIGGING HARDWARE AND SUPPLIES

ATM
FLY-WARE™

a division of **ATM GROUP**

21000 S Wilmington Ave ■ Carson, CA ■ 90810 ■ USA

Tel 310.834.5914 Fax 310.834.3042

—LISTING CONTINUED FROM PREVIOUS PAGE
 2u space. Price to be announced.
 PO Box 1678
 Los Gatos, CA 95031
 Phone 408/464-2448; Fax 408/464-7659



Symetrix 422 Stereo AGC-Leveler

The Symetrix 422 stereo AGC/leveler is a sophisticated automatic gain controller that boosts stereo signals falling below the target output level and pulls back those rising above it. Intended for use at any point where there is "line-level" audio, the 422 features a parallel input/output meter to allow the user to see and adjust the input level to a de-

sired target output level. Also features threshold control, response control and peak limiter.
 14926 35th Ave. W.
 Lynnwood, WA 98037
 Phone 206/787-3222; Fax 206/787-3211
 E-mail 102102.1126@compuserve.com

TC Electronic Digital Toolbox

The Digital Toolbox™ is added to the optional MD2 Multi-Band Digital Mastering package for the M5000. Among several features are 4-band parametric EQ, fade-in/out function utilizing Fletcher Munson curve, dithering to 22, 20, 18, 16, or 8 bits, MS encoding/decoding. Large-scale PPM w/ peak hold, correlation meter. All these features can run simultaneously.



TC Electronic ATAC Remote

The ATAC remote controller enables control of up to ten M5000 or M5000X signal processing mainframes—each capable of holding 4 independent stereo processors (= 40 machines).
 Grimhojvej 3
 DK-8220 Brabrand, Denmark
 Phone 45/86-26-2800; Fax 45/86-26-2928
 E-mail tcelectr@inet.uni-c.dk

TL Audio Model V11

The V11 from TL Audio is an 8-channel unit designed to interface between the recording console and the multitrack machine. Each channel has unity gain utilizing a tube stage, so the audio signal benefits from the warmth of the tube characteristics. Each channel has balanced inputs and outputs via stereo jacks, all are compatible with unbalanced signals and allow -10/+4 level matching. Frequency response is 20-40k Hz. List price: \$795.
 Dist. by Sascom Marketing
 34 Nelson St.
 Oakville, Ontario, Canada L6L 3H6
 Phone 905/469-8089; Fax 905/469-1129

U.S. Audio AS-4

The U.S. Audio AS-4 contains four high-quality active mic splitters in a single 1U rackmount package. Each splitter features 1 input to 4 outputs (1 direct, 1 active with volume control, 2 either transformer-isolated or active), with a 3-LED headroom indicator display. The adjustable line output is ideal for driving ADATs and other MDMs.
 99 Ling Rd.
 Rochester, NY 14612
 Phone 716/663-8820; Fax 716/865-8930

Weiss ADC 1

Two-channel, 20-bit analog to digital converter. Built-in line and mic preamplifiers, as well as a 32-bit digital signal processor. Functions include redithering, soft clipping, level control and filtering. The converters are mounted on plug-in modules, which may be exchanged as converter technology progresses in the future. Powering is 115/220VAC. 50/60 Hz.

Weiss Parametric Equalizer EQ1

Gambit Series EQ1 features seven independent parametric bands with identical features. Each band offers individual controls for center frequency over the whole audio range, boost/cut, Q value, shelving/peaking/lowcut/high-cut mode. Other features include optional linear phase filtering, large frequency response display, AES/EBU Input/output, MIDI control, Snapshots storage, 19-inch 2HU frame.
 Dist. by G Prime Ltd.
 1790 Broadway #402
 New York, NY 10019
 Phone 212/765-3415; Fax 212/581-8938.

**RENT WITH
A NET**

When you rent any one of our 2000 pieces of exceptional audio gear, you can take comfort in the fact that it's been tested and prepared by a team of technical wizards. We'll jump through hoops to get it to you anywhere in the world, whenever you need it... 7 days a week, 24 hours a day.

After all, we've been perfecting our act for over 13 years.
 So make the jump to The Toy Specialists. We've got you covered!

THE TOY SPECIALISTS *NOW you're renting!*
 Pro-Audio/Video & Musical Instrument Rentals

NEW YORK: 619 West 54th Street New York, NY 10019 212.333.2206 Fax 212.262.4095
TAMPA: 12111 North 56th Street Tampa, FL 33617 800.445.3330 Fax 813.980.6950
WEB ADDRESS: <http://www.bway.net/toyspecialists>

USE READER SERVICE CARD FOR MORE INFO

TEST GEAR

A.P. Audio Phase/Polarity Tester,

Test the phase of speakers, elements, processors, cables etc. with the Audio Phase/Polarity Tester from A.P. Audio. Two self-powered units, a generator (#APA-P1G) and detector (#AP4-P1D), offer real-time phase analysis of any audio signal. The generator sends full-frequency signals. The detector's built-in microphone (or input connector) accepts the signal, special circuitry screens for distortion and preshoot (eliminating false readings), and displays accurate phase. List price \$395.

A division of Ace Products
1334 C Ross St.
Petaluma, CA 94954
Phone 707/765-6597; Fax 707/765-6682
E-mail skahnace@aol.com

AudioControl IASYS

IASYS is a new design, patent pending, mixed domain measuring analyzer. Details will be available at the AES show.

22410 70th Ave. W.
Mountlake Terrace, WA 98043
Phone 206/775-8461; Fax 206/778-3166
E-mail audcon@ix.netcom.com

Audio Precision System Two Model 2322

System Two dual-domain model 2322 is the top of the line version of the System Two family, featuring true dual-domain audio testing architecture. For highest performance, analog signals are generated and measured by analog hardware and digital signals are generated and analyzed by digital hardware. System Two's DSPs also provide general-purpose FFT, MLS and AES/EBU interface analysis capability.

PO Box 2209
Beaverton, OR 97075
Phone 503/627-0832; Fax 503-641-8906



Gold Line DSP 30RM Rackmount RTA

A 19-inch digital rackmount RTA with precision microphone, duplicate line and mic connectors on front and rear, plus built-in pink noise generator. Features include DSP triple-tuned ANSI 1/2-octave filters, 85dB window, LEQ time averaging, sum and subtraction modes, plus SPL in flat, A, C or user weighting. Expansion features include loudspeaker timing, RT60 and THD measurements, plus an RS-232 computer interface with software for PC or Macintosh-based systems. Suggested retail: \$2,195.

Gold Line FD23 Feedback Detector

The Gold Line FD23, used with any equalizer, is the fastest and most effective way to eliminate feedback. The LED display of the FD23 will indicate which frequency to cut, allowing you to eliminate feedback by making the optimum equalizer adjustment. The FD23 is portable and battery-operated and can be used to "ring out" any room or to protect against feedback during live performance. Suggested retail price: \$259.95.

Box 500
West Redding, CT 06896
Phone 203/938-2588; Fax 203/938-8740

Integral Vision CD-WARP Gauge

Desktop unit that creates both a height and slope map, and tangential and radial warp for 65, 80, 120, and 130mm discs. Accurate readings are displayed as topographical maps and profiles. The data is displayed on a color monitor, and a hard copy can be printed on demand. Special features include: user-friendly interface, auto scaling, gray scale or color video, video zoom, 3-D disc view, and polar profiles at any radius/angle.

PO Box 6295
Toledo, OH 43614
Phone 419/536-1983; Fax 419/536-2793



Klark-Teknik DN6000

The DN6000 provides high resolution spectrum/time analysis. It performs real-time 1/2- and 1/3-octave spectrum, LET, LEQ, and RT60 analysis to a resolution of 0.2 dB. Thirty-two memory positions are available to store spectrum analysis data and a further sixteen for LET, LEQ, RT60.

Walter Nash Rd.
Kidderminster, Worcs
DY 7HJ, UK
Phone 44/1562/741-515; Fax 44/1562/745-371

TEF Sound Lab Polar ETC Software

Sound Lab Polar ETC (PET) is the latest software module for use with the TEF acoustic analyzer. The unique software reports directional information about reflections, as well as magnitude and time of arrival. From a practical standpoint, Sound Lab PET measurements can be used by audio professionals to quickly obtain accurate distance and directional information concerning problematic reflections within an environment. The Sound Lab Polar ETC (PET) has a suggested retail price of \$500.



TEF 20 SHIP Acoustic Analyzer

The new TEF 20 SHIP acoustic analyzer provides both serial and parallel communications in one instrument. The dual port option provides high-speed communications with notebook computers via a standard parallel port (LPT1 or LPT2). A parallel upgrade path is available for TEF20 and TEF20 HI analyzers and can be field-installed by the user in minutes. Suggested retail price for the new TEF20 SHIP acoustic analyzer is \$4,500.

PO Box 1000
Elkhart, IN 46515-1000
Phone 800/833-8575; Fax 219/293-8302

**Most Music Stores Don't
Have High Level Gear.
Thankfully, We're Not
Another Music Store.**

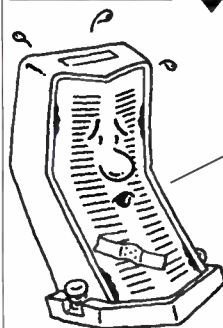
**AKG • NEUMANN
SENNHEISER
TC ELECTRONIC
BRÜEL & KJÆR
SANKEN • MILAB
MICROTECH GEFEL
FOCUSRITE • DEMETER
GROOVE TUBE • DBX
AUDIO-TECHNICA
ANTHONY DEMARIA LABS
SHURE • MEYER SOUND
MILLENNIA MEDIA**

**CALL TOLL FREE
(800) FINE MIC
→ That's (800) 346-3642**

**The
MICROPHONE
Company**
**5805 Chimney Rock Road
Houston, Texas 77081**

USE READER SERVICE CARD FOR MORE INFO

**TALKING
HEADS**



*I'm so worn!
Edge tracks
bounce...I'm
way out of
spec...Am
I done for?*

**See us at
AES Booth #842**

*No! Go to JRF.
I did, and now
I spec out
like new!*



- ▶ HEAD RELAPPING
- ▶ OPTICAL ALIGNMENT
- ▶ NEW REPLACEMENT HEADS

JRF
MAGNETIC SCIENCES

**(201) 579-5773
Fax (201) 579-6021**

249 Kennedy Road, Greendell, NJ 07839

RECORDING · G · N · O · T · I · E · S



**22 Brides: (L to R)
John Skehen,
Libby Johnson,
Ned Stroh,
Carrie Johnson**

Indies on the Rise:

**PRODUCER
ADAM LASUS AND
22 BRIDES**

by Blair Jackson

Led by sisters Libby and Carrie Johnson, the New York City band 22 Brides has been making waves on the East Coast for a couple of years now on the basis of their strong, genre-crossing songs, delicious vocal blend and high-energy live perfor-

mances. Their eponymous 1994 debut album was largely an acoustic affair—sort of a darker, heavier Indigo Girls—though with clear alternative influences and leanings. Since that record came out, though, 22 Brides have been touring almost constantly and, in the process, turned into a real band.

Besides Carrie on electric and acoustic guitar and vocals, and Libby on bass, keyboards and vocals, guitarist John Skehen and drummer Ned Stroh have become an integral part of the group's harder, edgier sound, adding immeasurably to the power of the Johnson sisters' already well-crafted songs. Their just-released second album, *Beaker* (again on the burgeoning NY indie label Zero Hour), is a real revelation—an eclectic set of songs populated by interesting, offbeat charac-

ters (no doubt often the ladies themselves), delivered in a number of different styles, from bright, melodic, folk strumming to punkoid buzzsaw guitar numbers. I hear echoes of Patti Smith, X, the Indigos and The Pretenders in their music, but it's all filtered through Libby's and Carrie's unique perspective as sisters who've led full, interesting lives (including formative years spent in Kenya; the band's name is derived from an African story).

To help realize their ever-broadening artistic vision, 22 Brides recorded this sophomore effort with another up-and-coming talent, producer/engineer Adam "Red" Lasus, whose work includes albums by Helium, Juliana Hatfield, Madder Rose, the Gigolo Aunts and Yo La Tengo. Working out of his own simply equipped Studio Red in Philadelphia, Lasus has managed to capture the many different facets of 22 Brides' sound, making a record that is challenging, sonically interest-

—CONTINUED ON PAGE 320

Producer Adam Lasus

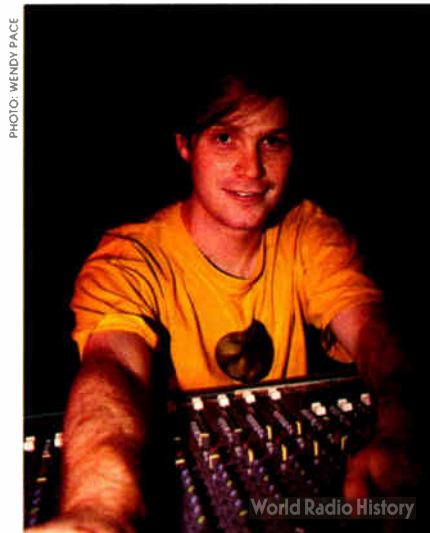


PHOTO: WENDY PACE

Recording at Home With Warren Zevon

by Eric Rudolph

Warren Zevon has a few basic guidelines for determining the direction of a new record. "I think one should only make records one would want to hear, and one should try to make them different" from their predecessors, he says. Zevon's done both with his latest recording, *Mutineer* (Giant/Warners), most of which was recorded in his Los Angeles apartment with a well-traveled broadcast board and a couple of ADATs.

Zevon says *Mutineer* is the record he has always wanted to make; it is also the quietest Zevon record so far. While it opens on familiar ground, with the rocking "Seminole Bingo,"

about a fugitive junk-bond king, it immediately turns markedly quiet, downbeat and introspective for the next five songs.

"Contrary to some perceptions of my having reached a quiet and meditative midlife turning point, the quieter sound of *Mutineer* has more to do with the nature of the at-home recording process than with a philosophical intention," he says by phone from a Cleveland hotel room. "My little apartment studio simply lends itself to quietude. However, when I saw that this was becoming the quietest record I'd ever made, it struck me that making a quiet record was the most mutinous thing I could do at this point." He is seven dates into a tour on which he laid to rest any doubts about middle-aged doldrums, rocking hard for two hours night



PHOTO: JONATHAN EXLEY

after night, backed by the energetic Irish pop-rock band Something Happens. (Zevon is considering making his next record with Something Happens, in a regular studio setting, perhaps in Dublin.)

After making records in state-of-the-art studios

with various perfectionist producers and associates (from ad jingles and his first sides as an artist with Bones Howe, to Jackson Browne, various members of the Eagles and Waddy Wachtel) for most of the last 25 years, Zevon decid-

—CONTINUED ON PAGE 322

CLASSIC TRACKS

"Groovin'" by The Young Rascals

by Blair Jackson

I've always had a soft spot in my heart for The Rascals because Felix Cavaliere, the group's lead singer, keyboardist and co-writer of all their best songs, grew up in my hometown of Pelham, N.Y. (a suburb of NYC). When the Young Rascals (as they were known their first three years) first hit the Big Time in early '66 with their peppy reworking of The Olympics' "Good Lovin'," this was big news in Pel-



L to R: Felix Cavaliere, Dino Danelli, Gene Cornish, Eddie Brigatti

ham! Even though Cavaliere had left Pelham a few years earlier, his parents still lived across the street from Pelham High School, and occasionally there would even be Felix sight-

ings, like when our hometown hero would pull up to his folks' house in a some fancy sports car. "Wow, there he is!"

The Rascals were always somewhat of an

anomaly in the pop music world. They emerged in the wake of the British Invasion, but their sound was closer to Wilson Pickett and Smokey Robinson than to The Beatles or Dave Clark Five. They were soulful white kids; in fact, the term "blue-eyed soul" was originally coined to refer to The Rascals (though none of the bandmembers had blue eyes). All four members had experience playing R&B, and three of the four members—Cavaliere, Canadian-born singer Gene Cornish and Eddie Brigati were latter-day members of the popular New York act Joey Dee & the Starlighters

—CONTINUED ON PAGE 324

Dali-2T

THE CREATIVE 2-TRACK

Dali-2T from Fairlight is a powerful DSP toolkit that provides brilliant sound for sophisticated audio processing like time compression and pitch change.

Equipped with Fairlight's proprietary Timefx™ software, Dali-2T gives you:

- 7 algorithms for time and pitch manipulation
- Powerful non-destructive editing
- Level control with ramps
- 4-band fully parametric EQ
- 4-stage dynamics
- PQ coding, and more.

Dali-2T is small and powerful, consisting of a discrete 3-unit rackmount, with an easy to use dedicated controller. Lay off tracks from digital or analogue multitrack, fix them up and lay them back in sync, in seconds. Record and edit your 2-track dialogue or music jobs at lightening speed, with audio scrubbing and unlimited UNDO. Assemble tracks for CD mastering including PQ coding. You can even use it as a digital EQ or compressor/limiter during a mix.

For detailed information call or fax your Fairlight dealer or local Fairlight office and you can have Dali-2T creating for you, in no time at all.

Meet the time shifter

USA - Phone - 1800-4-FAIRLIGHT,
Los Angeles Phone 310-287 1400 Fax 310-287 0200
Europe - London Phone 0171-267 3323 Fax 0171-267 0919
Asia - Sydney Phone 02-9975 1230 Fax 02-9975 1368
Tokyo Phone 3-5450 8531 Fax 3-5450 8530

See us at AES Booth #856

World Radio History
USE READER SERVICE CARD FOR MORE INFO

Fairlight™

King Biscuit Flowers Again on CD

by Blair Jackson

There was a time—not so long ago, actually—when rock ‘n’ roll fans couldn’t just turn on MTV or VH-1 or Showtime or HBO to see concerts by the hot touring bands of the day. Radio was still king, and a syndicated program called *The King Biscuit Flower Hour* was the main source each week for millions of people nationwide to hear live music. It was a boon to music lovers, and both bands and record companies recognized that playing The Biscuit (as it was fondly called) was an excellent promotional tool. Sound quality was always excellent, and if you were quick-fingered enough with your reel-to-reel or (later) cassette recorder, you could avoid the commercials and assemble thrilling live tapes of your favorite bands.

The show debuted on February 18, 1973, with an amazing triple-bill of Blood Sweat & Tears, fusion giants Mahavishnu Orchestra and a little-known artist named Bruce Springsteen. Twenty-two years and more than 1,000 broadcast hours of nearly 500 artists later, The Biscuit has a new home: on compact disc. While the show is still heard on some 170 stations (down from a peak of more than 300), it has been airing reruns since 1991 (though that may change soon), and now the company is looking to the new King Biscuit CD series as a fresh way to capitalize on their incredible archive of more than 16,000 tapes.

“We’re hoping to put out six or eight CDs a quarter,” says King Biscuit label manager and archivist Barry Ehrmann. “Whenever possible, we’re going to put out the whole concert, not just what was broadcast, and we’re going back to the original multitracks and remixing, rather than just releasing whatever the radio version of the show was.” The first batch of CDs, released mid-summer, includes a 1976 Deep Purple concert, America from 1982, Greg Lake (of the original King Crimson) with Gary Moore from 1981, Kingfish (featuring the Grateful Dead’s Bob Weir) from 1976, and Canned Heat from 1979. Under consideration for the second batch, due in October, are concerts by 10cc from 1975,

Steve Forbert from ‘79, The Fixx from 1982, Robin Trower from ‘74 and a couple of others that were still being finalized at presstime. “This is just the tip of the iceberg,” Ehrmann says. “There’s amazing stuff here, and we’re going to do whatever we can to get the rights to release it. Some acts we’re never going to get, of course. But so far, managers and labels have been very receptive to what we’re doing, because they know the quality is going to be good.”

King Biscuit hired veteran producer/engineer/studio owner Gary Lyons (Foreigner, Aerosmith, Grateful Dead, etc.) to handle the technical end of the re-release operation, which began with baking the master reels and transferring them to new digital or analog tapes. “They’d been kept very professionally,” Lyons comments. “They’re all 16- and 24-tracks done by the top trucks of the day—Record Plant, Wally Heider’s, Effanel, Fanta Professional Services out of Nashville, various others. Usually, I preferred the analog sound [for the transfer], because as the years pass, you pick up a little bit of second or third harmonic distortion on tape, and transferring to analog sounded more pleasant.”

“We used the Ampex recipe for baking the tapes,” Ehrmann adds with a chuckle. “Put them in a convection oven for eight hours at 120 degrees. Then you let them sit at studio temperature for 24 hours while the tape restabilizes. They’re fine for about 30 days, and then they tend to revert to their original condition. We found that it wasn’t the age of the tape that determined its condition. I’ve played tapes from 1973 that are fine and ones from 1978 that are shot. But I haven’t come across a tape that’s completely ruined. Everything has been recoverable, and I think that’s because they were stored so well. Probably a month after recording them, they were shipped to a climate-controlled environment called Iron Mountain in upstate New York. This place is like something out of James Bond movie—it’s a complete underground city. You go through this humongous steel door, and then there are about 25 buildings underground. I think people used to farm mushrooms down there, and then in the ‘50s, the guy

who built it started renting out space to corporations in case of a nuclear war or something. After that, it became a storage facility.”

Lyons has been doing his sonic work at a facility in Germany known as Dolphin Studios, which is equipped with an SSL G Series and Neve consoles, Genelec monitors, a SADiE digital workstation and whatever outboard gear he might require. “My goal is just to capture the excitement of the original performance,” he says. “When I worked on the Kingfish [two-CD] set, I worked with [band co-leader] Matthew Kelly to help me understand what the concert sounded like in the hall at the time, and he was very helpful. I didn’t want to go and make it sound modern. In fact, in general, I’ve tried to keep the outboard equipment as authentic as possible. If I have to use a compressor or something on a mid-‘70s show, I’ll use





Barry Ehrmann and some of the 16,000 King Biscuit tapes.

tube gear and try to keep it as much in that period as possible.”

Still, Lyons says that preparing the tapes for release has been a painstaking job. On Kingfish, for example, “I went through every song and marked down where there was singing and where there wasn’t, and then, using the computer, I’d kill that mic when it wasn’t being used for vocals, to get rid of buzzes and hums and crosstalk and spillage from the guitars and drums. At the same time, I’m not going to go through and take out every click and pop I hear. It’s a live show, and you want to keep the musical integrity. If there was a noise, well, that’s what was there. I don’t want it to sound like a studio record, although that’s easy to do with today’s technology.”

Wherever possible, King Biscuit is involving the original recording engineers and/or bandmembers in the process of mixing the tapes, and as Ehrmann jokes, “We’re not going to start screwing around with Bob Clearmountain’s original mixes of Bowie and Bryan Adams shows if it comes to that.” Greg Lake produced the release of his disc himself, and the Canned Heat project was overseen by the group’s drummer, Fito de la Parra. Ehrmann says he hopes to release entire concerts rather than just selected cuts, and he doesn’t envision making compilation CDs. Many of the tracks on the original tapes were never aired due to time constraints, and there are even a fair number of concerts that were not broadcast at all for one reason or another.

Obtaining the rights to release the vintage concerts is probably the biggest hurdle Ehrmann faces with the new label. Generally speaking, the performances are controlled by the

groups and the record companies for whom they recorded at the time the tapes were made. Complicating the situation are such factors as whether the band exists anymore, whether they now record for another label, and, most importantly, whether the musicians want the material released. Some artists are notoriously protective of their

work, and others may have already released live material from the year(s) covered by the King Biscuit material. King Biscuit tapes already have been tapped by the Rolling Stones for their *Still Life* LP, and Ehrmann says that some of their Eric Clapton material may turn up on a second Clapton *Crossroads* box that is in the works.

“There’s so much great stuff here it’s hard to know where to begin,” Ehrmann says. “We recorded three nights of Genesis in 1976—we have 45 reels of 24-track tape on that. We’ve got Peter Gabriel at the Bottom Line with Robert Fripp on guitar. It goes on and on.”

Indeed it does—from the guitar gods of the mid-’70s, to nearly every major new wave band, to the established giants of two decades. “I just want to get this music out to people,” Ehrmann says excitedly. “King Biscuit is a name a lot of people grew up on. These CDs are going to bring back a lot of good memories for people, and hopefully also introduce new people to some great music.” ■

—FROM PAGE 316, 22 BRIDES

ing and—dare we speak the word?—commercial at the same time. Lasus may have alternative-world recording credentials in spades, but he clearly knows how to work with singers and songwriters, too.

What has become a successful career for the 26-year-old Lasus “started out as a hobby in my basement with a Tascam 38 and an Allen & Heath board,” he says. “I’d played in bands and was into recording demos, and I started doing other bands’ demos for free just as a hobby for fun. I got my start at Stu-

dio 4 [in Philadelphia] as an intern, and my band got a spec deal there. While we were doing our music there, it dawned on me that I was maybe more interested in the recording end of it than playing in a band. I continued my little hobby studio, and then—I don’t know if it’s fate or what—but a lot of the little bands I did demos with for free ended up getting signed: Chris Hartford got signed to Elektra, Madder Rose got signed to Atlantic, Helium got signed to Matador, the Gigolo Aunts got signed to RCA. And a bunch of them came back and said, ‘Hey, we want to do our album with you in your basement, because we like the vibe.’”

As his business increased, Lasus moved from 8-track to a 16-track MS-16 and a Soundcraft board. Then, a year-and-a-half ago, disaster struck: “A four-foot water main in front of my house broke and flooded my entire basement, so all my gear and a lot of tapes, about 15 guitars and a couple of drum kits...everything I owned was under water for 12 hours. I was in a state of shock, wandering around my basement trying to save the master tapes, because you can always get more equipment, but the tapes were irreplaceable. I had about 300 there, and I managed to save all except four.” Then, in a scene straight out of *It’s a Wonderful Life*, a bunch of the bands Lasus had worked with threw benefit concerts for him in Boston, Philadelphia and Providence, raising nearly \$10,000 toward the resuscitation of their beloved Studio Red. “It made me feel good because I’d just been in my basement working all those years and hadn’t paid that much attention to the fact that I’d helped a lot of people and was actually starting to become a figure in this East Coast indie rock alternative scene,” he says.

Lasus’ luck continued when he learned that “right down the street there was a studio called Babylon Sound that had just folded, so I went in there and they rented the space to me—and it’s been great. It’s a huge space with a window, a beautiful drum room, a control room that was based on a John Storyk design. It’s quite a contrast from my basement, but I still think it has a nice, relaxed vibe. It’s still basically just a home studio that went wild.”

These days, Studio Red is equipped with a Soundcraft Spirit console, “which is probably bottom-

There's something you should know
about the 1996 National Electrical code...



(model ET1.5R shown)



Balanced power is recognized and approved.

(Ref: 1996 National Electrical Code Article 530 Part "G")

Yes. *Equi=Tech* did it. But we had lots of help from major motion picture studio engineers representing the audio/video industry on the NEC code-making panels. Studios of every shape and size are realizing the enormous benefits that balanced power provides. It's not just the hum and buzz that balanced power eliminates, it's the increased dynamic range and overall sound quality of the final product that invites the most praise. Our customers tell us about the great compliments they receive from their clients. One day, your clients could tell you the same great things. Visit us at the 99th AES Convention in New York City at the Javitz Convention Center. October 6-9, booth #1222.

Welcome to AC power for the 21st century.

Equi=Tech Corporation P.O. Box 249 Selma, Oregon 97538 Tel: 503/597-4448 FAX: 503/597-4099

USE READER SERVICE CARD FOR MORE INFO

Big Mo Goes Everywhere!



Live Recordings
Analog dual 24 track w/Dolby SR
ADAT/DA88—32 tracks each
Audio for Video and Film
Equipment Rentals
CD Prep & Graphics



3301 Decatur Avenue
Kensington, MD 20895

800-Big Mo-38

USE READER SERVICE CARD FOR MORE INFO

RECORDING EQUIPMENT SYNTHESIZERS SPEAKERS
GUITARS DRUMS P.A.'S AMPS
RECORDING EQUIPMENT SYNTHESIZERS SPEAKERS GUITARS DRUMS P.A.'S AMPS
RECORDING EQUIPMENT SYNTHESIZERS SPEAKERS GUITARS DRUMS P.A.'S AMPS

Our inventory is
HUGE

Our delivery is
FAST

Our prices are
LOW

Your satisfaction is
GUARANTEED

CALL
1-800
SOUND
800

LM & S
MUSIC

of-the-line," Lasus admits, "but I've worked on it so long I've gotten real good at it, and I actually like it a lot. I'm still using the Tascam MS-16 at 30 ips. I mix everything down to an Otari 5050 2-track at 15 with [Ampex] +99, which kind of smooths out the bottom end, and also to a Panasonic 3700 [DAT]. I go back and forth between analog and digital for my mixes. Probably the main thing that makes the studio sound warm is I have a thing called a Purkhiser CA2. Purkhiser is this genius in Ohio who's the brother of the singer in The Cramps [Lux Interior], and he makes the most incredible tube preamp compressors I've ever used. He built me this deluxe model that's two preamps and two compressors, kind of like a stereo unit or dual mono. Soundwise, it's kind of like a combination between a Fairchild and an old LA-2. On the Brides record, all the vocals were done through it, and all the acoustic guitars. I just go through that and right to tape. The unit is incredible, and it's in red aluminum with red backlighting, so it looks really cool, too!"

Sessions for *Beaker* (named after guitarist Skehan's cat) stretched over a month at Studio Red, with about ten days each devoted to basic tracks, overdubs and mixing. (Additionally, two songs were recorded and produced by Daniel Wise at Network Studios in New York City.) The total budget was about \$20,000—not a huge amount by major label standards, but a decent figure for an indie record. Helping Lasus with the engineering and mixing was Jason Cox, who has worked at Studio Red for more than a year. "He's amazing, with really good instincts," Lasus says of Cox. "He's a Full Sail graduate, which is a big help, because I'm completely untrained; I didn't even really read the manuals to this stuff. So he's shown me things I didn't even know about."

Lasus says the basic tracks were recorded live, "and we kept all the bass and rhythm guitar where possible and built up from there. There aren't too many overdubs; we tried to keep things simple—but still have some variety and sound interesting." To that end, Lasus encouraged Skehan to use a number of different guitars and effects. "I have a collection of about 25 vintage guitars and about 20 amps, ranging from little Ampeg Rockets up to Marshalls and Bass-

man. I think we used about 15 different guitars. I'm a big fan of \$100 guitars that sound cool. Plus I have about 50 effects pedals, so all my production is pretty guitar-oriented." Typically, he miked the amps "with a 421 up close and then a 414 in the room. I'll usually use one, the other or both." Bass mainly went through an Ampeg V4 cabinet miked with a Beyer M88 and then also captured direct with a Countryman.

For Stroh's drums, Lasus and Cox used an RE20 on the kick, a 57 on the snare, Beta 57s on the toms, 451s as overheads, and a PZM placed on the studio window "to liven up the sound a bit." In addition to the 414 for the room, Lasus also found the CAD Equitek E100 to be very effective: "We used it right close to the ground, about ten feet from the kick, and it sounded great. We also used the E100 on some of the vocals." The primary vocal mic, though, was "a 414 that I just love," Lasus says. "It seems a little brighter and a little warmer than most. For a second mic, I used either the Equitek or a Sony C-38, which is a cool old '70s transistor mic." Besides the aforementioned Purkhiser compressor, Lasus also used quite a bit of Roland Space Echo on the sisters' vocals—he says "it blows away any other vocal effect I've ever heard."

Working on the 22 Brides record was "really satisfying all the way around," Lasus says. "Carrie and Libby have a great dynamic going, and they're really open to trying different things. It was all very smooth. They were looking for a departure from their acoustic folk sound, so we just went in and tried a lot of different sounds. I'm really happy with how it came out, and I think they were, too." ■

—FROM PAGE 317, WARREN ZEVON

ed that he would finally work alone and unsupervised. Inspired by the low-tech approach employed on his previous recording, the direct-to-DAT acoustic solo world tour record *Learning to Flinch* (Giant), Zevon decided that his next studio record would be cut primarily in the 6x8-foot pitched-roof loft of his L.A. apartment.

The loft is equipped with two stock Alesis ADATs, an Amek/TAC Bullet console (the same 10x4x2 broadcast board used to record



Head Studio
New York, NY
Input
Bernie Taupin

CREATING A HIGHER STANDARD

- Real-Time Dynamic Automation of all Functions
Including up to 8 Channel Panning
- Instant Recall of all Functions
- Remote Controllable Mic Pre Amps with Instant Recall
- 4 Band Fully Parametric EQ on all Channels
- Dynamics on all Channels
- 48 Multitrack Bus Routing
- 16 Auxiliary Busses
- Recallable 8 Character Slates on Channel Faders
- Interactive Touchscreen Video Graphics
- Centralized Channel Control of all Functions
- Assignable Remote Faders
- Moving Channel and Monitor Faders
- Traditional Inline, Layered, or Assignable Control Surface
- Configured for Music, Post, Film, and Broadcast

SERIES TWELVE

Sonic Excellence

Technical Superiority

 **Harrison**

See us at AES Booth #865

ANALOG

DIGITAL

HYBRID

Zevon live-to-DAT during 96 shows around the world), a Zoom box, a couple of AKG 414 ULS microphones, Sony Pro headphones, Tannoy PBM-8 monitors, an ancient Macintosh Plus computer with memory upgrades and Mark of the Unicorn 4.2 software, Alesis drum machine, custom drum samples and a Yamaha KX88 keyboard. Zevon composed music and laid down sequenced, vocals and guitar tracks, starting at around midnight (his preferred time to record) each night.

"One of the big advantages of this approach is that it eliminates demos. I dislike making demos because I'm lazy, and because we always think the studio vocal is never as good as the demo. Also, the demo process stops the compositional process dead. It's, 'Get it on tape so you can play it for the guys, then throw the demo away,'" Zevon explains. At home, Zevon continued to compose the songs on *Mutineer* as he recorded them.

Zevon claims that he is not at all technically adept. "ADATs are pretty simple; my engineer Duncan Aldrich set up the studio and showed me how it worked, and I wrote it down and tacked it on the wall. I said, 'Look, Duncan, you might as well not even try to explain the route to me, just make it so it happens.' When Duncan heard tracks, either over the phone or in person, he was always saying, 'Stop using the compressor, stop fooling around, don't do anything I can't undo!'" Having decided to make an uncluttered record, Zevon used only seven of his 16 available ADAT tracks for music; an eighth was used for a SMPTE stripe. He used his second ADAT machine only to make safeties.

Zevon was determined not to spend "all day singing the same thing until I lost my voice. There's a risk of losing whatever personality I have as a vocalist by attempting to record vocals in a more perfectionist way like other singers. All this maximizing the vocal tracks is a wonderful thing for technically better singers. If I knew that I could fix bar 47 like [Don] Henley could, I certainly would; I can hear that triplet, but I can't sing it. So rather than worry about bar 47, I thought, 'What will happen if I just go for performances?'"

"The vocals are very relaxed, and we both think they're his best yet," says *Mutineer* engineer and frequent

Zevon collaborator Aldrich. "He wasn't under the gun for the big hourly studio rate and didn't have people telling him he wasn't singing right. Vocal sessions can often be quite grizzly, but he was having the time of his life. The whole philosophy of this project was to let the art overcome the technology. Most of the vocals on the record are from the home studio; whatever punching-in there is on those vocals, Warren did himself at home."

Long thought of as primarily a pianist, Zevon's guitar leads, rarely heard on record, are some of the best elements on *Mutineer*. They burst out of quiet songs about love gone horribly wrong, snarling with suddenly released tension and fury. Zevon says the lead parts were in many ways "the most expressive part of the record, so being able to play them at home with the least amount of inhibition was very important." *Mutineer*'s electric guitar parts were recorded direct from Zevon's Steinberger through a Zoom box; the acoustic parts were both miked and recorded direct.

The completed ADAT cassettes were transferred to 24-track analog at Devonshire Studios in Los Angeles, which has an old Neve 8128 board with Flying Faders, and a Studer 827. In keeping with the desire to make an uncluttered record, Aldrich limited Zevon to seven tracks of overdubs for everything, including guest musicians such as bassist Larry Klein, Bruce Hornsby and Zevon stalwart David Lindley. The bass, drum and keyboard parts were regenerated using the SMPTE stripe. "The notes were there; we just re-did the parts under the superior sonic conditions at Devonshire," says Aldrich.

Aldrich says he did as little processing to the ADAT material as possible. "With synthesizers, you do what you can to make them not sound so lame, and my philosophy on this record was less is more. I did some light EQ and made some tender use of digital sound environments with a Lexicon 480, and we used a live reverb chamber on some tracks. But I tried to do the processing so that you would only notice it if it wasn't there—like putting the shine on a freshly painted car."

Simplicity being the order of the day, the sound of a toy piano on "Piano Fighter" (which recounts Zevon's history from a would-be

prodigy to his crisis with alcoholism following his initial success) was produced by Zevon actually playing a toy piano "just like ['Peanuts' character] Schroeder!" Aldrich says. "A sampled toy piano would never sound like that. It belongs to my neighbor's daughter, and it was in tune." The toy piano was recorded live with a Neumann 47 FET at Devonshire.

Zevon encountered many challenges recording at home in an apartment, starting at midnight, but fortunately noise complaints from the neighbors were not among them. He monitored his raucous guitar leads with headphones and noted that there is no neighbor on the other side of the wall of his loft studio. "That's one of the charms of my apartment, that this sort of thing is possible," he notes. "I'm always telling people that they could buy a house, and, if they tried to record at home, the sound could still travel perfectly across the Valley to annoy the neighbors." ■

—FROM PAGE 317, *YOUNG RASCALS*

before hooking up with young jazz and R&B drummer Dino Danelli to form the Young Rascals in early 1965. They were signed by Atlantic Records—considered a "black" label at the time—and began their five-year string of hits with "I Ain't Gonna Eat Out My Heart Anymore" in December 1965.

Around the same time the Young Rascals were picking up steam, a young Liverpudlian named Chris Huston had crossed "the pond" and was starting to get involved with studio work. He had been a member of the group The Undertakers and even done some road time with Joey Dee, whom he knew from the Starlighters' days at the Star Club in Hamburg, where The Undertakers occasionally gigged, following in the footsteps of you-know-who. The Undertakers' American manager, Bob Gallo, also co-owned (with Bob Harvey) a small Manhattan recording studio called Talentmasters, and Huston quickly learned that he was more intrigued with recording than with playing. At Gallo's urging, Huston turned down an offer to join Paul Revere & the Raiders to work as an engineer at Talentmasters. "I guess I was one of the first of a class of musicians who went into the studio and basically

TL AUDIO
INTERNATIONAL
DISTRIBUTORS

A & FAR EAST
VW MARKETING
TEL +44 (0)1379 798481
FAX +44 (0)1379 794009

AUSTRIA
TON EICHENGER
TEL +43 1 4865 165
FAX +43 1 4865 165

BELGIUM
AMPTIC
TEL +32 11 98 14 58
FAX +32 11 98 14 59

CANADA
SASCOM MARKETING GROUP
TEL +1 905 469 8080
FAX +1 905 469 1129

CZECH REPUBLIC
EMPIRE MUSIC
TEL +352 2 490479
FAX +352 2 490863

FINLAND
DAMISH AUDIO DISTRIBUTION
TEL +45 3168 9819
FAX +45 3165 2449

FRANCE
SOUND MEDIA LTD
TEL +358 0 510 2355
FAX +358 0 510 9557

GERMANY
MUSIC BUSINESS
TEL +33 1 43 38 15 95
FAX +33 1 43 38 70 79

HUNGARY
GROOVE MUSIC (S.E.A.)
TEL +49 5903 93 880
FAX +49 5903 6141

ITALY
SOUND CONTROL S.A. AUDIO
& VIDEO SYSTEM
TEL +30 1 8837 60930
FAX +30 1 8836 377

NETHERLANDS
AUDIO ELECTRONICS
MATTIJSSEN
TEL +31 90 699 04 80
FAX +31 90 699 36 41

NETHERLANDS
B.F. PA-SYSTEMS
TEL +31 4 1 191 44
FAX +31 4 1 619 144

INDONESIA
MULTI AUDIO PERKASA
TEL +62 21 699 6009
FAX +62 21 699 8453

JAPAN
PRODUK SRL
TEL +39 2 393 11571
FAX +39 2 393 12609

KOREA
HOOK UP INC.
TEL +81 33 643 5735
FAX +81 33 367 4778

PORTUGAL
MUNDO MUSIC
TEL +351 2 200 4616
FAX +351 2 208 4949

RUSSIA
A & T TRADE
TEL +7 095 978 2016
FAX +7 503 956 1105

SINGAPORE/MALAYSIA
SWEET LEE COMPANY
TEL +65 336 7886
FAX +65 339 7085

SPAIN
REFLEXION ARTS
TEL +34 86 48 11 55
FAX +34 86 48 20 65

SWEDEN
ESTRAD MUSIC
TEL +46 8 643 20 07
OR +46 8 640 12 60
FAX +46 8 702 20 16

SWITZERLAND
ZAP AUDIO
TEL +41 92 340 05 70
FAX +41 92 340 05 75

SWITZERLAND
NAGRA - BROADCAST
TEL +41 91 738 01 01
FAX +41 91 738 01 00

UNITED KINGDOM
TRUE SOUND TRADING CO. LTD
TEL +886 9 595 8512
FAX +886 9 594 0032

USA
SASCOM MARKETING GROUP
TEL +1 905 469 8080
FAX +1 905 469 1129

ADD THE WARMTH FEEL THE GLOW

NEW!

NEW!

"I first tested the TL Audio Vi-1 in conjunction with a Yamaha AD8X A-11 converter and a Sony 3324 digital multitrack. I was so impressed with the warmth and smooth bottom end that the unit added to the recording that I have ordered a Vi-1 for our in-house studio and for our hire stock."
Ian Silvester
Digital Audio Technology, London

TUBE TECHNOLOGY

Give your recordings the rich, warm glow of Tube Technology, a series of tube based mixers & signal processors. Take for example the new Vi-1 interface, which offers 8 channels of tube warmth making it the ideal partner for digital multitracks, hard disk systems, stereo mastering & copying. Then there's the superb new EQ2 - a sophisticated, twin channel, parametric 4 band Tube Equaliser. Both these new additions offer the smooth sound, very low noise floor, quality construction & everyday affordability that only TL Audio can deliver.

To feel the glow contact your nearest authorised dealer.

AES 95 BOOTH #1118

THE TL AUDIO TUBE RANGE

\$2395

EQ2 Stereo Tube Parametric EQ
4 band parametric, variable filters, mic-amps, +48v phantom power, dual mono or stereo linked modes.

\$795

Vi-1 8 Channel Tube Interface
Line amp, balanced ins & outs, unbalanced compatible, level matching for -10dB & +4dB equipment.

\$5995

8:2 Tube Mixer

\$595

Dual Tube Mic Pre-amp/DI

\$1695

Dual Pentode Tube Pre-amp

\$1595

Dual Tube EQ

\$1795

Dual Tube Compressor

**SASCOM
MARKETING
GROUP**

For US & Canada Sales
Tel: +1 905 - 469 8080
Fax: +1 905 - 469 1129

TL Audio

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

USE READER SERVICE CARD FOR MORE INFO

World Radio History

MIX TO THE FUTURE



Digital audio has just taken a major step forward. Actually, make that a leap. At 44.1 or 48KHz sampling rates, the new Pioneer D-9601 is already amongst the best featured, highly engineered, and great sounding professional mastering DAT recorders that money can buy. But that is, quite literally, only half of the story. Switch to 88.2 or 96KHz Hi-Sampling and the sonic improvements are astonishing, adding depth to the sound stage, definition to fast staccato sounds and, dare we say, an almost "analogue" fullness to low and mid-range tones.

HSDAT

H I G H S A M P L I N G

What's more, the D-9601 will faithfully sample rate convert your HS DAT recordings back to 44.1 or 48KHz. So not only will your masters display superior fidelity on the advanced music and video formats currently being developed, they will also remain reassuringly compatible with the CD, MiniDisc and LaserDisc formats of today. And with two D-9601s, you can even make 44.1 and 48 KHz double speed copies via the AES/EBU digital I/O.

The Pioneer D-9601 is the future of DAT. See it at an HHB DAT Center today.

For full details of the Pioneer D-9601 Hi-Sampling DAT recorder, please mail this coupon to Independent Audio

Name: _____

Address: _____

Tel: _____

Independent Audio Inc - 295 Forest Avenue Suite 121, Portland, Maine 04101-2000, USA - Tel: 207 773 2424 - Fax: 207 773 2422 - E-Mail: 75671.3316@compuserve.com

Studer Canada Ltd - 1947 Leslie Street, Toronto, Ontario M3B 2M3, Canada - Tel: 416 510 1347 - Fax: 416 510 1294

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

MIX



USE READER SERVICE CARD FOR MORE INFO

World Radio History

said, "Let me have at it," Huston says.

"Talentmasters was this little place on 42nd Street," he continues. "The actual control room was no more than 12-foot-square, and it had a Presto lathe in the back. It had four Ampex MX10 mixers, with a little mic/line switch on the last one, four Pultec equalizers and four Hammond K10 spring reverbs. So it was pretty simple, but so much great music happened there. My engineering didn't really involve much, though. It was basically just turning a few knobs to capture a performance. There was not a lot of sophistication in engineering. In those days, we were documenting a performance, whereas today engineers help create a performance."

Atlantic Records used the room so much that they bought the studios from Harvey and Gallo, changed the name to Incredible Sounds, and then essentially turned over the operation to producer Bert Berns, who briefly ran an Atlantic custom label (BANG) until his sudden death in December 1967. "Atlantic had the place going night and day," Huston remembers. "We did Ben E. King there, The Drifters, Solomon Burke, Patti LaBelle, Mary Wells, Question-Mark & the Mysterians, Van Morrison, The Rascals..."

Huston already knew The Rascals through his association with Joey Dee, "so when I finally got to work with them [in early 1967], we didn't have to go through that sometimes awkward period of breaking the ice. They were a little different from the setups I'd been working with normally, because usually at Talentmasters we were working with sessionmen for the big artists, and in those days, people would rehearse until they got it right, even with the string section in there playing along with them. We only had 12 inputs, because the MX10s had three mics on each. But sometimes we'd have 28 people—like when we did James Brown, we had 12 inputs for 28 people live. So it was not unusual to find the musicians rehearsing for hours to get it right. I'd be circling the room, listening, getting a feel, because as an engineer then, your job was to take the energy of the room and add to it if you could."

For The Rascals, though, "The tracks were built," Huston says. "You recorded on four tracks of a 4-track machine, submixed down to two tracks of another 4-track and pro-

ceeded from there. The piano we had wasn't very good, but it worked well enough, I guess. The mics were fine. The esoteric mics that everyone bows down to today were our everyday tools. We had a 47 that we used on vocals, and I remember we had a lot of 56s. I made a little platform for Eddie [Brigati] to stand on around the microphone, because he's so short. Also, we brought in Davey Brigati, Eddie's brother, who also played with Joey Dee, to help out with the background vocals. They all had those wonderful Italian voices; so sweet. That's what was most amazing to me about The Rascals—those voices. And it wasn't just the notes they hit, but their choice of notes.

"By the time I worked with The Rascals, we were starting to work out parts more in the studio, because the ability to ping-pong opened up a lot of doors, and sometimes you wouldn't know exactly where a track was headed until you'd heard some of that [layering]," he says. "Still, it usually came down to the rhythm section on one track—that was mono drums and bass; horns and strings on one track; lead vocal on another; and then background vocals on the other. On The Rascals, we'd usually use eight or nine tracks total; no more than that.

"Groovin" was written by Cavaliere and Eddie Brigati and recorded March 27, 1967. It marked something of a departure for the band in that it featured a very relaxed, vaguely Latin groove laid down by Danelli's congas, rather than conventional rock n' roll trap drums. Gene Cornish usually played bass, but for this session, "without really thinking of the politics of such a move, I brought in Chuck Rainey [from King Curtis' band], and that was literally his first job as a session player," Huston says. "There was no looking back for Chuck after that—he ended up playing on a lot of Aretha Franklin's best stuff, and so much more, of course." The track is also notable for Cavaliere's soulful lead vocal, the distinctive high harmonica line (played, Huston says, by the studio's janitor, Michael Wienstein), and the cheesy, but effective, bird noises contributed by Huston and Brigati. The Rascals produced their own sessions—a rarity in those days—but with plenty of input from Huston, the group's manager Sid Bernstein, and Atlantic staff producers

—CONTINUED ON PAGE 347

COMPACT DISC • CASSETTE
& RECORD MANUFACTURING

WHAT
MAKES
YOU
SO
DAMN
GREAT?

(WE KNOW!)

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

USE READER SERVICE CARD FOR MORE INFO



HEAD RELAPPING

The contour and performance of your heads are restored to factory specifications before a precise optical/digital assembly alignment is performed. Original replacement heads also in stock.



MOTOR REBUILDING

Your Capstan, Reel, and Tachometer motors are rebuilt to quiet, flutter free perfection.



— Become an AMP SERVICES customer and enjoy a level of quality workmanship and individual attention rare in today's business environment. Call:

Audio Magnetic Professionals

AMP SERVICES INC

224 Datura Street, Suite 614
West Palm Beach, FL 33401

1 (800) 826-0601 In Florida (407) 659-4805

Authorized OTARI, SONY, TEAC Parts Dealers

by Philip De Lancie

TAPE & DISC NEWS

T

ELEMETRICS OFFERS DIGITAL BIN

High-speed cassette duplication equipment manufacturer Versadyne has branched into the digital bin market with the founding of Telemetrics, a new affiliate company specializing in digital master reproducers for duplication lines. The company's first product will be the DBS-1000 system, which includes a mastering station

the price of currently available systems." The economy is achieved by designing the bin around two RAID (Redundant Array of Independent Disks) hard disk arrays (one for each side of the cassette), rather than using the more costly RAM storage approach favored by Telemetrics' competitors. Hard disks were used in the original bins offered by industry pioneer Concept Designs some eight years ago, but RAM-based systems were found to offer better reliability. Telemetrics appears to be banking on the idea that the substantial evolution in hard disk technology over the past few years now makes the disk-based approach feasible.

The DBS-1000 uses Pentium-based computers as CPUs for both mastering and duplication stations. The system has 16-bit linear converters, selectable output bus configurations, slave recorder control, cue tone generation and a built-in "production totalizer" for monitoring up to 24 slaves. The mastering station uses simultaneous real-time loading of A- and B-side programs from DAT via an AES/EBU bus, with the B-side reversed during download. Program data

and format commands (including EQ, record level and bias information) may be stored along with the program.

VHS BLOOMS AS DVD WAR LOOMS

Rival groups of digital video disc (DVD) proponents may be staking their claims to the future of the CD as a video and multimedia format, but



and a hard disk-based digital bin. The system offers 64:1 and 80:1 duplication ratios at a 44.1kHz sampling rate, as well as 128:1 at 32 kHz.

The DBS-1000 is aimed at the low end of the price spectrum in digital bins, which generally have been within reach of only the most prosperous duplicators. Telemetrics says the system will sell for "less than half

Bottom Line:
{ If sound really matters, there's just no other choice. }

The Legacy.



FOR INFORMATION ON THE API LEGACY CONSOLE CALL DAN ZIMBELMAN, DIRECTOR OF CONSOLE SALES
PHONE (708)653-4544 FAX (708)665-4966 COMPUSERVE:102071,2534

JAPAN: HENRY DIENN, TIMELORD LTD PHONE 011-81-3-3794-5575 FAX 011-81-3-3794-5605

UK: PETE WANDLESS, THE SOUND NETWORK LTD PHONE 44-1225-743848 FAX 44-1225-742155

API AUDIO PRODUCTS, INC. 7655-G FULLERTON ROAD, SPRINGFIELD, VA 22153 PHONE (703)455-8188 FAX (703)455-4240

See us at AES Booth #256


World Radio History
USE READER SERVICE CARD FOR MORE INFO

**COMPLETE!
RETAIL
READY!**



**SAS INDUSTRIES
INCORPORATED**
1-800-955-7271

**Digital Bin
Cassette Duplication
CD Replication
Video Duplication
Digital Editing
Graphic Art Services**



**1,000 CDs &
1,000 CASSETTES**
\$2,895

**FREE CATALOG
FREE DIGITAL BIN DEMO
CALL 1-800-955-7271**

USE READER SERVICE CARD FOR MORE INFO

AUDIO LEVEL INDICATORS



These high-quality, audio level meters give you near-spec performance at a very favorable price. Rugged, space-efficient core magnet design with taut-bond suspension is ideal for broadcast or recording equipment in studio, stage, or location applications. Dials are buff with black and red markings. Styles are available for front- or back-of-panel mounting, with and without bezels. Request catalog today.

SELCO ▲ ▼ SELCO

HANDSOME



COLLET KNOBS

Selco's collet knobs meet the highest standards of precision, durability, performance, and beauty. Solid brass hardware is permanently bonded to a matte-finish, 94V-2 nylon body. Black or gray, with snap-on cops in a wide selection of standard and special colors. Full range of sizes, types, and accessories. Attractive OEM prices.

Request full-color knob catalog today.

SELCO PRODUCTS CO.
7580 Stage Road, Buena Park, CA 90621
(714) 521-8673, or (800) 229-2332
FAX (714) 739-1507

TAPE & DISC

consumers are showing little dissatisfaction with the product that the new high-density CDs are designed to replace: videotape. According to figures released by the ITA, U.S. unit shipments of blank VHS cassettes rose 11% in 1994, while sales of VHS pancakes jumped a whopping 30%. (Blank audio cassettes, meanwhile, showed a mere .3% rise in unit volume, with a 4.1% drop in dollar volume.)

Unless (and even if) agreement can be reached between backers of the MMCD (Sony/Philips) and SD (Time Warner/Toshiba) versions of DVD, high-density CD is likely to have a hard time competing against the near universal VHS format, especially since the discs are not recordable. Commenting on the probable effects of a format war at the Replitech conference in Santa Clara, Calif., industry watcher Ted Pine of Infotech said he foresees an adoption rate that "will underperform the initial adoption rate of CD-Audio." In computing applications such as multimedia, Pine expects that in the "worst case...the high-density format war will prolong the life of normal-density CD-ROM."

SONIC ADDS CD-PLUS SOLUTIONS

Sonic Solutions has announced plans to debut a new set of tools designed to enable users of its audio workstations to write CDs in the multisession "CD-Plus" format, with audio tracks in the first session and multimedia data in the second. Sonic Solutions has also announced that it is cooperating with REV Entertainment to provide tools for building a series of CD-Plus titles for major labels including Warner Bros., Sony, Atlantic and Elektra.

SPLICES

JRF Magnetic Sciences (Greendell, NJ) supplied T-bar head mounts to two high-speed duplicators. National Tape (Nashville, TN) installed the mounts on 19 ES-8000 slaves, with an additional 35 slated for upgrade soon, while Michelle Audio (Messena, NY) upgraded 20 ES-8000s and 50 Gauss 1200s, as well as two Electro Sound loop bins. The mounts improve azimuth alignment by replacing shims with a tapered set screw... Novato, CA's KABA Research & Development is offering Saki ferrite recording heads as original equipment in its real-time and double-time in-

cassette duplication systems. Saki (Calabasas, CA) also reports the sale of ferrite heads to Russian duplicator RONEES for installation in Electro Sound high-speed slaves... Electro Sound (Sun Valley, CA) sold Series 9000 high-speed audio dupe systems to Marsal Productions (San Antonio, TX), The Teaching Company (Springfield, VA), Digital International Corp. (North Hollywood, CA) and Cold Call Cowboy Productions (Palm Desert, CA). Sister company Gauss, meanwhile, made duplication sales to Jackson Sound Productions (Englewood, CO), which added slaves, and Northwestern (Portland, OR), which purchased a MAX digital bin... Versadyne (Campbell, CA) delivered a turnkey high-speed audio duplication system built around a 1/4-inch 1000 Series master to KASA in Phoenix, AZ. Also in Phoenix, Versadyne sold Series 1000 and Series 1500 slaves to Global Cassette. In international sales, a 1000 Series system went to SonoTec in Bogota, Colombia and a 1500 Series system to Shunde Jixin Industry in China... Greencorp Magnetics (Sydney, Australia) purchased coating, slitting, milling and test equipment to expand its cassette tape manufacturing operations... Rank Video Services America began operations at a new 235,000-square-foot, \$36 million manufacturing center in North Little Rock, AR. The plant will have an annual duplication capacity of 74 million feature-length video cassettes... At CMS Digital (Pasadena, CA), engineer Robert Vosgien mastered the new Van Halen single for Warner Bros... Digital Domain (New York City) mastered the new Toulouse Engelhardt CD for Sierra Records, as well as remastered a 1973 concert album from Gram Parsons... Rykodisc remastered the Frank Zappa album *Strictly Commercial* at SAE Mastering in Phoenix, AZ. Other labels working at the facility recently include Blind Pig, Flying Fish, Sub Pop, Touch & Go and RCA... San Francisco's Rocket Lab was the scene of mastering work by Paul Stubblebine on new albums by Harvey Mandel and Henry Kaiser, as well as mastering by Ken Lee of a new album from the Drifters... Phil Austin of Trutone (Hackensack, NJ) wrestled with mastering the new Hulk Hogan album, while colleague David Radin handled new releases from Matador and Ichiban Records. ■

A Work of Art can easily be spoiled by digitizing...

...so can Music



When Genesis began re-mastering their back-catalog they wanted the best A/D converter money could buy. They tried a Prism Sound AD-1 at London's Abbey Road Studios...

...then they bought one.

"the Prism Sound AD-1 was the best sounding converter we could lay our ears on".

Geoff Callingham (Engineer)

To **experience** music in **full color** and **fine detail** ask your Prism Sound representative for a **demonstration**, or call us at the address below.



DA-1 Digital to analog converter

AD-1 Analog to digital converter

SNS 4-curve noise shaper



MR-2024 16, 20 & 24 bit

interface for DA-88

PRISM MEDIA PRODUCTS INC.
121 STATE HIGHWAY 35
RED BANK, NJ 07701
TEL: (908) 747 7272
FAX: (908) 747 2871
E-mail: 74631.1001@compuserve.com
USE READER SERVICE CARD FOR MORE INFO

ORIGINAL PAINTING BY PIERRE BONNARD (1867 - 1947)
MADAME BONNARD ET SON CHIEN 1916

C O A S T

L.A. SESSION SPOTLIGHTS ■ BY ADAM BEYDA

Tonic, Andora Studios

Soon after L.A. alternative four-piece Tonic signed to Polydor/Atlas, the label put out a producer's cattle call. After meeting with several candidates, the band chose to work with formidable producer/engineer Jack Joseph Puig, whose voluminous discography includes credits with bands such as Belly, the Black Crowes and Jellyfish.



Tonic mixed their upcoming Polydor/Atlas debut at Andora Studios in Hollywood. Posing in front of the Wall O' Outboard in Studio B are (L to R) producer/engineer Jack Joseph Puig, bassist Dan Rothchild, vocalist Emerson Hart and guitarist Jeff Russo.

Puig tracked Tonic at Ocean Way and tracked and overdubbed at Sound City and Sunset Sound Factory. Come mix time, Puig chose to work in Studio B at Andora Studios in Hollywood, where he has mixed several other albums. The room

—CONTINUED ON PAGE 338

Weapon of Choice, NRG Recording

When funkmeisters Weapon of Choice went into North Hollywood's NRG Recording Services this summer, they were only planning on cutting a remix of a single. Maybe it had something to do with the vibe at the commodious, studio-bau-ton-designed facility, but creative mayhem ensued, and the funk just wouldn't stop: After three weeks, the band emerged with an album's worth of new material.

The LP, *Hoorasion of the Body Hatchers*, is slated for a January '96 release and will be the band's second album for the Loosegroove label, headed by Pearl Jam guitarist Stone Gossard. Gossard produced, working with producer/engineer Matt Wallace (known for his work with Faith No More,

—CONTINUED ON PAGE 344

Loosegroove Records recording artists Weapon of Choice at NRG Recording Services: front (L to R) are Regan Hagar (Loosegroove co-owner), Mark (backing vox), Finn (guitar), John Ewing Jr. (second engineer) and producer/Loosegroove chief Stone Gossard. In the back are Audra (backing vox), band manager Von, Lonnie (bass, vox) Tom-Bone (trombone), engineer Matt Wallace and Keefus (keyboards).



C O A S T



PHOTO: WALTER SEAR

SESSIONS & STUDIO NEWS

by Adam Beyda

NORTHEAST

Richard Stoltzman was in at BearTracks in Suffern, NY, recording for the BMG Classics label. Jeremy Wall produced the session, with Larry Swist engineering and Steve Regina assisting... The Fun Lovin' Criminals tracked their self-produced EMI debut at New York's Magic Shop. Tim Latham engineered with Juan Garcia assisting. Producer John Agnello was also in mixing the new Triple Fast Action release on Capitol... TAANG! recording artists The Swirlies mixed their latest material with engineer/producer Rich Costey at Boston's Sound Techniques. Dave Kirkpatrick assisted... Phil Greene mixed the new Roomful of Blues album on Rounder Records' Bullseye Blues label at Normandy Sound Studios in Warren, RI. Roomful leader and trombonist Carl

—CONTINUED ON PAGE 334

New York session: At tube gear Mecca Sear Sound (on the West Side), the lads took a break from recording the forthcoming debut release of new Geffen band Hunk. Shown are (L to R) engineer Bil Emmons, assistant Tom Schlick and producer Don Fleming.

NY METRO REPORT

by Dan Daley, Georgie Jessel & Charlie Callas

Howard Schwartz—you know, of **Howard Schwartz Recording**—is celebrating his 20th year in showbiz this year. He figures success is just around the corner. Any day now. But seriously folks, Howard is a New York institution. In fact, he's been institutionalized numerous times. But you know, Howard has done very well for himself. Howard made his first money in real estate—his thighs went condo in 1977. The height of the market, no less! One thing you can say for

—CONTINUED ON PAGE 344

*Howard Schwartz
at Howard Schwartz Recording*



PHOTO: STEVE PREZANI

New York session: Lou Reed was in at SoHo facility The Magic Shop cutting tracks for a self-produced future Warner Bros. release. Pictured in front of the studio's vintage custom Neve wrap-around, Reed is flanked by Steve Rosenthal (L), studio owner and engineer for the project, and Joe Warda, assistant engineer.

—FROM PAGE 333, SESSIONS

Querfurth produced, assisted by guitarist Chris Vachon...Matt Johnson (a.k.a. The The) was in at Sear Sound (NYC) recording for Sony UK with engineer Bruce Lampcov. Sear staffer Bil Emmons engineered for Geffen behemoths Boss Hog, produced by Steve Fisk, with assistants Tom Schick and Fred Kevorkian. Mixdown was done on the studio's rebuilt Ampex 300 ½-inch tube recorder...Smoothie Michael Franks was in at the Make Believe Ballroom in West Shokan, NY, working on a new project for Warner Bros. with producer Matt Pierson and producers Russell Ferrante and Jimmy Haslip of the Yellowjackets. Tom Mark engineered...Tom Dowd was at Sheffield in Phoenix, MD, working on a television special for the Allman Brothers Band, with Fred Derby engineering. Sheffield's remote truck was recently working on a jazz and a gospel series

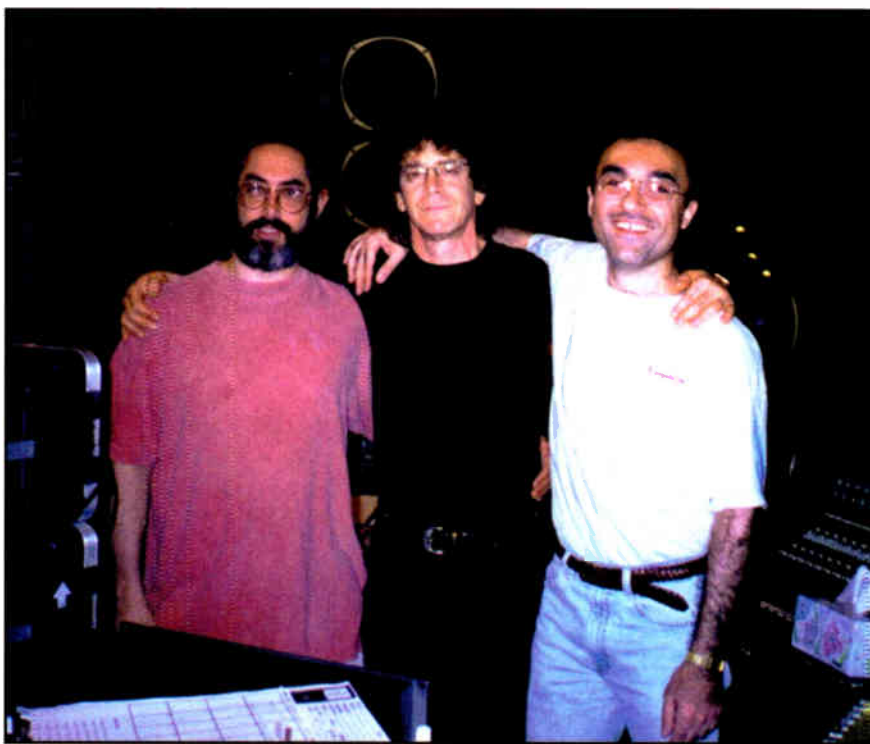


PHOTO: JANET CARROLL

for Black Entertainment Television at Washington, DC, locations. Bill Mueller and Robert Jackson engineered...

SOUTHERN CALIFORNIA

Heart-melting chanteuse k.d. lang completed her latest Warner Bros. re-

lease at Encore Studios in Burbank with Ben Mink producing and Marc Ramaer mixing. David Betancourt assisted. Quincy Jones was also in mixing his new Warners album with engineer Tom Vicari and assistant Carlos Warlick...311 was at NRG Recording

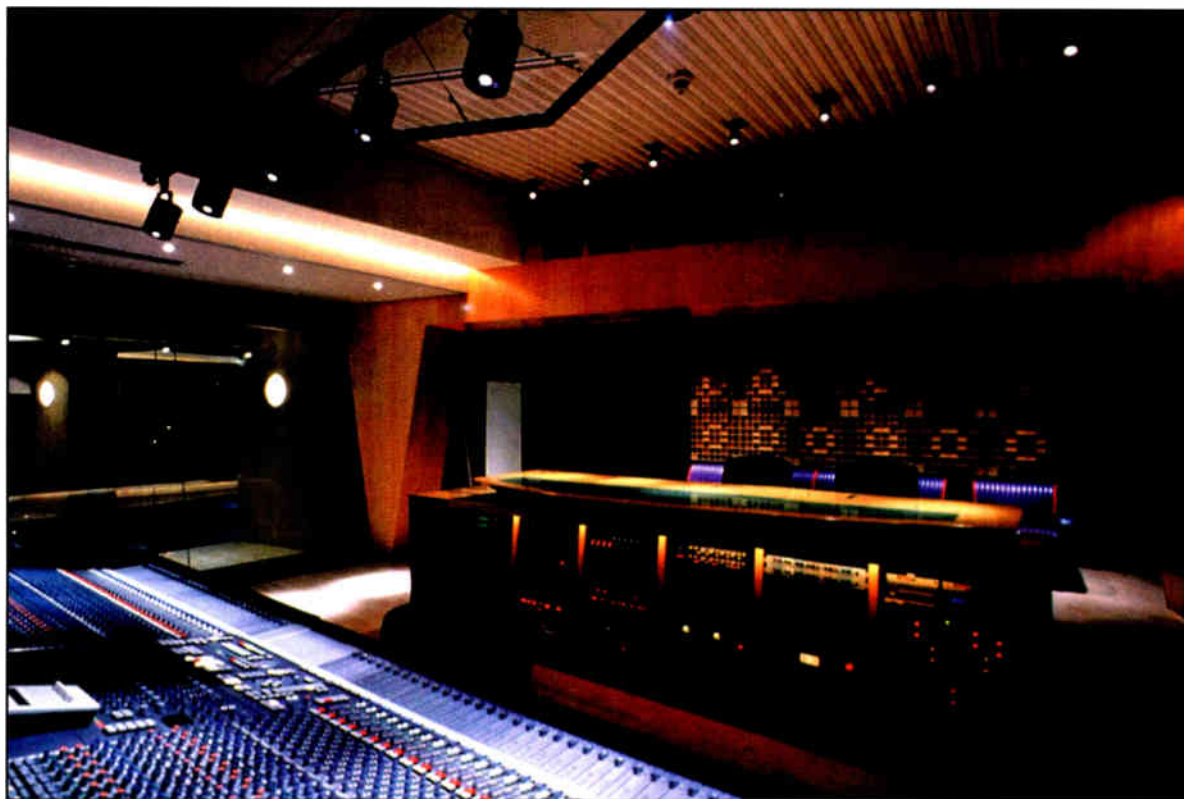


PHOTO: DOUG TOMLINSON

This is the control room at Whitney Houston's new personal studio in Mendham, N.J., designed by the Russ Berger Design Group. The room is based around an SSL 9000 console and features 48-track digital and 24-track analog Studer recorders and a custom Quested monitoring system. The facility also includes a tracking room and a piano room.

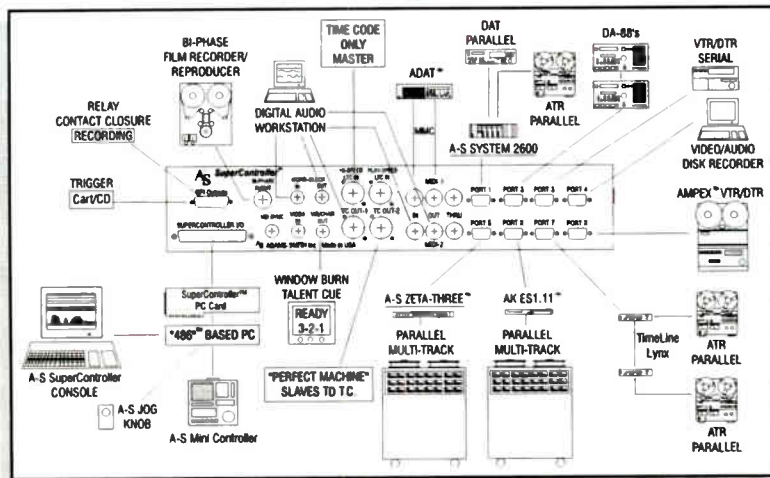
in North Hollywood with producer Ron St. Germain, engineer Scott Ralston and assistant John Ewing Jr. working on their latest project for Capricorn Records...Red Five were in Sound City in Van Nuys cutting their Interscope debut with producer Matt Wallace and engineer Tony Phillips. Jeff Sheehan and Billy Bowers assisted...At Skip Saylor Recording in L.A., legendary modern-rockers Love & Rockets were in tracking and mixing their upcoming self-produced American Recordings release with engineer Sylvia Massey. Atlantic act Brandy was in mixing her single "Broken Hearted." Soul Shock & Karlin produced with Jay Lean engineering. Erin McInnes assisted on both sessions...Songwriters Robin and Judithe Randall recorded a new number for the show *Baywatch* at Tutt & Babe Music in Santa Monica. Guy Marshall produced...

NORTHWEST

Producer Dennis Herring tracked the Restless Records debut of the Penny Dreadfuls on the API in Studio B at Bad Animals/Seattle. Chris Fuhman engineered, and John Burton assisted...Jazzman Mark Murphy recorded his latest LP at Triad Studios in Redmond, WA, with engineer Mark Yeend...

NORTH CENTRAL

Producers Chad Elliott and Big Jimmy Wright and engineer Jeff Taylor cut vocals with Stokely (lead singer of Mint Condition) at Flyte Tyme Studios in Minneapolis on a remake of the Isley Brothers' "Make Me Say It Again Girl" for the *Dead Presidents* soundtrack...Irascible recordist Steve Albini tracked indie darlings Silkworm at The Chicago Recording Co. CRC also had the Freddy Jones band in recording their second Capricorn LP with producer/engineer Justin Niebank...Doug Olson was at Smart Studios (Madison, WI) mixing a Warner Bros./Canada debut release for Weeping Tile...Marshall Vente mixed his new Southport CD *Tropicale* at Chicago's Sparrow Sound Design with engineers Jim Massoth, Joanie Pallatto and Patrick Halliwell. Halliwell was also mixing Native American artist James Yellowbank for a Northport release...Peace Tree spent three weeks at Spiral Studios in Cleveland recording a ten-song CD for Fish Face Records. The sessions were en-



MACHINE CONTROL FOR ANY MACHINE:

SUPERCONTROLLER MACHINE CONTROLLER

Introducing the Adams-Smith SuperController/MC™—a revolutionary new audio/video machine control system. Synchronize and control multiple studio devices—audio/video transports, digital workstations, film dubbers, or Midi products—most, without expensive and complicated synchronizers! Provides absolute speed control of digital workstations and transports with resolved wordclock and precise varispeed for re-syncing material. Allows sub-frame accurate edits including track select of all available analog or digital tracks. And this is only the beginning!

For the cost of individual remotes, you can now have the power of the SUPERCONTROLLER

Visit AES Booth #924



34 Tower St • Hudson, MA 01749 • 508/562-3801

USE READER SERVICE CARD FOR MORE INFO

Records' artist Albita Rodriguez was also in the studio completing her new LP, *No Se Parece a Nada*, with executive producer Emilio Estefan Jr., co-producer Juan R. Marquez, and engineers Scott Perry and Freddy Piñero Jr...Atlantic Records artist Tracy Lawrence was in Criteria Studios (Miami) to work on vocals for his next release with producer Don Cook, engineer Mike Bradley and assistant Steve Robillard. Metro Blue/Capitol act Nil Lara was also in finishing up his label debut with co-producer/engineer Susan Rodgers and staffer Chris Carroll in Criteria's Augsburg-designed Neve 8078 room...

SOUTHWEST

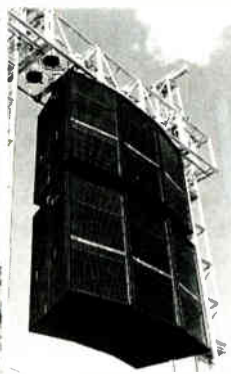
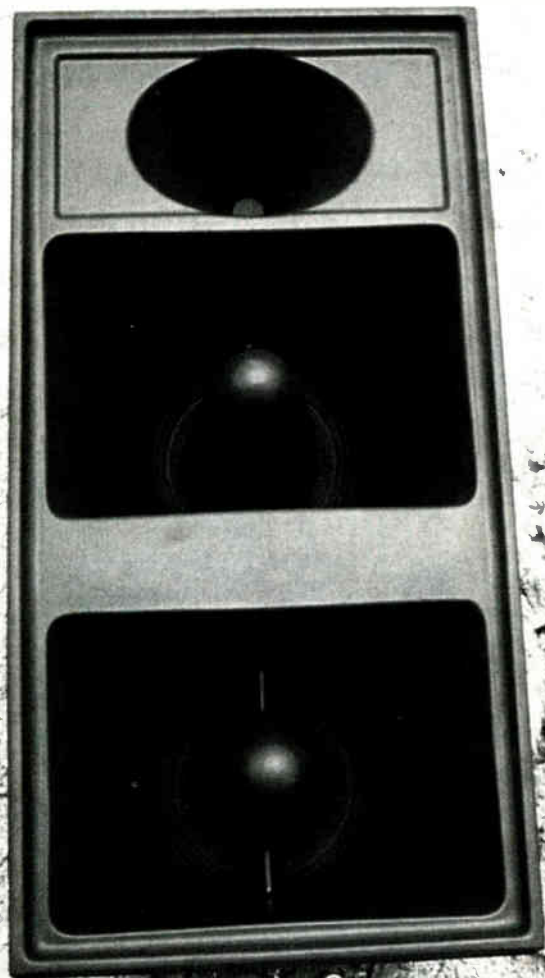
Recent sessions at Arlyn Studios in Austin, TX, included Steven Doster (produced by Jay Aaron and engineered by Stuart Sullivan and Larry Greenhill) and Guy Forsthe for An-tones Records (produced and engineered by Sullivan). Meanwhile, at Arlyn's sister studio Pedernales in nearby Spicewood, Ruben Ramos was in working on a Bobwire Records release with producer Joel Guzman and engineer Spencer Starnes, while Todd Snyder was produced by Mike Utley and engineered by Sullivan for Margaritaville/MCA...

STUDIO NEWS

New York's EastSide Sound opened a new mixing room, moving their fully automated Harrison Series 10B over from the tracking room. Installed in place of the Harrison was a pre-80 Series Neve console that the studio acquired recently, which features David Manley tube modifications by Craig "Hutch" Hutchison, 24 Neve 1064 modules and Flying Faders automation. The console also houses two rare Neve 2252 and 2253 compressor/limiters...Nashville facility Masterfonics is completing work on a new 8,500-square-foot building featuring a Tom Hidley-designed, Infrasond-ready control room, scheduled to open this month. The room will be equipped with a newly purchased Solid State Logic SL 9080 J Series console...Two-year-old Room One Recording in Tacoma, WA, is expanding, adding office space and a new Pro Tools III editing/mastering suite. Recent music sessions include The Rhino Humpers and Happy Socks...Five Towns College in Dix Hills, NY, expanded its music video facility, adding Sony 1/2-inch A/B roll editing equipment and a Grass Valley switcher. ■

viking audio®

Most loudspeaker systems cost a lot more than the price of their individual components. Only Viking Audio offers an extensive line of high quality enclosures without drivers. Save thousands of dollars by installing the drivers yourself - a simple task taking less than one hour per cabinet.



Consider the MCW-2. It is a medium to long-throw system finished in fiberglass, for use with two 15" 2226's and a 2446 compression driver.

For more information contact Michael Crichton and request a free catalog.

MCW-2
\$870*

Dealer inquiries welcome

viking audio

Juárez 51, Col. El Colli
C.P. 45070 Zapopan, Jalisco, México.
Tel. (3) 628-3950 Fax (3) 628-3694

*Suggested retail price for enclosure only - drivers not included. Shipping and handling extra.

USE READER SERVICE CARD FOR MORE INFO

—FROM PAGE 332, TONIC, ANDORA STUDIOS

has been heavily booked of late—in the past year, artists ranging from Tom Petty (*Wildflowers*) to the Red Hot Chili Peppers (the new *One Hot Minute*) have mixed there—and its popularity is no fluke.

Studio B is equipped with Genlec 1035A mains and a Studer A800 recorder, and it features a hot-rod-ded Neve 8078 with GML automation that Puig says sounds amazing. He adds that Andora is a great place to mix because "you walk in and throw the faders up and the room doesn't lie to you, but it allows you to manipulate what you want to very comfortably. It's only a function of the fact that the signal chain is so clean and the monitoring is so accurate that you're really able to manipulate it the way you need to, if necessary."

Although the studio has plenty of outboard gear, for the Tonic mix Puig brought in some 130 pieces from his personal stash. "It's a wide-ranging collection of all different kinds of stuff," he says. "I have old tube compressors that were made in

Where do you go for that pro audio feel?

You're not far from the solution. In fact, it's right at your finger tips: CLAROSTAT Modular Potentiometers. Words alone can't describe the quality, but you can feel it. Even, consistent, unit after unit, each one the same. Nothing else quite like it. We call it the Magic Touch. And there's more:

- Modular 1/2", 5/8" and Metrics.
- Singles, duals, quads.
Or gang up to eight units.
- Versatile. Over a million configurations including electrical and/or mechanical phasing; laser trimming;

Turn here.

multiple shaft, bushing, terminal, resistance, taper and tolerance options; switch, pot/switch, push-pull switch,

concentric shafts and... whew!..still more.

Get your hands on a sample and discover why the world's leading audio console makers specify CLAROSTAT controls. It's music to your fingers.

Featuring...

Magic Touch
the pro-audio feel.

For information, call 800-874-1874

CLAROSTAT
PANEL CONTROLS

1500 International Parkway, Suite 100
Richardson, Texas 75081 USA FAX: 214-479-1220

A product of...

CLAROSTAT
SENSORS AND CONTROLS GROUP

USE READER SERVICE CARD FOR MORE INFO



"THE PROFESSIONAL'S SOURCE . . ."

FOR ORDERS CALL:

800-947-5508
212-444-6698

OR FAX (24 HOURS):

800-947-9003
212-444-5001

**OVERNIGHT AND RUSH
SERVICE AVAILABLE**

E-Mail at 76623.570@compuserve.com

TANNOY System 6 NFM II

A 6.5 inch Dual Concentric with Tulp HF wave guide forms the heart of the System 6 NFM II providing a reference single point source monitor in a more compact enclosure than ever before. Every aspect of design fully complements the drive unit's capability. The rigid cabinet with carefully contoured baffle and trim minimizes diffraction and the high quality minimalist DMT crossover and gold-plated Bi-Wire terminal panel optimize the signal path. Pin-point stereo accuracy with wide frequency response, good power handling and sensitivity make this an ideal nearfield monitor.

PBM Series II Reference Monitors

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



PBM 5 II

- Custom 5" injection-molded bass driver with a nitrile rubber surround for extended linearity and accurate low frequency reproduction. They are better damped for reduced distortion and exhibit more natural open and detailed midrange.
- Woofer blends seamlessly with the 1" polyimide soft dome tweeter-cooled tweeter providing extended bandwidth for extremely precise sonically-balanced monitoring.
- Designed for nearfield use, the PBM 5 II cabinets are produced from high density medium for minimal resonance and features an anti-diffraction radiused front baffle design.

PBM 6.5 II

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

PBM 8 II

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

Stewart PA1000/1400/1800 Power Amplifiers

- High frequency switch mode power supply fully charges 120,000 times per second (1000 times faster than conventional power supplies) requiring far less capacitance for filtering and storage.
- High speed recharging also reduces power supply "sagging" that affects other designs.
- Incredibly efficient, 5 PA-1000 or PA-1400's (4 PA-1800's) can be run on one standard 20 amp circuit. There is no need for staggered turn-on configurations or other preventive measures when using multiple amp set-ups, as current draw during turn-on is only 6 amps per unit.
- They produce smooth and uncolored sound, while offering very full detailed low end response and tons of horsepower.
- They carry each a 5 year warranty on parts and labor.

PA-1000 weighs 9 lbs. is 15" deep and occupies one standard rack space. Delivers 1000 watts into 4Ω when bridged to mono.
PA-1400 weighs 16 lbs. is 15" deep and takes 2 standard rack spaces. Delivers 1400 watts into 4Ω when bridged to mono.
PA-1800 weighs 17 lbs. is 17" deep and takes two rack spaces. Delivers 1800 watts into 4Ω when bridged to mono.

TASCAM M-2600 Series 16/24/32 Channel Eight Channel Mixers

LOW NOISE CIRCUITRY

- Combining completely redesigned, low noise circuitry with Absolute Sound Transparency™ the M-2600 delivers high-quality extremely clean sound. No matter how many times your signal goes through the M-2600, it won't be colored or altered. The signal remains as close to the original as possible. The only coloring you hear is what you add with creative EQ and your onboard signal processing gear.

- Double reinforced grounding system eliminates any hum. World-class power supply provides higher voltage output for better headroom and higher S/N ratio.

PREMIUM QUALITY MIC PRE-AMPS

- The M-2600's mic pre-amps yield an extremely low noise floor, enormous headroom and an extremely flat frequency response. This lowers distortion and widens dynamic range. It also increases gain control to an amazing 51dB. Plus, you get phantom power on each channel.

- The M-2600 accepts balanced or unbalanced 1/4" inputs, and low-impedance XLR jacks. Better still, the TRIM controls operate over a 51dB input range. For the hottest incoming signals, all it takes is a press of the -20 dB PAD button atop each channel strip to bring any signal down to manageable levels. Plug anything into it - keyboards, guitars, basses, active or passive microphones, samplers and more. No matter what you put into it, you can be confident that signal can be placed at optimum levels without a lot of fuss.

THE BEST AUX SECTION IN THE BUSINESS

The most versatile AUX section in its class, rivaling expensive high-end consoles, 8 sends total 2 in stereo. Send signal in stereo or mono, pre- or post-fader. Available all at once. Return signal through any of 6 stereo paths.



FLEXIBLE EQ SECTION

You'll find both shelving and split-EQ sections on some mid-level consoles. But that's where the similarities with the M-2600 end. The M-2600's bi-directional split EQ means you can use either or both EQ sections in the Monitor or Channel path... or defeat the effect altogether with one bypass button. Most other comparably-priced mixers will lock the shelving mix into the Monitor path only, limiting your EQ application.

ADVANCED SIGNAL ROUTING OPTIONS

Direct channel input switching. Assign to one of eight busses, or direct to tape or disk, or to the master stereo bus. Because the group and direct-out jacks are one and the same, you can select either without repatching. You won't find this kind of speed or flexibility in a "one-size-fits-all" board.

ERGONOMIC DESIGN

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

MACKIE MICRO SERIES 1202

12-Channel Ultra-Compact Mic/Line Mixer

Usually the performance and durability of smaller mixers drops in direct proportion to their price. Fortunately, Mackie's fanatical approach to pro sound engineering has resulted in the Micro Series 1202, an affordable small mixer with studio specifications and rugged construction. The 1202 is a no-compromise, professional quality ultra-compact mixer designed for professional duty in broadcast studios, permanent PA applications and editing suites where nothing must ever go wrong.

BIG CONSOLE FEATURES

- Working S/N ratio of 90dB, distortion below 0.025% across the entire audio spectrum, switched +48 volt phantom power and +28 dB balanced line drivers.
- Real switchable phantom-powered mic inputs with discrete, balanced mic preamps as good as those found in big consoles.
- Has 4 mono channels, each with discrete front end mic pre-amp input and four stereo channels, each with separate left and right line inputs.
- Every input channel has a gain control with unity at the center detent for easy setup. Also a pan pot, low frequency EQ at 80Hz, high frequency EQ at 12.5 KHz, and two aux sends with up to 20dB available gain.
- Main outputs operate either balanced/unbalanced, as required.
- Switchable three-way 12-LED peak meter displays.

- Master section includes two stereo aux returns, a separate headphone level control, metering and two stereo aux returns.
- Line inputs and outputs are designed to work with any line level, from instrument level, to semi-pro, -10dB, to professional +4dB.

HEAVY DUTY CONSTRUCTION

- Designed for non-stop, 24-hour-a-day professional duty in permanent PA applications, TV and radio station, etc.
- Sealed rotary controls instead of open frame phenolic potentiometers that suffer from dust and contamination.
- Has steel chassis, rugged fiberglass circuit boards and a built-in power supply. Also has exceptional RF protection.

MULTIPLE APPLICATIONS

- Ideal "entry level" mixer for those just starting a MIDI suite.
- Ideal as headphone or cue mixer, level matching pro audio "tool kit", drum or effects sends submixer, 8-track monitor mixer.

CR-1604 16-Channel Mic-Line Mixer

The hands-down choice for major touring groups and studio session players, as well as for broadcast, sound contracting and recording studio users, the Mackie CR-1604 is the industry standard for compact 16-channel mixers. The CR-1604 offers features, specs, and day-in-day-out reliability that rival far larger boards. It features 24 usable line inputs with special headroom ultra-low noise Unityplus circuitry, seven AUX sends, 3-band equalization, constant power pan controls, 10-segment LED output metering, discrete front end phantom-powered mic inputs and much more.

LOWEST NOISE, HIGHEST HEADROOM

- With the CR-1604, having the lowest noise and highest headroom (90 dB working S/N and 108 dB dynamic range) at the same time are not mutually exclusive. It is free of commonly encountered headroom restrictions, and is able to handle the occasional pegged input with ease. In fact, many drummers consider it the only mixer capable of handling the attack and transients of acoustic and electronic drums.

CONSTANT POWER PAN POT

- Only with constant power pan pots will a source panned hard left or hard right have the same loudness as when it is sitting dead center. While most small mixers pass simple balance controls for pan pots, the CR-1604's carefully optimized constant power pan circuitry make it a professional tool with the kind of performance necessary for CD mastering, video posting and other critical audio production.

IN-PLACE STEREO SOLO

- Stereo "in place" solo allows not only the monitoring of level and EQ, but also stereo perspective. Usually found in very expensive mixers, stereo solo allows you to critically scrutinize and carefully build a mix using all the channels with their respective sends and AUX returns.

UNITYPLUS GAIN STRUCTURE

- Proper gain settings are facilitated by proper gain labeling, along with center-click detents on the faders, clearly understandable input trim controls and output meters that read channel levels in solo mode. With properly set levels you achieve very high headroom and low noise at the same time.

EFFECTS SEND WITH GAIN

- Unusual circuit design that provides two different "zones" that reflect real world use. send from each channel can vary in level from off to unity gain, which is the normal range of effects sends in other mixers. Since you also get another whole zone from the center detent to +15 dB of gain, the channel fader can be pulled down and the effects send can be boosted above unity when more effect is needed.

INTELLIGENT EQ POINTS

- Low frequency EQ is at 80 Hz where it has more depth and less hollow midbass "bunk". Midrange is centered at 2.5 KHz, providing for more control of vocal and instrumental harmonics. A specially-shaped HF curve that shelves at 12 KHz creates more sizzle and less aural fatigue.

REAL MIC PREAMPS

- The CR-1604 has genuine studio-grade phantom powered, balanced input mic preamps on channels 1 through 6. All CR-1604 (and XLR10) discrete input mic preamp stages incorporate four conjugate-pair, large-emitter geometry transistors just like the big mixers use. So, when recording nature sound effects to heavy metal or mixing flutes or kick drums, you get the quietest, cleanest results possible.

BUILT TO LAST

- The CR-1604 is designed for non-stop, 24-hours-a-day professional duty - even for tours that log 100,000 miles in three months. It has sealed rotary potentiometers that are resistant to airborne contamination like dust, smoke, liquids, and even the oxidizing effects of air itself.

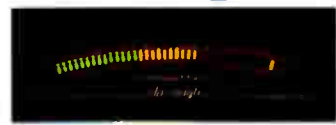
Optional Accessories

OTTO-1604
Add sophisticated computer controlled automation to your CR-1604. When connected to the MIDI port of your computer (PC, Mac, Amiga or Atari), each one of the 16 input channels can be programmed to change gain or to mute, just as you would program a sequencer. Master levels can be programmed as well, along with all buss channels.

XLR10

While the standard CR-1604 comes with 6 high performance mic inputs, there are times when you need more. Enter the XLR10. This simple-to-install accessory adds 10 more (for a total of 16) mic inputs, with the same quality, performance and features as those in the CR-1604.

dorrough



With today's audio systems stretching the limits of program dynamics it's become critical for engineers to obtain maximum loudness with the minimum of distortion components. To fully utilize the dynamic range available, it is of equal importance that they have a method of monitoring and establishing the maximum safe level at which a system can operate. That's why every Dorrough Audio Level Meter simultaneously shows three dimensions of program material content; Peak, Average Power and Compression are displayed on a color-coded 40-segment LED scale. The meters are easily viewed while providing high precision indications of program energy content.

Loudness Meter Model 40-A

The model 40-A has a scale allowing 14dB of headroom in 1dB steps. A stand-alone unit, it measures 8" x 22" x 6"; and has an internal power supply. Model 40-AP has a peak-hold option as well.

Loudness Meter Model 40-B

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

BEHRINGER MDX 1000 Autocom Automatic Compressor/Limiter



- Incorporates an interactive auto processor for intelligent program detection. With the auto processor, the attack and release times are derived automatically from the respective program material - preventing common adjustment errors.
- The auto processor also allows you to compress the signal heavily and "musically" in dynamic range without any audible "pumping" or "breathing" or other side effects.
- Provides both Attack and Release controls allowing for deliberate and variable sound processing.
- Switchable soft knee/hard knee characteristics. Soft knee is the basis of the "inaudible" and "musical" compression of the material. Hard knee is a prerequisite for creative and effective dynamics processing and for limiting signal peaks reliably and precisely.

MDX2000 Compressor Interactive Dynamics Processor



- Powerful and versatile signal processing tool provides 4 most commonly dynamic control sections: fully automatic compressor, manually controlled compressor, expander and peak limiter.
- Auto processor provides fully automatic control of attack and release times. There is also manual control.
- Interactive Ratio Control (IRC) expander eliminates "chatter" on or around the threshold point.
- Interactive Gain Control (IGC) Peak Limiter combines a clipper and program limiter. This allows for "zero" attack, distortion-free limitation of signal peaks.
- IGC is invaluable in live applications. Servocontrolled inputs and outputs. Operating level switchable from -10dB to +4dB.

PEQ305 Studio Parametric The Musical Equalizer

- Five independent, switchable bands. The quality of each band can be modified gradually from notch to broadband characteristics. This offers more flexibility than any graphic equalizer can provide.
- Bands 1 and 5 are switchable between shelf and peak. This is extremely useful, since acoustic problems usually occur in the upper and lower frequencies.
- Utilizes the "Concept of Q" principle to eliminate interaction of the parametrics frequency, bandwidth and amplitude. The same applies to interaction between the individual frequency bands.
- Parallel arrangement of the individual filters reduces phase shifting and associated delays to a minimum.
- Pcentimeter response follows human hearing characteristics.
- Relay-controlled hard bypass with auto-bypass function during power failure.

TASCAM 103 Mastering Cassette Deck

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

TO INQUIRE ABOUT YOUR ORDER:

800 221-5743 • 212 807-7479

OR FAX 24 HOURS: 212 366-3738

119 WEST 17TH STREET, NEW YORK, N.Y. 10011

Store & Mail Order Hours:

Sun 10-4:45 • Mon & Tues 9-6 • Wed & Thurs 9:30-7:30 • Fri 9-2 • Sat Closed

RUSH OR OVERNIGHT SERVICE AVAILABLE (extra charge)



SENNHEISER

RF CONDENSER MICROPHONES

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

MKH 20 P48U3 Omnidirectional

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

MKH 40 P48U3 Cardioid

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

MKH 60 P48U3 Short Shotgun

Short interference tube RF condenser. All-weather metal element transformerless low noise omnidirectional capsule. Smooth off-axis frequency response, switchable low cut filter (-5 dB at 100 kHz), high frequency boost (+5 dB at 10 kHz) and 10 dB attenuation. Handles 142 dB SPL (135 dB) ideal for broadcasting film video sports recording interviewing in crowded or noisy environments. Excellent for studio voiceovers.

MKH 70 P48U3 Shotgun

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

We are also full stocking dealers of

audio-technica.

beyerdynamic

Electro-Voice

Symetrix

Signal Processing Products

601 Digital Voice Processor

- Accepts mic or line level analog signals, converts them to digital (13 bits) and then performs 24-bit digital domain processing.
- Processing includes fully parametric EQ shelving EQ notch filtering, dynamic filtering (noise reduction, de-essing, delay chorus, noise gate), expansion, compression, AGC and DC removal.
- Combination of 128 factory presets and 128 non-volatile user programs guarantee predictable and repeatable effects from session to session performance to performance.
- Has XLR-balanced (analog) monoaural mic and line inputs and XLR-balanced stereo output. XLR-balanced JFET and S/PDIF (RCA) inputs and outputs. MIDI input/output supports connection to virtually any type of MIDI control device for programming or controlling the 601 in real time.
- Ideal for a variety of recording, broadcast, live sound and post production applications.

488 Dyna-Squeeze

8-Channel Compressor/Interface

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

We are a full stocking dealer for the entire Symetrix line

TASCAM

DA-88 Digital Multi-Track Recorder

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

- The ATF system ensures that there will be no tracking errors or loss of synchronization. The DA-88 doesn't even have (or need) a tracking adjustment. All eight tracks of audio are perfectly synchronized. What's more, this system guarantees perfect tracking and synchronization between all audio tracks on all cascaded decks - whether you have one deck or sixteen (up to 128 tracks!).
- Incoming audio is digitized by the on-board 16-bit D/A at either 44.1 or 48kHz (user selectable). The frequency response is flat from 20Hz to 20kHz, with the dynamic range exceeding 92dB. As you would expect from a CD quality recorder, the tone and filter is unmeasurable.
- One of the best features of the DA-88 is its ability to execute seamless Punch-ins and Punch-outs. This feature offers programmable digital crossfades as well as the ability to insert new material accurately into tight spots. You can even delay individual tracks, whether you want to generate special effects or compensate for poor timing. All of this can be performed easily on a deck that is simple and reliable to use.



Fostex RD-8 Multi-Track Recorder

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

- Full transport control is available on the unit's industry standard RS-422 port, providing full control right from your video bay. The RD-8 records at either 44.1 or 48kHz and will perform Pump Up and Pull Down functions for time-lapse transfers. The Track Slip feature helps maintain perfect tempo to picture and the 8-Track Stereo Digital Interface helps you in the digital domain.
- All of this contributes to the superb recording quality of the RD-8. The analog input is provided by 16-bit digital-to-analog (D/A) converters at either 44.1 or 48kHz using aggressive, averaging filters with 64x oversampling. Playback is accomplished with 18-bit analog-to-digital (A/D) and 64x oversampling, thus delivering CD quality audio.
- The S-VHS transport in the RD-8 was selected because of its proven reliability, rugged construction and superb tape handling capabilities. Eight tracks on S-VHS tape allow much more track width than is possible on other digital tape recording formats.
- With its LCD and 10-digit display panel the RD-8 is remarkably easy to control. You can readily access 100 locate points and session begins, whether on your RD-8 or another machine. Contents data can be re-recorded on tape. When the next session begins, whether on your RD-8 or another machine, you can load up information from your tape and begin working. Since the RD-8 is fully ADAT compliant, your machine can play tapes made on other compatible machines, and can be controlled by other manufacturers ADAT controllers. Your tapes will also be possible on any other ADAT deck.



TASCAM

DA-P1 Portable DAT Recorder

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



SONY

TCD-D7 DAT Walkman Player/Recorder

- Long Play (LP) mode allows up to 4 hours of recording/playback of 12-bit audio on a single DAT cassette.
- Equipped with digital coaxial and optical input connector. Maintains the highest signal purity for recording and playback of digital sources with all information retained in the digital domain.
- Also has analog Mic and Line inputs for recording from analog sources without external adapters.
- High-speed Automatic Music Sensor (AMS) search function finds and plays tracks, skips forward or back up to 99 tracks, all at 100x normal speed.
- Has a Digital Volume Limiter System (DVLIS) that increases listening comfort and sound quality by automatically adjusting for sudden level changes of the recording. It also helps prevent sound leaks through headphones.
- Two-speed cue-review lets you hear sound while player is in fast-wind modes up to 3x or 25x normal speed.
- Compact and portable. It has an anti-shock mechanism that permits accurate recording and playback even while in motion.
- LCD display with backlight windows clearly shows recording level, track number, operation status and 4-segment battery indicator, even in low ambient light conditions.
- Optional RM-D3K System Adapter Kit for complete digital interface. The kit is equipped with the input/output connectors for both the optical cable and the coaxial cable. Therefore you can use it as a cable between the TCD-D7 and other digital equipment.



Panasonic

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

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



- When recording via the analog inputs, a front panel switch permits selection of the sampling rate (44.1kHz or 48kHz). When recording through the digital inputs, it automatically clocks to incoming frequencies of 32kHz, 44.1kHz or 48kHz.
- Ramped record mute and unmuter with three seconds fade-in and five seconds fade-out provides automatic level changes at the start and end of a recording.
- High speed transport enables searching up to 250+ minutes. High speed search up to 400x normal speed is possible once the tape has been scanned in Play. Fast-Forward and Reverse mode.

- Built-in shuttle wheel has two variable speed ranges: 3 to 15x normal speed in Play mode and * 2 to 3x normal speed in Pause mode - an ideal way to find tape locations.
- Comprehensive display includes program numbers, absolute time, program time, remaining time and Table of Contents which displays total recorded time and total PNO count for commercial prerecorded DAT tapes.
- Has XLR-balanced and unbalanced (phono) digital inputs and outputs. Also has XLR-balanced analog stereo inputs and outputs. Output level is selectable between -4dB and -10dB. The input level is -4dB.

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

Offers enhanced performance required for professional broadcast and live-sound systems. Features instant start external sync capability, additional digital interfaces and expansion 20 bit audio.

- QUICK START WITH TRIM AND REHEARSAL**
 - With BMB of memory holding five seconds of audio data, the Quick Start function provides sound almost instantly after a play command is executed. Other DAT recorders lag about 7 seconds, making them unusable for professional applications.
 - Early adjust the Quick Start position and specify it by a Time-Start ID or PND. Rehearsal with Quick Start is also possible, allowing two SV-4100s to be used for frame-accurate punch-in/punch-out and assembly editing.
 - You can adjust the Quick Start position with 1-Frame resolution over a range of -50 frames.
 - Without playing the tape, you can monitor the level of audio data to check your Quick Start position. This preview capability is handy before actual editing or on-air play. Repeated play is also possible, using about 1.5 seconds of the data to create a kind of sampler effect.
- FRAME ACCURATE INDEXING AND EDITING**
 - Using the trim and rehearsal functions, you can accurately determine points to make start and stop IDs. These IDs can be written on the tape or on a separate card and will be read and automatically renumbered.
 - With two SV-4100s connected via the 8-pin parallel remote terminal, synchronized frame-accurate editing can be performed. Continuity of edit points can be checked by rehearsal playback. By entering and editing end position in one of the Locate buttons, you can determine a punch out point as well.
- FLEXIBLE SEARCH**
 - Easily and accurately access your A-Time. You can specify hour, minute, second and frame.
 - In most modes, the currently displayed A-Time can be assigned to one of the Locate buttons. Then, from Stop, Pause or Play, you can rapidly cue to any of these four addresses by pressing its Locate key. In addition, Locate Last takes you to the most recent Quick Start A-Time position.
 - Search is also possible by Start ID or program number.
- 5-MODE EXTERNAL SYNC**
 - External sync is essential for applications such as video post-production and stereo submix recording. It uses uniformity of timing between different equipment so the audio data consistently matches up with the target media. Select from 3 video external sync modes (25, 29.97 and 30 frames per second) or use the word sync (Digital Data modes) which lock to the input sampling frequency.
- MULTIPLE DIGITAL INTERFACES**
 - Has XLR-balanced digital input and output plus unbalanced digital coaxial and digital inputs and outputs. Analog inputs/outputs are XLR-balanced and output level is switchable between -4dB and -10dB, providing compatibility with other equipment.
- 3-WAY REMOTE CONTROL**
 - 8-pin parallel allows simple triggering of Quick-Start. Play 8-pin parallel remote terminal connects to another DAT deck, computer or wired remote. Includes wireless remote control.

TCD-D10 PRO II Portable DAT Recorder



- Has balanced XLR input, switchable microphone (-60dB) or line (+4dB) inputs. A 12-pin digital connector provides interfacing with AES/EBU digital signals of 32.0, 44.1, or 48.0 kHz sampling rate. This means that compatibility with other digital systems is assured. It also provides the convenience of digital dubbing and editing without any degradation.
- Equipped with a comprehensive self-diagnostics function that constantly monitors the rotation of the head drum, capstan and reels. The tape transport mode and load/unload time are continuously checked as well. Upon detection of trouble, the tape is brought to a forced stop and unloaded automatically to protect the tape and the recorder.
- Up to 99 start IDs can be recorded in the subcode area. When the record button is pressed, the start ID is recorded automatically for 9 seconds. During recording, it can also be added manually to any position of the tape. Search for these start IDs is performed in two modes at 100 times normal speed.
- Offers a maximum spooling time of 140 x normal speed. A two hour tape can be rewound or fast forwarded in under a minute.
- 20-segment digital peak level meters include overload indicators. Closely tracks input signal for accurate level indications.
- During playback, the date and time of recording is displayed.
- Has a 5-segment battery indicator. The last segment blinks on and off notifying you to change batteries.
- To eliminate distortion caused by unexpected peaks, the TCD-D10 PRO II incorporates a record-level limiter with a fast attack time of 300ms. The microphone attenuator prevents distortion by suppressing the signal level 20 dB.
- Immediate playback is possible through a built-in speaker.
- A wired remote controller is supplied to control the record, play, stop, and pause functions of the recorder. The top end of the controller is designed to accept a microphone holder. Two microphone stand screw adapters are also supplied.
- The supplied NP-22H rechargeable battery pack provides 1.5 hours of continuous operation. The optional NPA-D10 battery adapter enables 1 hour of continuous operation on AA-size batteries. With the use of the supplied APC-88 AC power adapter, it can also be operated on 100-240 VAC, 50-60 Hz.

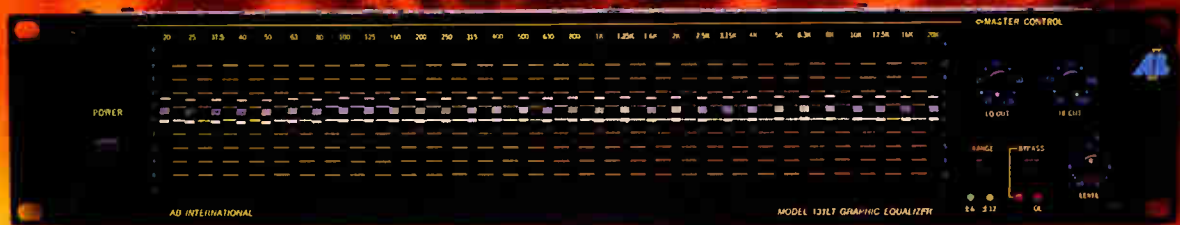
Roland

DM-800 Digital Audio Workstation

The DM-800 is a compact, stand-alone multi-track disk recorder that provides an amazing array of features at an unbelievably low price. Whether for music production, post production or broadcast, the DM-800 will make your work simpler, faster, more productive and more profitable. A full function workstation, the DM-800 performs all digital mixing operations from audio recording to editing to final mixdown. It fully supports SMPTE and MIDI time codes and also features a built-in Sample Rate Resolver to synchronize all tracks to any time code.



AB International Offers Graphic Equalizers Professionals Demand



MODEL 131 LT Long Throw



MODEL 215 LT Long Throw

Understanding the need for great sound quality demanded by live sound technicians, recording engineers and musicians, AB International delivers.

AB International releases their new graphic equalizer "Long Throw" Series. Impressive as their predecessors, the new "Long Throw" Series 131 LT and 215 LT offers ideal sound quality for use on mono and stereo sound sources. The 131 LT single channel 31 band and 215 LT two channel 15 band graphic equalizers lets you shape and adjust your frequencies (20Hz to 20kHz and 25Hz to 16kHz) as well as, incorporating constant Q circuitry with a 3% center frequency accuracy. **Standard features:** a selectable range of 6dB or 12dB, active balanced and unbalanced input/output connectors, RFI filters, variable level control, passive bypass switch, overload threshold LED, ground lift switch and selectable line voltage switch. *Whether your considering our "Long Throw" series for a commercial install, recording studio, or touring rig, AB International's 131 LT and 215 LT graphic equalizers provide sonic flexibility in a two rack space.*



Professional Sound Quality, Built To Last

AB INTERNATIONAL ELECTRONICS, INC.

1830-6 Vernon Street, P.O. Box 1105 Roseville, California 95678

Tel 916 783 7800 • Fax 916 784 1050

USE READER SERVICE CARD FOR MORE INFO

the late '50s, and in the same rack I have an SSL compressor; I have a Pultec, and next to it a Spectrasonics compressor that was built in the '70s; I have an old GE compressor that came from a radio station, which is all-tube and very thick and fat, and I have eight modules that came out of the Beate board."

Puig judiciously employs his haul in an effort to embrace the best factors from the past 30 years of recording (an aesthetic perhaps most audible to date in his work for Jellyfish). "I'm trying to fuse all those elements," he says, "and the reason why I have all the gear is that's the only way that you can really do it. You have to have the different pieces that were used in those times to make those sounds."

Though Puig by no means takes all his racks with him wherever he goes, he likes to have his palette on hand when possible, and the Tonic mix benefited from a full spectrum of his hues. Andora staffer Kenji Nakai assisted on the mixing sessions, and the album is scheduled for an early '96 release. ■

PHOTO: THE TECHNOLOGY STATION/NEIL KARSH



New York Facility Spotlight

New York-based audio/video support company The Technology Station Inc. designed and constructed this new, multisuite audio facility for New York-based film and television composer Michael Whalen,

whose credits include scoring for the PBS series *Nature*. The studio includes two composing suites and a machine room/dubbing room and features a Euphonix CSII console with DSC option, a 16-output Synclavier sampler, PostPro 16-track editor and a full complement of MIDI gear. ■

**Call or Fax
for FREE
CATALOG!**

*Inquire about
products not listed.*

**USA & Canada
1-800-331-3191**

**NYC Area:
516-678-4414
Fax: 516-678-8959**



**Master Distributor of Professional A/V Tapes,
Data Media, Equipment & Accessories.**

- | | | | |
|----------------------|-----------------|------------------|--------------|
| • 3M | • CARVER | • JILCOOPER | • SAMSON |
| • AKAI | • DENON | • JVC | • SENNHEISER |
| • AMPEX | • EDITALL | • MARANTZ | • SHURE |
| • APOGEE Rep | • ELECTRO-VOICE | • MAXELL | • SONY |
| • ASTC-Exclusive Rep | • FOSTEX | • MRL | • SOUNDTRACS |
| • AUDIOPAK | • FUJI | • PINNACLE MICRO | • TASCAM |
| • BASF | • ITC | • SABINE | • TDK |



Shipped From Stock • Priced Right • Immediate Delivery

Burlington A/V Recording Media, Inc.

106 Mott Street • Oceanside, New York 11572

PRO TOOLS, SESSION 8, SOUND TOOLS HARD DISK RECORDING SYSTEMS

DIGITAL MULTI-TRACK RECORDING • MIXERS • SOUND MODULES

**1995 MUSIC & SOUND AWARDS
WINNER - BEST MUSIC SOFTWARE/
MULTIMEDIA DEALER (Division B)**

In the Digital Recording market there are some things you want to get right. IT MUST SOUND GREAT, BE DURABLE, FUNCTIONAL, USER FRIENDLY, EXPANDABLE & AFFORDABLE.

That's why you need a Digital Audio dealer who knows how to ensure that the products you buy are exactly what you need to get the job done - a dealer who gets it right the first time.

Sounds like you're talking about MacBEAT. We're not some huge sales organization, just the best, dedicated sales people and technicians in the business who are musicians themselves. Call us now, and you too can experience what it's like dealing with Pros in the know.

"The Music & Sound Awards" is a registered trademark of Testa Communications and the Music & Sound Retailer Magazine.



**Info Line: 505-473-3434
SALES: 1-800-MAC-BEAT
FAX: 505-473-4647**

MUSIC SOFTWARE • KEYBOARDS • SAMPLERS • DAT RECORDERS

DAT RECORDERS • AMPLIFIERS • MICROPHONES • PRO AUDIO

Mac BEAT

1314 Rufina Circle, Ste. #A4
Santa Fe, NM, 87501



Coda
Mark of the Unicorn
E-Mu
E-Magic
Steinberg Jones
Kurzweil
Panasonic
Ramsa
Korg
Roland
AKG
Lexicon
Fostex
Passport
Kawai
MUCH MORE!

**DIGIDESIGN
OPCODE
TASCAM**

USE READER SERVICE CARD FOR MORE INFO

1985 TEC

6054 SUNSET BOULEVARD, HOLLYWOOD, CA 90028

**Bernie Grundman
MASTERING**

tel 213 465 6264 fax 213 465 8367

—FROM PAGE 332, WEAPON OF CHOICE, NRG
BoDeans and The Replacements).

Because the sessions happened so spontaneously, they were pretty unorthodox. There was no pre-production, of course, but a lot of communal creativity, with everybody throwing in ideas. (No one involved had previously known Wallace, but by all accounts the collaboration worked out incredibly well.) The bandmembers were writing songs while recording them, says assistant and NRG staffer John Ewing Jr., who was amazed watching them come up with stuff on the spot.

With so much jamming going on (members of Fishbone and Spearhead dropped by to lay down some grooves), Ewing says they "mostly tracked live, with six monitors blaring in the room. We goboed the drums off and had everybody facing each other." In fact, a lot of the bands who have recorded at NRG have tracked live, attracted by the studio's big room. "It seems to work out better," Ewing says. "Everybody's more comfortable that way."

Now in its third year at its present location, NRG has been enjoying a successful run, boasting recent sessions ranging from Hootie & the Blowfish to White Zombie. Equipment includes a 64-input Neve 8068, two Studer A827 multitracks, a large selection of tube mics, custom TAD mains, and Genelec, Yamaha and Tannoy near-fields. NRG is currently constructing a second large, bauton-designed tracking and control room (to be equipped with a one-of-a-kind Neve 8078 purchased from Allen Sides of Ocean Way), which will open later this year. ■

—FROM PAGE 333, NY METRO

Howard, he's been on the cutting edge of pro audio technology right from the start, and he's picked winners. But can he pick up a lunch check? Oy!

But seriously, Howard is a funny guy. So funny that I'm turning over the column so that he can, on the 20th anniversary of Howard Schwartz Recording, share with us...

**HOWARD SCHWARTZ'S
FAVORITE JOKES**

"A couple of quick one-liners to warm up: I'm not getting married again—I'm just going to find a woman who hates me and buy her a house.

"Two older Jewish musicians are sitting on a park bench in Miami. One says to the other, 'Oy!' The other one replies, 'I'm hip!' Here's one you haven't heard in a while: 'Is that the viola player's Porsche?'"

"Two songwriters are walking down the street when they see a man fall off the roof of a 30-story building. He picks up speed as he gets closer to the ground, but his fall is slowed by a large tree. He is then thrown onto a second-floor awning where he is again bounced up into the air and finally lands on a mattress that is being delivered to the building. The first songwriter says, 'Boy, that guy is lucky!' The second songwriter responds, 'He's not lucky. Andrew Lloyd Webber is lucky!'"

"There was a man of ill health. His business was failing, his wife had left him, and his children wouldn't talk to him. Nothing was working. Finally, he went to the rabbi and told him of his plight. The rabbi said, 'I have just the thing for you. You must go home and get a good night's rest. When you wake in the morning, I want you to pray all day long. Pray, pray, pray. Until you fall asleep. On the second day, I want you to fast, fast, fast, until you go to bed. Repeat this six times and on the seventh day, I want you to take out the Talmud and put your thumbs into the center of the book. Then open the book, and the first two words you see will be your guide.'" The man is puzzled, but he agrees to try it and leaves.

"Six months later the Rabbi is walking down the street, and a Rolls Royce screeches to a halt at the curb. A very tan and slender man in a dark blue Armani suit with a gold Rolex and slicked-back hair jumps from the car, runs up to the rabbi and gives him a great big hug. He says, 'Rabbi, I never got a chance to thank you for the advice you gave me!' The rabbi looks at him, puzzled. The man says, 'You remember: pray, pray, pray: fast, fast, fast?' The rabbi says, 'Ah, yes. And what were the two words from the Talmud that you saw when you opened it?' The man's face lights up. He looks into the rabbi's eyes and says, 'Chapter 11!'"

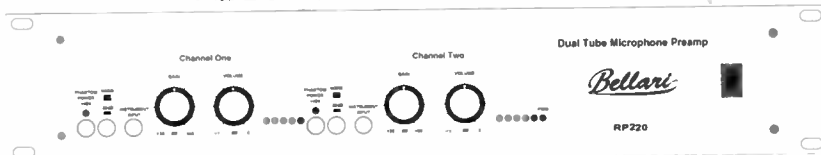
Thank you, Howie, thank you! That was great. Wasn't he great, folks? He kills me! And thank you, ladies and gentlemen. You were a tough crowd, but you stuck it out. Mort will be out here in a moment. But in the meantime: Try the veal!

tube REAL SOUND

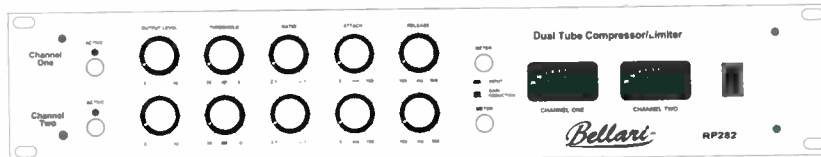
See us at AES
Booth #1161



ADB3 Stereo Tube Direct Box



RP220 Dual Tube Mic Preamp



RP282 Dual Tube Compressor/Limiter

The new Bellari tube driven signal processors offer musicians and engineers of all levels cost-effective yet high quality products. Compare our prices and feature/benefits to the "thousand-dollar plus" processors and you'll see. Bellari; not just tube circuits - tube circuit success.

Bellari

A Division of ROLLS Corporation
5143 South Main Street
Salt Lake City, UT 84107
(801) 263-9053 • FAX (801) 263-9068

USE READER SERVICE CARD FOR MORE INFO

*This is a 500 FOOT EXTENSION CORD
for your KEYBOARD and MONITOR.*



The **TSE100** includes sender and receiver units that extend your monitor and keyboard up to 500 feet from the location of your Macintosh computer.

The **TSE100** allows two users to work on the same computer; one at the extended location, and one at the computer site. It's ideal for Avid, Digidesign, Sonic Solution, Studer, Dawn, and other digital workstations.

Our new models, the **TSE150** and **TSE200** are rack mounted versions with two extended monitor outputs.

The **TSE100**, **TSE150** and **TSE200** models support any kind and size of RGB monitor with S or H & V type sync.

For more information & cable pricing contact:

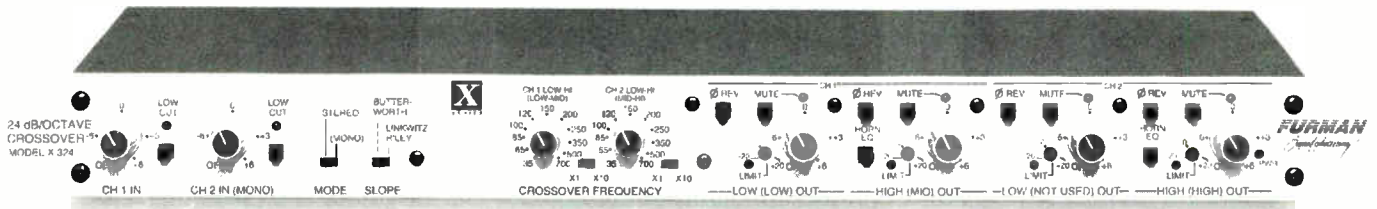


See us at AES Booth #738

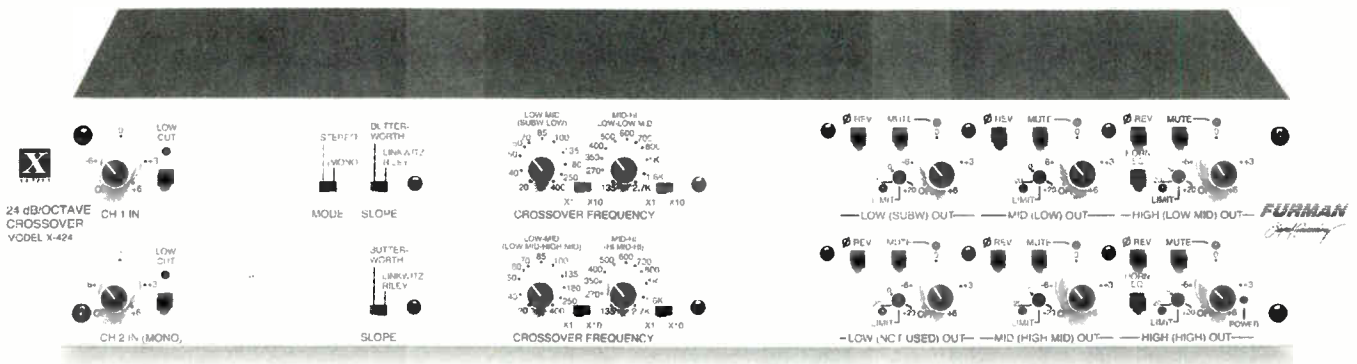
GEFEN SYSTEMS 6261 VARIEL AVENUE SUITE C, WOODLAND HILLS CA 91367

PHONE: 800-545-6900 818-884-6294 FAX: 818-884-3108

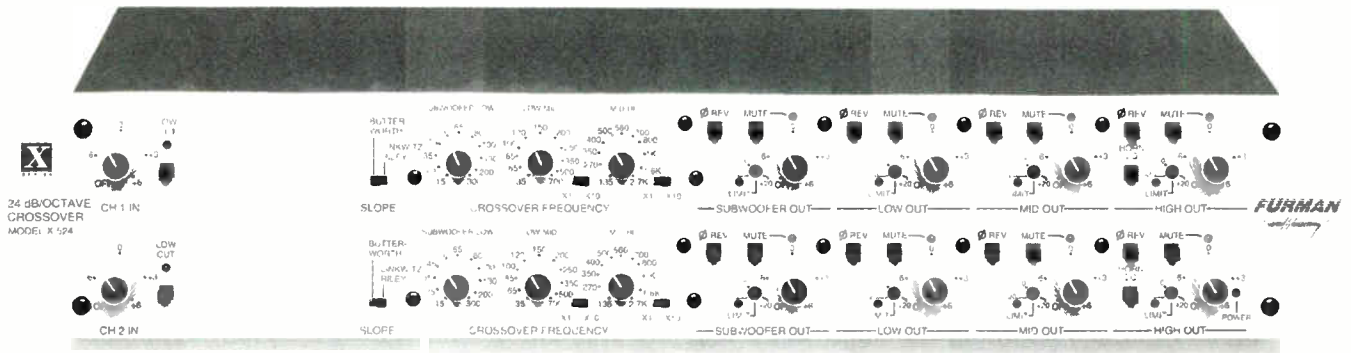
Furman's new X Series crossovers: All the features. For hundreds less.



X-324B: Two-Way Stereo, Three-Way Mono, list \$529. That's \$220 less than the competition.



X-424B: Three-Way Stereo, Five-Way Mono, list \$719. That's \$860 less than the competition.



X-524B: Four-way Stereo, list \$849. That's \$750 less than the competition.

The new Furman "X" Series 24 dB per octave Electronic Crossovers are yours for far less than other high quality crossovers. And the X Series has all the features you want:

- A slope switch to select either Linkwitz-Riley or Butterworth rolloff slopes, to optimize performance for either near field or far field applications.
- Flexible and convenient front panel XI/X10 range switches, instead of hard to get at internal cards or jumpers, to simplify and add repeatability to the setup process.
- Detented frequency pots, recessed range slide switches and optional security covers that combine to provide protection against accidental changing of control settings.
- A Horn EQ button for each High output, to eliminate the need for an external equalizer to achieve the compensation needed when using most compression drivers.
- A Low Sum/Normal switch to allow mixing the left and right Low outs together to mono.
- A screwdriver-adjustable peak limiter on each output, with an LED to indicate gain reduction.

- A Mute button with two-color LED on each output, for simpler system setup and checkout.
- A Phase Reverse switch on each output, which makes troubleshooting faster and easier.
- A ground lift switch.
- Models shown above include balanced XLR's; X Series models with unbalanced connectors are priced *much lower*.

The cost savings we call to your attention are based on list price comparisons with a leading manufacturer's competitive crossovers. Contact us today—we'll send you an X Series data sheet and our new full-line color catalog.

FURMAN
Signal Processing

Furman Sound, Inc.
30 Rich St. • Greenbrae, CA 94904 USA
Tel: (415) 927-1225 • Fax: (415) 927-4548

See us at AES Booth #1261

USE READER SERVICE CARD FOR MORE INFO
World Radio History

—FROM PAGE 167, NEW YORK POST TALES

was terror-stricken. 'You must come,' he said in a harsh whisper, 'but quietly, please!' We followed him down the hall to the waiting room. There, was our star, purring away, each of her arms draped across the back of the overstuffed sofa. Nothing unusual here, we thought. But there, on the back of the hideous, overstuffed relic (the sofa, not the star, who was quite slender), scampered a little gray mouse. He was running from one end of the sofa to the other, traversing Ms. Swanson's outstretched arms with each lap of the furniture.

"The implications of this situation were clear to all those assembled. Two of the more enterprising members of the crowd tiptoed into the room and stationed themselves on either side of the sofa, attempting to lure the mouse down from his Hollywood Matterhorn. This only served to terrify the little thing and cause him to increase the pace of his round trips across Ms. Swanson, sometimes detouring over her head.

"With a glottal snort, she began to stir, causing all those present to freeze, not daring even to breathe, lest she awaken. Naked fear coursed through the room. It was left to the studio manager to devise a solution. A trip to the employee lounge produced a Hostess Twinkie, which in due course was removed from its cellophane wrappings and crumbled into useful bits. Approaching the sofa with utmost caution, the manager began to lay a trail of Twinkie crumbs that began at Ms. Swanson's shoulder and continued along the cushions and onto the floor. From there, the trail was blazed to the employee lounge, where it was thought the minuscule critter might be trapped.

"This having been done, all retreated from the star's sanctum to await the well-baited mouse. Mice, of course being mice, are wise to the ways of man. This particular fellow proved himself even wiser. As we watched from the relative safety of the corridor, our rodent prey appeared at the doorway of the waiting room, took one look at the huddled mass awaiting him, fled in the opposite direction, never to be seen again.

"The chauffeur dutifully roused his employer, and as she was being escorted back to the dubbing stage, she was heard to say, 'Nigel, can you believe how filthy this place is? Just look at all these crumbs.'"

—FROM PAGE 327, YOUNG RASCALS

such as Arif Mardin and Tom Dowd.

"While we were recording 'Groovin,' Sid Bernstein brought [famed NY DJ] Murray the K up to the studio, and he anointed it a hit," Huston says. "He said it was going to be the biggest hit of the summer, and it was." Actually, it was the biggest hit of that spring: It came out at the end of April, and by early May it had hit Number One (and Number Three on the R&B charts!). It held the top slot for a month and then remained popular all through the summer. The Rascals' third album, also called *Groovin'*, was released in August and included two other charting songs, "A Girl Like You" and "How Can I Be Sure?" The album itself made it to Number Five on the *Billboard* charts. The following year, The Rascals scored with "A Beautiful Morning" and their anthemic Number One hit "People Got to Be Free," but their move into jazzier, more ambitious music in '69 and '70 (as well as a label change) led to the group's slow decline. They disbanded in 1972. A reunion in 1988 failed to arouse much interest from the record-buying public. But Cavaliere has made a couple of fine solo albums, and this past summer he landed a spot on Ringo Starr's third All-Star Revue, which gave him the opportunity to sing his old Rascals hits one more time.

After Bert Berns' death, Huston relocated to the West Coast, where he engineered and produced records for many years before moving into recording studio design and commercial production. He remains friends with Cavaliere and still recalls his days with The Rascals with great fondness. "They had an airiness about them that I really liked," Huston says. "They were part of that moving generation—one part of the generation was heading toward regurgitating rock 'n' roll one more time, and the other part was heading toward the peace-and-love thing. The Rascals were right down the middle in a lot of ways. They were a pop band, but they also did things like 'People Got to Be Free,' and Felix got into Transcendental Meditation later [actually he followed Swami Sachidananda].

"We were all on a ship, and we didn't know where it was going. I think it's true to say that in pop music in those days, we were all just winging it and doing the best we could."

SCHOEPS

NEW

SMALLEST CLASSICAL CONDENSER MICROPHONE



CCM --

ALL PATTERNS
BALANCED LO-Z OUTPUT
12 V - 48 V
PHANTOM POWERING

Contact

- | | |
|---|--|
| A Dietmar Koller,
Tel.: (1) 4 09 57 57 | I SDS - Tecnica Del Suono,
Tel.: (2) 33 40 03 50 |
| AUS dB audio,
Tel.: (3) 8 53 10 70 | IL Kallnor Ltd.,
Tel.: (3) 5 61 01 52-4 |
| B Heynon Audio Video NV,
Tel.: (11) 52 58 58 | J Imai & Comp. Ltd.,
Tel.: (3) 33 57-04 01 |
| CON Shouva Ltd.,
Tel.: (514) 3 64 21 18 | N Siv. Ing. Bassini A/S,
Tel.: (22) 14 54 60 |
| CH Duedel S. A.,
Tel.: (21) 9 46 33 37 | NL Heynon B. V.,
Tel.: (8851) 9 61 11 |
| DK PSS,
Tel.: 35 82 15 82 | P Filmhouse Services-Gesamt,
Tel.: (1) 80 46 77 |
| E Laxon,
Tel.: (3) 2 03 48 04 | PR J & C Electronics,
Tel.: (56) 44 51 83 |
| F Aramis,
Tel.: (1) 45 30 21 23 | S EMS AB,
Tel.: (176) 1 46 50 |
| GB Project Audio Ltd.,
Tel.: (171) 3 59 04 00 | SF Mofitfil Oy,
Tel.: (0) 48 81 33 |
| HK Audio Consultants Co. Ltd.,
Tel.: 3 51 36 28 | USA Posthorn Recordings,
Tel.: (212) 242-37 37 |
| PL Studio Dove,
Tel.: (22) 26 49 12 | |



SCHOEPS

Schalltechnik Dr.-Ing. Schoeps GmbH

Box 41 0970 · D-76209 Karlsruhe
Telephone: 07 21/9 43 20-0 · Fax: 07 21/49 57 50

USE READER SERVICE CARD FOR MORE INFO

STUDIO SHOWCASE



STUDIO
MORIN HEIGHTS

Studio Morin Heights

201 Rue Perry
Marin Heights, Quebec J0R 1H0
(514) 226-2419; Fax (514) 226-5409

The studios, our six-bedroom guest house and cottage, are nestled in the heart of the Laurentian Mountains resort area, with panoramic views of our private lake and forest. Less than an hour from Montreal and NYC. Featured equipment includes SSL 4056, Neve 8014, Mackie 3208, Studer A800 and A80, Otari MTR-90 and Otari RADAR 24-track hard disk recording system, as well as comprehensive array of outboard equipment and microphones.



Laughing Dog Studios

80 Van Duzer St
Staten Island, NY 10301
(718) 720-9497; Fax (718) 448-7750

Located just 25 minutes from Manhattan in Staten Island, Laughing Dog Studios combines state-of-the-art equipment with an exceptionally talented staff to deliver the highest quality final product. Equipment includes an 88-input Amek "Big" with SuperTrue Automation and Total Recall; three Alesis ADATs w/BRC; Pro Tools III Digital Editing; StudioVision; Lexicon 300; Eventide H3000SE; cool tube gear; Neumann, AKG, Sennheiser and Shure mics; four isolated rooms, kitchen, lounge & ample parking!



Avalon Recording Studios Inc.

40-35 235th St.
Douglaston, NY 11363
(718) 224-9158; Fax (718) 224-5083

Located 28 minutes outside Manhattan in Douglaston Manor, Avalon is the viable professional alternative to the high-pressure environment of the city. Our unique sound is a mix of our vintage API console, Studer and Otari tape machines, and the great live spaces and control room designed by Frank Commentale. Our experienced musical staff brings it all together, making our primary focus your best creative performance. Brochure available.



B.K.B. Studios Inc.

15 Wallace St., Elmwood Park, NJ 07407
(201) 703-0073; Fax (201) 703-0481

Whitney Houston's B.K.B. Studios is a recording and rehearsal facility located 20 minutes from Manhattan featuring an SSL 4000E console with G Series computer along with a Studer A827 and Otari DTR-900 MkII 32-track. We have a wide selection of vintage outboard gear and tube microphones. There are two 20x20 tracking rooms and one 38x58 tracking/rehearsal room with a full M.S.E. monitor and P.A. system. Extensive selection of band gear available. Call for more information.



Orange Whip Recording

1324 State St. #G-169
Santa Barbara, CA 93101
Phone (805) 730-9148

Ninety minutes from L.A., Orange Whip Recording is Santa Barbara's newest recording facility. Control Room "A," designed by Chris Pelonis, features the first automated Oram Sonics B-EQ series console on the West Coast, 24-track analog and ADAT digital recorders and Tannoy System 215 DMT main monitors. Clients include artists with Columbia, A&M, Smart, World Movement, Reel and Baby Reel Records, plus theatrical and post-production projects.



Pearl Records Entertainment Group

4247 Walnut St., Ste. 100A
Kansas City, MO 64111
(816) 561-5151; Fax (816) 561-8441

Located in the heart of America—between the Westport area and the Country Club plaza, we are "New York" and "L.A." in the Midwest. We are a recording company with a 32-track completely digital recording studio with samplers, keyboards, drum machines and all you'll need for quality productions. Our engineers are musicians, performers and producers. At Pearl, we bring your music to reality!

QUAD

Recording Studios

Quad Recording Studios

723 7th Ave.; New York, NY 10019
(212) 730-1035; Fax (212) 730-1083

Quad Recording's four world-class Solid State Logic studios (up to 72 channels), two digital editing suites and two complete MIDI rooms are available for all your music recording needs, from pre-production to post-production. Artists who use our state-of-the-art facility include Aerosmith, Prince, David Sanborn, Janet Jackson, Elton John, Rolling Stones, Daryl Hall, Frankie Knuckles, David Byrne, Mariah Carey, B.B. King, Rosanne Cash, U2, Marc Cohn, SWV, Whitney Houston, Yoko Ono and David Morales.



Mix-O-Lyidian

144 Warbasse Junction Rd.
Lafayette, NJ 07848
(201) 300-0030

Mix-O-Lyidian, one of New Jersey's premier studios for the past 20 years, has recently moved to new quarters on eight acres in Lafayette, N.J., 1 hour from NYC. The 4,000-sq.-ft. facility features a 104 input Amek Big console with Total Recall, a Studer 827, and Tascam DA-88 24-track. The studio also offers a large array of outboard gear and microphones, including 20 vintage Neve and Focusrite EQ/pre-amps. Overnight accommodations are available.



Rockingchair Recording Studios

1711 Poplar Ave.
Memphis, TN 38104
(901) 276-8542; Fax (901) 276-8546

Comfort is very important to an artist's creativity. Rockingchair Recording offers a relaxing environment and personalized service that set us apart. Special attention was given to the aesthetics and location of our studio in order to establish the perfect atmosphere for our clientele. We are located in the heart of midtown Memphis, just minutes away from historical Beale Street, clubs, restaurants and hotels. Together, Rockingchair and Memphis make a perfect retreat for today's recording artist.



White Room Studios

1145 Griswold St.-3rd Floor
Detroit, MI 48226
(313) 963-7305; Fax (313) 964-3338

API/Neve consoles, Ampex ATR-124, Fairchild, Pultecs, LA-2As, ELAM, C-12, U47s Focusrite, Massenberg, Trident, Lang, Telefunken. Need we say more? With dozens of exotic tube mics, compressors and EQs, White Room contains your wish list of well-maintained vintage and modern gear. All in a vibrant atmosphere with large, ambient rooms, natural outside lighting, vintage instruments, and a friendly, professional staff. Call for bargain block rates.



Allgood Productions

458 Plasmour Dr. NE
Atlanta, GA 30324
(404) 892-7111 Fax: (404) 892-7115

We offer one of Atlanta's largest live studios, 55' x 65' x 16'. Control room A offers the Otari Concept 1 Console with 96 automated inputs, Dolby Surround Sound, 24 tracks of Tascam DA-88, Otari MTR90 analog with full lock to our video suite are available in the A & B control rooms. We are specialists in classical music, jazz, audio for video, and music mastering.



Brooklyn Recording Studio

8000 Beverly Blvd.
Los Angeles, CA 90048
(213) 655-9200; Fax (213) 852-1505

Owned by music industry veteran Freddy DeMann and run by Chief Engineer Bill Dooley, Brooklyn Recording Studio has developed a reputation for first-class service and sound. Featured equipment includes "the classic" Neve 8078 console with GMI Automation, as well as the finest tape machines, mics, and outboard gear available. Recent developments include the addition of a state-of-the-art digital mastering suite.

STUDIO SHOWCASE



Millennium

Denver, Colorado
800-2-STUDIO (800-278-8346)
Denver area 303-466-9896

Complementing the growth of the entertainment industry in Denver, Colorado, Millennium is a commercial production facility that houses high-end audio equipment and the most talented staff in the area, for all post-production and audio applications. Please contact Ralph T. Dickerson, VP/Director of Marketing, Midwest Region; Talbert Bartholomew, Director of Marketing, Western Region; Joe Clemmons, Account executive; Winston Ford, Creative Director; Mike Hupfer, Chief Engineer; Steve Weis, First Engineer/Composer.



EastSide Sound

98 Allen Street
New York, NY 10002
(212) 226-6365; Fax (212) 226-0788

EastSide Sound has been satisfying clients for 24 years. Our tracking room boasts a vintage Neve with David Manley tube modifications and Flying Faders. Our mixing room houses the Harrison Series Ten B—the ultimate in automation. Both rooms include Studer and Sony tape decks, a wide selection of both vintage and modern mics and outboard gear, as well as computer workstations. Located in Manhattan, private and very comfortable. Call for further information.



Gabriel Productions

Wayne "TEX" Gabriel & Sandra Furton Gabriel
10 Addison Boyce Drive
New City, NY 10956-1261
(914) 356-5501; Fax: (914) 352-6122

A unique creative environment near NYC. The Gabriels are Emmy-nominated Platinum and Gold recipients. Wayne has performed, recorded, produced, and/or engineered with John Lennon, Stevie Wonder, Mick Jagger, Chuck Berry and Randy Travis. Sandra has over 15 years TV production with David Letterman, Joan Rivers, ABC. Services include: Write and record TV/film themes, commercials, songwriting demos, arranging, music publishing and video TV productions.



Reelsound Recording

2304 Sheri Oak Lane
Austin, TX 78748
(512) 282-0713; Fax (512) 282-8767

For 25 years, Reelsound Recording has provided the quality of a sound studio when you're recording on location. Our 42-foot Hidley-designed mobile unit offers the very best 24- and 48-track equipment available, and clients such as Paul Simon, Neil Young, Stevie Ray Vaughan, Genesis and Material Issue can testify to the Gold and Platinum results of our experienced staff.



Rumbo Recorders

20215 Saucay Street
Canoga Park, CA 91306
(818) 709-8080; Fax: (818) 709-4072

Known for Platinum-award-winning records from Guns & Roses, Smashing Pumpkins, Stone Temple Pilots and Tom Petty to name a few. Our newly redesigned studio A features a large tracking room with five large isolation booths, and like studio B and C has a spacious lounge adjacent to the control room. Rumbo Recorders offers three studios with a wide range of recording environments to meet any need.



Coyote Recording Studios

100 North 6th St, Brooklyn, NY 11211
(718) 387-7958; Fax (718) 388-3898

A studio born from years of hard work by two brothers; one an engineer, the other a musician, both with an ear for music and a dream of making it their business. The control room glows with the power of outboard gear and the studio boasts vintage amps and premium mics. Notable artists include: Bottle Rockets, Del Lords, Eric Ambel, Blood Oranges, Ramones, Guided by Voices, Mojo Nixon and other musical luminaries. The studio rocks. Pure and simple.

STUDIO SHOWCASE



Pajama Recording Studio

247 4th St., Ste. 407; Oakland, CA 94607
(510) 832-JAMM

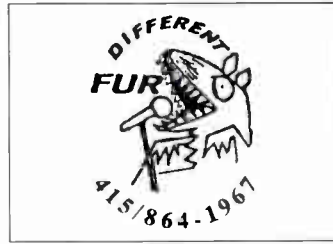
Pajama Studios is Oakland, California's first world-class 48-track recording studio. Pajama features an Otari Series 54 46x40 80-channel w/DiskMix III automation, Sony/MCI JH-24 24-track and Alexis ADAT 24-track w/BRC remote. Pajama was designed by Dennis Rice for producer Jim Gardiner, whose credits include Tony Toni Toné, En Vogue, Vanessa Williams, Kenny G, Michael Cooper, Lucasfilms, Too Short, Spice 1... WHEN PAJAMA JAMMS, LABELS LISTEN!



Oz Recording Studio

310 East Biddle St.
Baltimore, MD 21202
Phone (410) 234-0046
E-mail oz_studios@ool.com

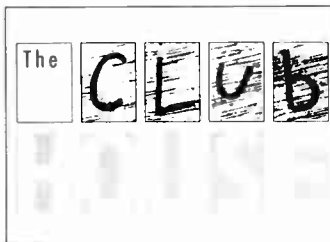
Oz features such recognized, trusted names as Studer, Trident and Genelec on its roster of vintage and state-of-the-art equipment. The studio was designed to meet a beautifully unique aesthetic while ensuring a dynamic sound. For comfort and convenience, we have indoor parking, separate lounges, kitchen and shower. Accommodations and catering available. While we offer few luxuries, we accept no compromise. Contact Laura for details.



Different Fur

3470 19th St.
San Francisco, CA 94110
(415) 864-1967

Different Fur offers custom service in a private atmosphere, featuring a Solid State Logic 4056 E/G console w/TR, Sonic Solutions digital editing and a large selection of echo, reverb, delay and microphones. Clients include Bobby McFerrin, Faith No More, Suede, George Winston, Primus, Windham Hill, Phil Collins, Kronos Quartet, Digital Underground and TV/film soundtracks. Brochure available.



The ClubHouse

Box 373
Germantown, NY 12526
(518) 537-6305; Fax (518) 537-5829

The ClubHouse recently installed a Neve 8058 MkII mixing desk. Vintage Neumann tube microphones and Telefunken preamplifiers have been added to the collection. Our large studio is 50'x25'x20', and the smaller room is a more intimate 19'x16'x8'. Located on the scenic Hudson River only two hours north of New York City, The ClubHouse provides a large selection of fine equipment in a relaxed country setting.



Giant Recording Studios

1776 Broadway, NY, NY 10019
(212) 247-1160; Fax (212) 247-2081

Sound Giant!



Dolphin Recording Studios

29-G Hunter Rd.
Hilton Head Island, SC 29926
(803) 689-6001; Fax (803) 689-2239

Dolphin is the newest state-of-the-art studio located on beautiful Hilton Head Island, South Carolina. Record in a relaxing atmosphere, and enjoy golf, tennis, fishing and the best beaches anywhere. Dolphin Recording Studio offers a Yamaha C-7 concert piano, 54-input Mackie 8-bus console, 32-track digital and Neve outboard gear. Contact Lew Carey Conetta, President.

—FROM PAGE 25, SECRET STRIFE

concentrated on the feelings and on the plants, leaned toward the plants and stared at them (but stayed far enough away to avoid breathing on them), all the time listening to oscillators on both the raw continuous CV feed and the quantized final feed.

Risking any credibility that I might have with you, I will say this: They definitely responded. We (the plants and I) only needed one day to get good enough to record the score that Stevie wanted, and so we did, and so it is in the album and on the film. I sat there and conducted with my *thoughts*, and the plants played. Now, I was not reading score, I was controlling rough voltage excursions, their timing, and note gate durations and speed. The DS-2 was cleaning them up, and Stevie was generally late or busy with his new Votrax speech synthesizer. A good time was had by all, until a nonbeliever brought a lighter into the room with the intent of threatening the plants. They screamed when he entered and maxed everything out when he pulled out the lighter, even though he never made it to the plants themselves, as we all heard the results on the studio monitors and ran in to see what was up.

Interesting. Alive is alive, it seems. Bad news for vegetarians.

So now I remember how sensitive and interactive those Boogalusa begonias were as I watch my Maryland marginata drop leaves after every sci-fi-screening. Are these plants trying to tell us something that we can't hear because the music's too loud? Is mother nature concerned about her children's hearing? Will our hero escape the evil of Rap as he once did with Disco? Some questions (like who is our hero, anyway?) can only be answered by each of you for yourselves. I am just here to remind you that the questions exist, perhaps to point out possible connections that you may have once felt and now lost. I am here to serve. By the way, how are the plants in *your* studio doing? ■

Warning, Will Robinson, Stop the Press! Those who read my July column, "And Now the Rest of the Story," may find TDK's advertisement on pages 6-7 interesting. Next month, my column will be the response TDK asks for. Fun will be had by all. —St. Croix

—FROM PAGE 31, THE END OF THE WORLD

deal with replication, and the very problematic question of promotion and distribution. Today, a musician no longer needs mass replication; by setting up a Web site, artists can make music available to anyone in the world, the very day the master tape is completed. Free samples of the work can be offered, or people can be charged to download work to their computers. It is not fantasy to imagine the day when a big-name group lets their contract expire and decides to release their next album on the Internet. Skeptical? Consider that id Software released a demo shareware version of a new video game on the Internet, where it was widely downloaded and copied. That game's name was Doom.

Similarly, downloadable shareware is now a key marketing element throughout the software industry. In addition, the ability to monitor Web hits provides an artist and record company with valuable instant feedback on the popularity of new material. The Internet Underground Music Archive (<http://www.iuma.com>) is one example of a Web site that specializes in offering samples of music recorded by independent artists and possibly is the prototype of the future of music distribution. The possibilities are endless.

A few years ago, the Web began by weakly mimicking traditional media. Now it has begun to find a unique role and is developing creative muscle with virtual 3D chat spaces and other innovations not possible with traditional media. Every major corporation has taken notice and is either on the Web or joining it. Whether you're enthused or repulsed by the Internet, it is fast changing the world we live in and the industry that employs us. The world has changed; to compete and participate, each of us must change as well. The sword has been withdrawn from its sheath; the blade glitters in the flickering light. Position the sword carefully. Now, fall upon it. Your rebirth awaits you. ■

Ken Poblmann (<http://www.music.miami.edu/music/poblmann>) has completed the long-awaited third edition of Principles of Digital Audio (McGraw-Hill). Dave Lampton (<http://www.arc.miami.edu/dave>) is a multimedia development engineer for the School of Architecture at U. Miami.

—FROM PAGE 108, HANS ZIMMER

I think I can live with it. When Ennio's good, he's really good—he's better than anybody else. All the spaghetti western stuff is quirky, it's funny, it's insane, but at the same time you can always hear the person. His stuff is very personal, and it's very uncompromising. I like that, and I don't think he's ever tried to do what anybody else does. He does Ennio, and if you don't like it, hire somebody else.

Bonzai: Have you met him?

Zimmer: I met him a couple of times, but I really never wanted to. When I first started as a session synth programmer, I started working with a lot of people who were my heroes, and most of them turned out to be complete assholes. So, I made it a rule that I never wanted to meet any of my heroes anymore.

Barry Levinson knew this, and one evening he said, "Why don't you come over for dinner on Sunday?" I got there and Ennio was there. Barry had done it on purpose, and I was completely intimidated by the man. And he is intimidating. He instantly asked me if I did my own orchestrations and arrangements. When I answered "yes," I was all right in his book. And we met again while he was doing *Wolf* in New York. We both share the same agents, Sam Schwartz and Mike Gorfaine, so I went to the sessions in New York. I'm still a fan. I go to the cinema, and I don't sit there and analyze what somebody else did. I just sit there, and if it's a great movie, it knocks my socks off, my mouth is open, and I'm having a great time.

Bonzai: How did you break into film?

Zimmer: It came about because I was writing commercials for a company that belonged to George Martin. George actually gave me my first job. There's a woman there named Maggie Rodford, still there, and she still looks after my publishing.

I was doing demos, and one day she said she'd heard that I programmed synths. She said they did commercials, and she would give me a ring on Monday. I wasn't holding my breath, but she did call and asked what I was doing the rest of the week. I was in a band at the time, endlessly touring, we never had a record deal, playing every shithole in the universe. When I got that call, I was out of that band so fast!

One of the composers she had for commercials was Stanley Myers, who had written *Deerhunter* and hundreds of films. If you think I work hard, well, Stanley never stopped. He must have been about 50 at that time and knew everything there was to know about orchestra but didn't know how to switch on his television. Electronics, new technology—a drum machine? Forget it. But he was interested. He had an incredibly inquisitive mind, and he thought all this electronic stuff was interesting as a sound, not as something you actually get involved in. Up to the day he died, he still didn't know how to switch his television on properly or change channels on his VCR.

So he phoned me up one day and asked if I would do movies with him as his assistant. The conversation was the shortest conversation I ever had. Stanley said, "Hans, would you like to work with me on movies?" I said yes, and he hung up. He didn't even say goodbye.

And in a way, that was how our style carried on. We never really discussed things. He threw me right in at the deep end. There were certain cues he just didn't want to write. He loved writing the pretty melodies and love themes and hated car chases and anything like that. He'd tell me to do certain cues, and he never asked if I could do it or not. On the first lot, I failed miserably.

We would write together, which meant I'd go into the studio when Stanley was away and hear what he'd done and go. "Oh, that bit's really boring." I'd just wipe it and put something of mine in, without discussing it with him. And he would do the same with me. It was totally egoless. All we were trying to do was show each other within our own disciplines that we could make something good happen.

When we did *My Beautiful Laundrette*, I slaved for three days on the opening titles. We were hardly ever in the studio at the same time and I went out for a bit, and when I came back, he had obviously been there. What had been a tune over three chords was now a tune over two chords. He wiped every second chord. At first I went, "Oh, I worked on it so hard," but after listening I thought, "Bloody hell, he's right. It's better."

Whenever I fell over and broke my nose in front of a director for doing something totally ludicrous and inap-

propriate, Stanley would steer me back into something that made sense. And I learned pretty much anything I know about music and orchestra, and how to deal with film, from Stanley. I figured out the math of how to hit every cut in sight. One day, Stanley said gently, "Sometimes a reaction is even better." He was right. He wasn't dictatorial—he was always interested in you doing something completely

How many scores sound
like Aaron Copland?
Right now everyone
is ripping off Copland,
and has done so since
Randy Newman did
The Natural.

off the wall and would defend you, too. We worked with all those very tricky European directors, who would encourage you to go way out there on that ledge. But sometimes you went out a little too far.

Stanley would find instant solutions as well. I learned that in film you need to find instant solutions, and you need to really listen to people. You need to find out what they say, not with words, but what is behind the words and what they have forgotten from being on the movie for two years. What was the original idea?

Bonzai: Do you get involved early on, even before the film is in production?

Zimmer: Sure. And I do films more and more by the director than the script. You form these small families on film that last a certain amount of time, and you have to be very good friends for a very long time. And then the film is over, and you don't see each other for years. These families are very intense, because the film is the boss. I don't work for the director or the producer; I work for the film, just as the director does. You hang on for dear life, and the film is dictating what it requires itself.

Bonzai: Are you continuing this tradition you had with Stanley?

Zimmer: That's the idea here at Media Ventures. I was more excited at the *Speed* premiere that Mark Mancina wrote than at any of my own films. It was like, "Hey—we showed those bastards who never hire anybody who doesn't have a name." And he did a good job, and he's got a hit movie, and he got through it without falling over. That's what this whole company is about.

Bonzai: Who else is working with you here?

Zimmer: Well, we have Jeff Rona, who does a lot of television at the moment: *Homicide*, *Chicago Hope*. Our friend John Van Tongeren is doing *Outer Limits*.

Bonzai: Pretty good show...

Zimmer: Yes, but it's a shitload of music each week. I never see him leave before four in the morning. And also, we just started working with Wendy & Lisa, and they just did their first film.

Bonzai: What's your next big project?

Zimmer: A John Woo film, *Broken Arrow*, which is going to be fun. Once a year I need to go crazy, and John is such a delightful gentleman. You would never imagine all that violence coming from such a softspoken intellectual. But then he's a big fan of all the '60s avant-garde directors. Those are the films they won't let you make over here, but he found a way of making them. You disguise it with lots of excitement, and it's really how you tell it, you know?

Bonzai: Is there any director you'd like to work with?

Zimmer: I'd love to work with Clint Eastwood, but he's totally loyal to Lenny Neihaus and has a strong working relationship with him. They are a team, and I respect that. There are many directors I haven't worked with. I would never assume to work with Spielberg because he works with John Williams. And I actually like going to those films with his music. Once you work on a movie, you can never have that joy of seeing it untainted.

Bonzai: How has changing technology, automation and that sort of thing affected your work?

Zimmer: Well, I wouldn't have a career without it, being a really bad player. But you have to remember that I started when this stuff first came out. Back in the late '70s, my first sequencer was the Roland MC-8, where you had to type numbers in for notes. Middle C was a 24, there-

fore D was a 26. Then I had the Fairlight Series 1, and I could play eight notes at the same time! Things have changed, but it hasn't made it any quicker. It's just given us more possibilities to get confused and to try things and be indecisive.

And my counterpoint writing was much better when I only had eight or 16 notes available at any one time. By playing a chord I would waste all that. It's certainly easier now to be mediocre. On the other hand, what I really do like about all the new technology is that it's no longer an elitist thing to make great noise. You don't have to have a big budget to go into a recording studio. You can do it at home, and either you write good music or you don't.

Bonzai: Is it easier now for a young person to get into the business?

Zimmer: No, I think most films are done by five composers these days, and I'm one of them. And it's really tedious. I want to hear other people's ideas or things won't progress. How many scores sound like Aaron Copland? Right now everyone is ripping

off Aaron Copland, and has done so since Randy Newman did *The Natural*. Being uneducated is helpful, because you don't know who to steal from. My influences aren't Copland. I'm not an American for starters. How can I escape my culture? I write about America, but I don't know what America is. *Thelma and Louise*, *Rainman*, *Driving Miss Daisy*, *Backdraft*—all intensely American films. The only point of view I can write from is that they are people like you and me. If this happens to them, then they must be feeling this way.

And there are the African films I've done, and everyone says the music is so African. I've never done any research; I just carry on writing my European stuff. But I love going to Africa, taking my European melodies down there and seeing what happens when you get another culture to interpret it.

I hate cultural imperialism, where you do the research and steal the bits that are appropriate. Everybody thinks *Lion King* has lots of African things in it. It doesn't. It has that one shout right at the beginning of the movie, and that's the trick of film

composing. By doing something so overtly foreign, you know you're not in Kansas anymore when you hear that chant at the beginning. You buy yourself license, and you don't have to do it time and time again. It's actually a very European score. I was just writing from the heart, and occasionally when I felt we were leaving our world too much, we would put some African choirs back in. But the impression is quite different.

Bonzai: So here you are at the top. Where do you go from here?

Zimmer: Well, I'm thinking of chucking it all in and doing something completely different. Every once in a while you need to go and say, "Okay, we've done that." I don't know what it will be for me next.

Bonzai: Could it be nonmusical?

Zimmer: I don't know if it could be nonmusical. There's too much love involved there. I'm married to the music, but it doesn't mean I can't have a mistress somewhere else. ■

Roving editor Mr. Bonzai's brief career in film scoring ended with the 1960 high school hygiene flick, Blindness or Hairy Palms? The Choice Is Yours.

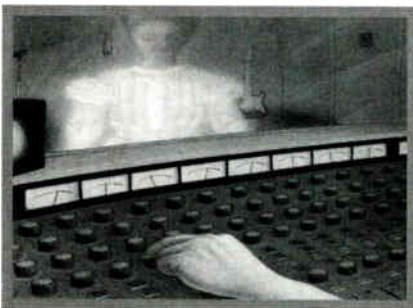
—FROM PAGE 212, GHOST STORIES

the punch, and said to the drummer, 'Rick, don't be hollering while we're recording.' He said, 'Man, I didn't say a word.' I said, 'Did you hear that?' He said, 'No, I didn't hear anything.' So we rewound the tape and, sure enough, in that spot you could hear the voice.

"Everybody was freaking out and laughing about it being the ghost, when suddenly the machine went into rewind on its own, and I never could stop it, no matter what I tried. I reeled it back up, and it was just fine and nothing went wrong after that."

"The voice that came through the speakers had an alien tonality, and it printed to tape," adds Gwin Spencer, who was in the Mother Station at the time and now has a solo deal with Elektra. "It was the song 'Heart Without a Home.' If you put on the headphones, you can hear a lot of weird noises in the mix that we didn't do on that album. I think it is cool that 315 is the way it is, because you feel that the building is alive."

Guitarist Wayne Perkins shares Spencer's sentiments. "I tried two or three different studios out here in California for my latest album," he says, "and I couldn't get that dog to



hunt, so I got on a plane and went to Memphis. I believe that one can be indwelt by different spirits when playing. If you are in tune enough, you can let something take you over, close your eyes and play the real stuff. That is what happened to me at 315 Beale Street. I stood out there, and the spirits came up through the floor and got all over me.

"I've worked at 315 Beale a lot, and I've written three songs in there in one night, so I know what kind of spirit is in the place. You can walk through the studio, and the air is so thick, it's syrupy. I know that the place is haunted, but it is haunted with some great musicians."

"I think studios are full of all kinds of residual energy," producer Dickinson says. "Anyone who walks

into a studio and doesn't feel something ought to get into another line of work. You can't walk into a studio and not feel a vibe, if you are a professional.

"It is the attempt to capture and reorganize the unretainable nature of the moment that I think makes man seek to record. A studio is a place where you repeat the same activity. No matter who you are, you are doing the same thing that the person before you did. Because you exposed yourself creatively in this space, you have literally left behind part of your soul. It is because the essence of the moment is the performance, and it equals the soul, whatever it is, musical or theatrical. It is a spark, and it is what I think you feel.

"I think a ghost may have more to do with those who perceive it than it does with whom it may have once been," Dickinson concludes. "I think your seeing it is creating it, but I think that the ghost, per se, may be unaware of where it is. I certainly don't think it is a whole being. It is something left over." ■

Got any good studio ghost stories? We want to hear them! Contact Rick Clark at blurgeboy@aol.com.

—FROM PAGE 248, LISTENING ENVIRONMENT

use minimum phase filters. Minimum phase filters allow for more latitude to boost or cut without hearing excess phase shift. I would like to see more parametric manufacturers use second order filters in their high/lowpass filter sections. Second-order filters are much more applicable to room tuning than third- and fourth-order filters, which are designed mainly for noise removal.

Equalizable room/speaker interaction is a minimum phase, second-order phenomenon exhibiting constant bandwidth and linear frequency spacing. Minimum phase frequency-

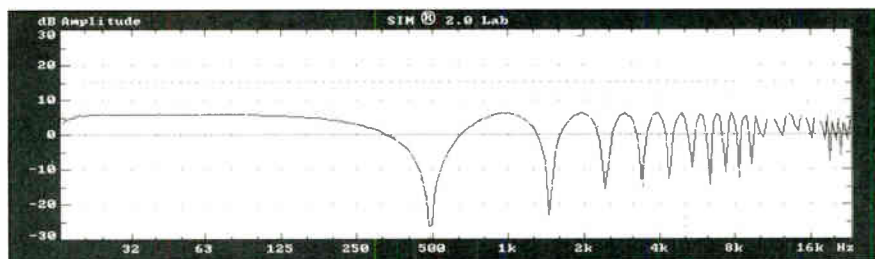


Figure 3: Effects of 1 ms delay on signal.

ment. Combs rarely occur exactly at fixed ISO standard frequencies. Once again, parametrics offer the versatility to use a single filter to correct an overall trend in the response. With $\frac{1}{3}$ -octave EQ, several filters must interact to address this same issue.

Part of the reason for using $\frac{1}{3}$ -oc-

EQ'd. The $\frac{1}{3}$ -octave analyzer averaged this section out in a broad stroke. This is a simplified picture, but it is accurate and is the rule rather than the exception. I strongly suggest that you look at your rooms

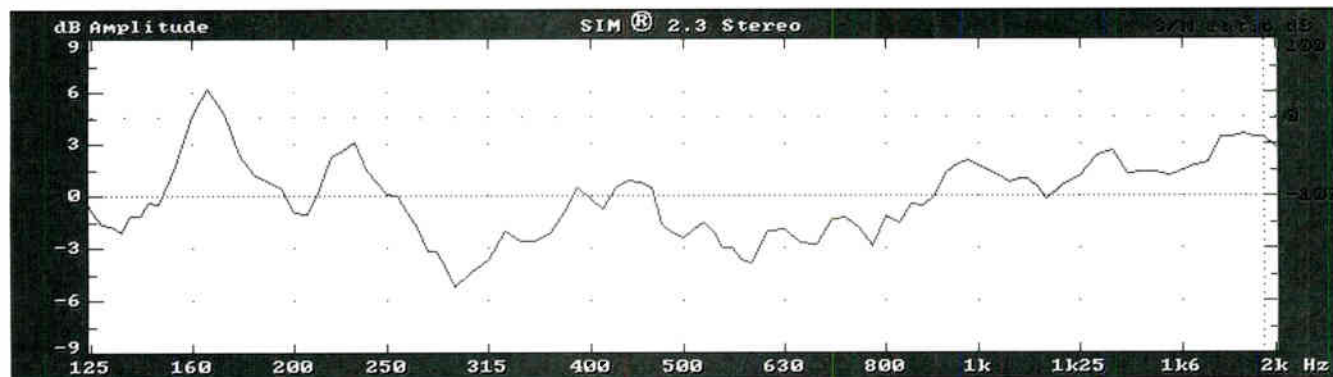


Figure 4: Midrange response viewed in $\frac{1}{3}$ -octave resolution.

response anomalies occur when speakers are placed in proximity to boundaries such as walls, ceilings or soffits. At best, $\frac{1}{3}$ -octave equalizers are constant-percentage bandwidth with logarithmic frequency spacing. Fig. 3 demonstrates the type of frequency response comb filtering caused by a 1ms echo, typical of a console reflection. Note that the combing is not logarithmically spaced (e.g. $\frac{1}{3}$ -octave) but rather a constant bandwidth of 1 kHz. The frequency centers of the comb are an octave wide from 1 to 2 kHz and $\frac{1}{10}$ -octave-wide from 10 to 20 kHz, meaning that a device with fixed $\frac{1}{3}$ -octave bandwidth can not create a comple-

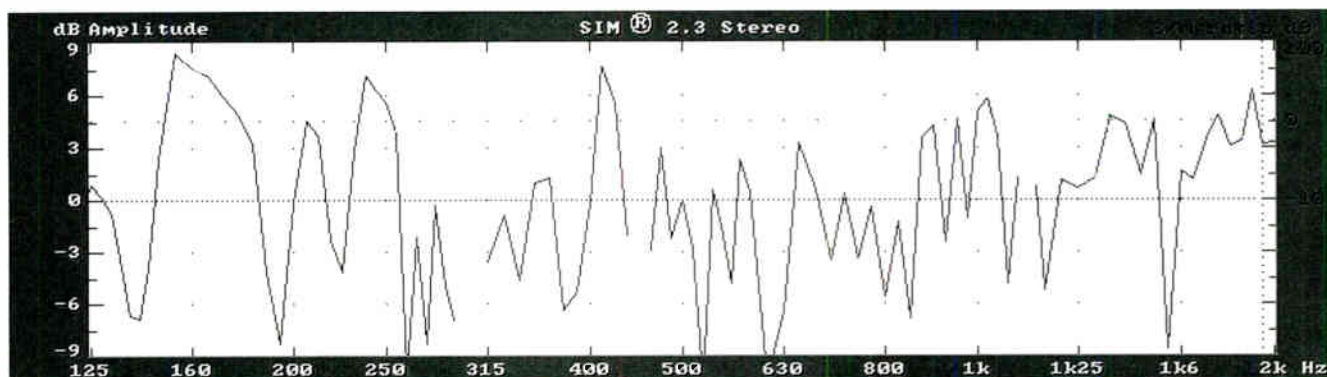
tive equalizers for so long is due to the fact that until recently most analyzers were $\frac{1}{3}$ -octave. But $\frac{1}{3}$ -octave analysis does not offer enough resolution to actually see the whole story. Fig. 4 shows a $\frac{1}{3}$ -octave mid-band shot of a control room. Notice the hole from about 500 to 800 Hz. This would lead one to believe that some boost centered at 630 Hz on your $\frac{1}{3}$ -octave EQ would fix the problem. In actuality, viewing the $\frac{1}{10}$ -octave resolution in Fig. 5, we see that this is not a wide-band hole but a series of tight combs that should probably not be

with effective resolution if you really want to solve the problems.

There are now better solutions available to address room/speaker interactions than are currently in use. Without a huge investment, the quality of studio monitoring environments can be upgraded significantly, which is supposed to be one of the advantages to working in a "recording studio." If you don't agree, just make mine a double espresso with a twist, please. ■

Berkeley, Calif.-based Bob Hodas travels throughout the country tuning studios. He will be demonstrating lots of colorful squiggly room curves with his SIM® System II at the studio audition booth during AES.

Figure 5: Midrange response viewed in $\frac{1}{10}$ -octave resolution (same as Figure 4).



—FROM PAGE 277, DIGIDESIGN POSTVIEW

port window. To play Pro Tools independent of a video deck, select Transport = Pro Tools in the Transport pop-up menu, and make sure the online button is off. To control your video deck independent of Pro Tools, simply switch to Transport = Machine. In an online situation, you can use the transport to make either Pro Tools slave to your videodeck or vice versa.

The two scenarios cause slightly different results: when "Transport = Pro Tools," clicking a Pro Tools autolocate point, selecting a region with the Grabber tool, and using the Selector tool in the Mix window all cause the machine to chase to the selected start location. When "Transport = Machine," the machine will not follow selections made with the Selector tool in the Edit window. In addition, when Auto Spot Regions is selected in the Options menu, regions can be spotted to the current machine time, and the trimmer tool will cut to the current machine time. Very nice.

I found that though I could use the Panasonic to control Pro Tools, I couldn't consistently get the deck to slave to Pro Tools. When I pushed Play, it would always chase to the correct location but once there, the deck usually simply stopped. No playback followed, and the dialog told me that that the machine was still cueing. And at one point, the system locked up when I hit play using the Panasonic to control Pro Tools. I also found that machine control was sluggish when I chose Pro Tools as master—especially when I wanted to stop playback. Digidesign's technical support personnel were generally helpful (when I could get through), but despite the company's success, tech support continues to be understaffed and overworked. It was only after a Digidesign support person came out to our facility and spent more than five hours trying to diagnose this machine control problem that the mystery was unraveled. We had assigned machine control to the printer port and MIDI to the modem port. Switching machine control to the modem port and MIDI to the printer

port completely solved the problems—including sluggish transport response—on our 840AV. We did verify that this serial port problem was not present on a Quadra 650, and Digidesign assured us that it is indeed unique to the 840AV.

CONCLUSION

With a retail price of \$1,495, PostView is an elegant solution for audio post work using a Pro Tools system. Unquestionably, synchronized random-access audio and video is a technology whose time has come, and Digidesign has a winner of an application for random-access junkies. And once the company works out minor kinks with machine control, it promises to be an even better value for professional audio post production facilities that have a substantial investment in standard video playback technology.

Digidesign, 1360 Willow Rd., Menlo Park, CA 94025; +1 688-0600. ■

Paul Potyen is a Mix contributing editor, a producer at ESCAtech media in Half Moon Bay, Calif., and a random-access junkie.

In Session With PostView

With credits on films like *Speed*, *Desperado*, *Immortal Beloved* and *Apollo 13*, Dean Beville is no amateur when it comes to digital post-production. He recently started up a "very digital-picture-integrated" production facility called Creative Cafe, with recent Academy Award winner Steve Flick. Mix caught up with Beville at Todd-AO in Studio City, Calif., where he took a moment during mixing for the Paul Verhoeven feature *Shogun* to share his thoughts on PostView:

"I actually used an early version of PostView a long time ago, and cut two things with it—a *Congo* trailer and one of the polar bear spots for the national Coke campaign," Beville recalls. "The first thing I really liked about it was the fact that I was able to scrub sound effects and have the picture chase, which is PostView's single most powerful feature. The first teaser trailer for *Congo* showed the POV of the camcorder, the man walking

through the jungle. You saw the camera moving around, and you saw a lot of video glitches, interference and static start to build up on this image, and it eventually goes to black. If I had cut that on videotape, I would have driven myself nuts because, frame by frame, I would have seen nothing but video noise. Finding the frames to cut the video static hits and the weird little sound effects that we did for it would have been difficult on videotape, just by the nature of the material.

"Before, your video would always be pretty jerky. Playback was dreadful unless you digitized a very small, postage-stamp-sized image, and you had to apply heavy compression. With the new PostView, you don't really need to. I've used the updated DAE system with earlier versions of Pro Tools, and I didn't have the type of control with scrubbing that I do now—I would say that in combination with Pro Tools 3.1, it's a great feature.

"We use PostView mostly to do Foley. With videotape, you would always have to preroll a couple of

seconds and then wait for your system to lock up, and with Foley that's not really good because it's subframe-accurate editing. With multiple edits per foot, if I'm checking sync on a section of footsteps and I have to preroll three seconds, I've lost my orientation, and have to listen to 40 footsteps to finally listen to the four I really want to hear. What's really good about PostView is being able to zoom right in and hear the sound effect that you need to listen to against picture.

"PostView is a new piece of software, and I've managed to make it crash a few times by using modifier key shortcuts, but it's really robust. I spend less time rewinding tapes, less time pre-roll and post-roll. It's only a couple seconds here and there, but if you're constantly rolling a couple seconds...I still take the same amount of time to cut material, but I spend more time editing, being creative, and less time dealing with the machinery."

—Sarah Jones

—FROM PAGE 198, ANITA BAKER

tion transducer that gives the musicians the sensation of sub-bass without having subwoofers onstage. The bass and kick drum channels are sent to a separate sub mix, feeding the combined signal to these devices that are mounted to the underside of stools or under riser platforms.

To augment the Yamaha PM-4000 at FOH, Ken Newman is using the MIDI-controllable Yamaha ProMix 01 console to return the seven stereo keyboard modules, allowing their balance and effects to be set up as a preset for each song. To control the ProMix and all the other effects' program changes, Newman uses a Yamaha MPC-1 MIDI keypad. "Something they don't make anymore that I wish they did," he comments. A Lexicon PCM70, a PCM42, an Ensoniq DP-1 and an Alesis QuadraVerb are used as floating effects. Dedicated effects include a Yamaha SPX-990 for toms, an SPX-1000 for background vocals, and an Eventide H3000SE for doubling and chorusing BGs.

A Lexicon 480 is used for Baker's vocal, with the other side for drums, and the 480's vocal reverb return has a Meyer CP-10 on it for critical equalization. Baker's vocal, fed to the FOH from the Hardy preamp onstage, is routed to a BSS 901 for frequency-dependent compression, a Summit EQF-100 tube EQ for wide-band tonal adjustment, a Sabine ADF-2400 Workstation for narrow band EQ and a Summit TLA-100A limiter before entering the console's channel insert return. The background singers are bused to a stereo group with a Summit EQF-100 and TLA-100 combination inserted. Other compressors are various dbx models, including a 165 as a stereo system compressor. Also used is an Aphex Type C Aural Exciter as an overall send-and-return effect, and a Type III Aural Exciter inserted on the channels for the piano pick-ups, which are Lawler-modified Helpinstills.

The addition of SIM means

that the usual FOH engineer's responsibilities are split, and the mix position has become two distinct workstations. With a pair of delayed Meyer HD-1 studio monitors (which were used for mixing the album) placed on the console meter bridge, Newman finds he can concentrate more on the house mix without having to concern himself with the room EQ. "It doesn't really matter where the mix position is," he comments. "I can turn up the HD-1s so they are louder than the P.A. and mix critically on them." At Oakland, Calif.'s Paramount Theatre, the mix position ended up way at the back, between the last row of seating and the rear wall, under the balcony. "Without those HD-1s, I would have ended up listening to an imbalance, due to the bass trap back there," Newman explains. "Because the HD-1 mix at the console so closely resembles what the audience is hearing from the P.A., and because of the in-ear monitoring's benefit of having almost no sound coming off the stage, I could practically mix in another room, although I haven't tried that yet."

This project is breaking new ground by using SIM on a tour without any specific time set aside for this daily process. In the past, it has not been uncommon for shows of this scope to have anywhere from four hours to a whole day allocated for SIM time. This can be very expensive over the length of a tour, and incorporating it into a traditional setup schedule is challenging. After purchasing the SIM system for this tour, A-1 Audio also built a BSS Varicurve 900 Series EQ rack to speed up the EQ process, as opposed to using standard parametric EQ. The zones can track coupled together, or they can be EQ'd discretely, and several memory configurations were stored for different styles of venues. The numerical readout on the Varicurve 900 remote screen can be matched to the numerical cursor readout on the SIM screen quickly and accurately. Along with the BSS TCS-804 system delays, there is

Coming in Mix November 1995

Computers in Audio

• TECHNICAL FEATURES

Networking Studio
Computers

Audio for the New Rock 'n'
Roll Hall of Fame

Engineers on Using Console
Automation Systems

• REGIONAL FOCUS

Chicago Blues Clubs

Chicago Project Studios

• LIVE SOUND

Hootie & the Blowfish

Computer Control in
Live Sound

• SOUND FOR PICTURE

Workstations in Post-
Production, Part II

Century III Sound Studios

• PLUS!

The BBC's New TV Facility:
Chris Isaak; Bela Fleck;
John Lee Hooker

ATTENTION ADVERTISERS:

Deadline for ad placement is the seventh of the month, two months prior to publication. Call (510) 653-3307 for a 1995 Mix Editorial Calendar, space reservations and complete advertising information.

MIX

also a Sabine ADF-2400 Workstation in the rack to assist in locating and adjusting frequencies to 1Hz resolution.

Some members of the audio world have misconceptions about SIM's role and functions. The machine itself is an analysis tool and does not automatically EQ the room or time-align the system. To quote John Meyer, "It is an X-ray machine, not a doctor." The SIM machine receives line-level feeds from the console outputs (system EQ inputs), the EQ outputs and from the room at various mic locations. It compares the output of the console to the response of the room. The system is then physically adjusted, time-aligned, and/or EQ'd by a human operator, with the goal of making the room response identical to the output of the console for every seat in the house. By dividing the FOH system into eight zones and analyzing them each in four to five locations, we are able to EQ and

time-align all the zones separately and then analyze the combined response, all with 1/2-octave resolution. On the screen, we can see the room trace before and after EQ, and time correction at any of the mic locations, as well as the actual EQ curve.

After using the SIM system for even a short while, it becomes increasingly obvious just how critical speaker placement is. No amount of EQ is going to fix the acoustical problems generated by incorrect speaker placement. Radio City Music Hall was built 60 years ago and, like many older venues, was not designed to be used for amplified music. As anyone who's played there knows, there is a 250-millisecond slap off the parabolic rear wall, which focuses sound back (you guessed it) at center stage. The narrow dispersion pattern of the MSL-4 and MSL-5, along with a downward tilt on all clusters, is very helpful in keeping reflections off the walls and getting more direct than reverberant

energy to all seats. The system design of eight zones allows us to place and EQ speakers that cover usually hard-to-reach areas—especially balconies—with genuine fidelity and critical accuracy in the time domain.

SIM, however, is much more than a device for setting sound system EQ. The SIM system was used on this tour as an in-the-field bench tool for phase, frequency and distortion analysis of individual electronic components—including wireless receivers and headsets. Calculating speaker delay times can be performed with extreme accuracy, as can the uncovering of room reflections and combs. Because this analysis is a comparative study, this task can be performed using pink noise, music or any source with full frequency content. ■

Dave Lawler, formerly with the Vancouver Mafia, has also worked with k.d. lang, Phish and Barry Manilow.

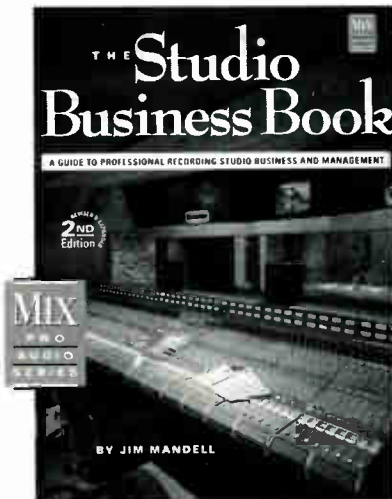
MIX

Reader Service

For more information about products and services advertised in this issue, fill out and return *Mix's* postage-paid reader service card! You'll receive information directly from the advertisers whose products interest you.

NEW FROM MIXBOOKS

The Key to the Studio Business!



The new second edition of this widely-used book is a necessity for anyone running or owning a studio, whether it's a project setup, a midrange commercial facility, or a world-class room hosting the stars! Author Jim Mandell gives you in-depth, detailed, *specific* information on:

- Writing a business plan and getting funding
- Choosing and buying equipment
- Determining monthly expenses and setting rates
- Developing new income sources and making contacts
- Advertising and PR
- Scheduling and studio politics
- Managing, hiring and firing personnel

The Studio Business Book also includes special sections on the legal issues surrounding home project studios and writing an employee handbook, plus a guide to terms and technology and other resources.

Item 1319A, \$34.95 plus \$4.00 shipping and handling.

TO ORDER, CALL TOLL-FREE: (800) 233-9604

AD INDEX & READER SERVICE PAGE

PAGE	READER SERVICE NUMBER	ADVERTISER	PAGE	READER SERVICE NUMBER	ADVERTISER	PAGE	READER SERVICE NUMBER	ADVERTISER
284	001	Aardvark Computer Systems	263	039	BASF	301	079	Eastern Standard
342	002	AB International	226	040	Russ Berger Design			Productions (ESP)
51	003	Absolute Audio	159	041	beyerdynamic	88	080	Electro-Voice (EV)
67	004	Ace Music Center	322	042	Big Mo	160	081	E-mu Systems
106	005	Ace Products	303	043	Black Ink Publishing	131	082	Ensoniq
90	006	Acoustical Solutions	101	044	Brainstorm Electronics	321	083	Equi=Tech
301	007	Acoustic Sciences Corporation(ASC)	111	045	Bryston	65/65	-	Euphonix Insert
268	008	Acoustic Systems	343	046	Burlington A/V Recording Media	241	084	Europadisk
335	009	Adams-Smith	242	047	Caig Laboratories	75	085	Eventide
288	010	Advance Recording Products	187	048	Calrec Audio	66	086	Fairlight
273	011	AirCraft Production Music Libraries	296	049	Cal Switch	318	087	Fairlight #2
78	012	Akai	298	050	David Carroll Electronics	64	088	Ferrofluidics
56-57	-	AKG	177	051	Carver	55	089	Focusrite
IFC	013	Alesis (MidiVerb 4)	290	052	Cassette Productions	24-25	090	Fostex
13,14-15	014	Alesis (ADAT-XT)	148	053	CCS Audio Products	237	091	Fostex #2
61	015	Allen & Heath	339	054	Clarostat	315	092	Full Sail Center
9	016	Ampex	210	055	Corel Corporation			for the Recording Arts
327	017	AMP Services	152-153	056	Crown	96	093	Furman Sound
27	018	AMS/NEVE	231	057	CTI Audio	346	094	Furman Sound #2
178	019	Anthony DeMaria Labs	149	058	D & R USA	304	-	Future Disc System
161	020	Aphex Systems	95	059	Dale Electronics	345	095	Gefen Systems
329	021	API Audio Products	97	060	Dale Electronics #2	207	096	Gemini
34	022	API Audio Products	99	061	Dale Electronics #3	129	097	GENELEC
190	023	Applied Research & Technology (ART)	305	062	The DAT Store	314	098	General Business Solutions (GBS)
294	024	ARCoustics	195	063	dB Technologies	293	099	Gepco
145	025	Ashly	52-53	064	dbx	264	100	Golden Ears
126	026	AT&T/Studio A	283	065	Demeter Amplification	259	101	Gold Line
296	027	Athan Corporation	257	066	Denon America	307	102	Grandma's Music & Sound
311	028	ATM Fly-Ware	336	067	Design FX Audio	226	103	Groove Tubes Audio
289	029	AudioForce	289	068	DGS Pro Audio	285	104	Groves Dictionary
256/257	-	AudioForce Insert	18-19	-	Digidesign	344	105	Bernie Grundman Mastering
156	030	Audiomation Systems	46-47	-	Digidesign #2	22-23	106	Hafler
181	031	Audio Precision	219	069	Digital Audio Labs	114	107	Harris Allied
41	032	Audio-Technica	42-43	070	DigiTech	323	108	Harrison/GLW
171	033	Audio Toys (ATI)	183	071	Disc Makers	72	109	HHB Communications Ltd.
258	034	Audio Toys (ATI) #2	65	072	Dolby	326	110	HHB Communications Ltd. #2
98	035	Audix	69	073	Drawmer	143	111	The Hollywood Edge
94	036	Avalon Design	303	074	Dreamhire	196	112	Horizon Manufacturing
21	037	BAG END Loudspeakers	30-31	075	Duracell USA	225	113	Hot House Professional Audio
340-341	038	B & H Photo-Video	108	076	dynaudio acoustics	234	114	Innovative Quality Software
			265	077	EAR Professional Audio/Video	144	115	Institute of Audio Research
			124-125	078	Eastern Acoustic Works (EAW)	183	116	Inward Connections

PAGE	READER SERVICE NUMBER	ADVERTISER
BC	-	JBL Professional
79	249	The John Hardy Company
313	117	JRF/NXT Generation
114	118	KABA Research & Development
122	119	Kart-a-Bag
150	120	KRK Monitoring Systems
188-189	121	Kurzweil Music Systems
322	122	L & M Music
288	123	Leo's Professional Audio
261	124	Lexicon
118	125	Lighthouse
118	126	Lightwave
91	127	LinearX
107	-	Los Angeles Recording Workshop
344	129	MacBEAT
IBC	130	Mackie (CR-1604)
28-29	131	Mackie (8-BUS)
194	132	Mag-Zon
268	134	Manhattan Production Music
123	135	Manley Laboratories
306	136	Markertek Video Supply
204-205	137	Meyer Sound
313	138	The Microphone Company
227	139	Micro Technology Unlimited (MTU)
102	140	Millennia Media
337, 358	141	Mix Bookshelf
308, 337	142	Mix Español
276	143	Mobile Fidelity Sound Lab
54	144	Mytek
259	145	National Sound and Video
81	146	Neumann/USA
179	147	Neutrik
151	148	Night Technologies International
309	149	Northeastern Digital
310	150	OGM Production Music
166-167	151	Optifile/Sascom Marketing
139	152	Otari
300	153	Otari #2
62-63	154	Peavey Electronics
199	155	Pelonis Sound & Acoustics
137	156	Pioneer Hill Software
216	157	Platinum Island Recording Studios
314	158	Polyline
331	159	Prism Media Products
292	160	Progressive Music
266	161	Project One Audio
277	162	Project One Audio #2
182	163	Pro Sound & Stage Lighting

PAGE	READER SERVICE NUMBER	ADVERTISER
327	164	QCA
134	165	QSC Audio Products
106	166	Quintessential Sound
17	167	Raindirk/Sascom Marketing
84	168	Rane
248	169	The Recording Workshop
251	170	Revelation Products
305	171	Rhythm City
292	172	Rich Music
108	173	Rocket Lab
142	174	Rocket Science Limited
36-37	175	Roland
345	176	Rolls Corporation
115	177	Rorke Data
252	178	Ross
240	179	RPG Diffusor Systems
275	180	RSP Technologies
113	181	Russ Jones Marketing Group
287	182	Sabine
298	183	Sam Ash Parts
249	184	Sam Ash Professional
330	185	SAS Industries
347	186	Schoeps
330	187	Selco Products (Indicators/Knobs)
176	188	Sennheiser
193	189	Sennheiser #2
209	190	Sheffield Audio-Video Productions
147	191	Shure
120	192	Simon Systems Engineering
1	-	Solid State Logic (SSL)
243	-	Solid State Logic (SSL) #2
295	193	Sonic Foundry
297	194	Sonic Foundry #2
299	195	Sonic Foundry #3
140-141	196	Sonic Solutions
10-11	-	Sony
278	-	Sony #2
112/113	-	Sony Insert
228	-	Soundcraft
136	197	Sound Ideas
246	198	Soundscape
255	199	Spectral
284	200	Speir Music
39	201	Spirit
239	202	Spirit #2
35	203	SPL
109	204	Stanford Research Systems
80	205	Steady Systems

PAGE	READER SERVICE NUMBER	ADVERTISER
3	206	Studer Editech
40	207	Studer Professional Audio Equipment
213	208	Studer Professional Audio Equipment #2
76-77	209	Studio Audio Digital Equipment (SADiE)
260	210	studio bau:ton
90	211	Studio Consultants
127	212	Studio Techniques
103	213	Sweetwater Sound
203	214	Switchcraft/Raytheon Co.
146	215	Symbolic Sound
223	216	Symetrix
130	217	Systems Analysis
121	218	Systems Development Group
208	219	Tactile Technology
2	220	Tannoy
162-163	221	Tascam
49	222	t.c. electronic
6-7	223	TDK
265	224	Technomad
238	225	Technoworks Mobile
293	226	Thoroughbred Music
184	227	3M Corporation
269	228	TimeLine
325	229	TL Audio/Sascom Marketing
312	230	The Toy Specialists
128	231	TROISI Digital Companion
173	232	TURBOSOUND
271	233	Uncle's Stereo
270	234	Uptown Automation
306	235	Vertigo Recording Services
158	236	Vestax Corporation
338	237	Viking Audio
307	238	Walters-Storyk Design Group
245	239	Waterland Group
206	240	Waves
87	241	Westlake Audio
311	242	West L.A. Music
174-175	243	Whirlwind
290	244	Whisper Room
235	245	White Instruments
248	246	The Woodwind & The Brasswind
286	247	World Studio Group
157	248	Yamaha
291	249	Yorkville
105	128	Zero International

MARKETPLACE

LOOKING FOR A DEAL ?!



NEW
from **KLARITY**
KASSETTE


200 TAPES FOR ONLY \$1.98 EACH!!
COMPLETE BLACK & WHITE RETAIL-READY PACKAGE!

Two-Color Print add just .10 per unit (\$20.00)
Pure Chrome tape add just .15 per unit (\$30.00)

800-458-6405 Klarity Cassette, Inc.
Waterville, Maine 04901

ASK FOR OUR FREE FULL-COLOR CATALOG

**NEW PATENTED
ANTI-JAM SELF-CLEANING
ENDLESS LOOP**



CHEATING YOURSELF?

Most likely you are - If you're not producing "ON HOLD" telephone tapes. **BIG PROFITS** being made, just ask AT&T for their monthly prices. Call or fax for **HOLD-A-CALL** info. & a sample of our new "ANTI-JAM/SELF-CLEANING" ENDLESS LOOP.

Also ask about our Dealer Lead Program.

MANN ENDLESS CASSETTE INDUSTRIES
3700 Sacramento, San Francisco, CA 94118
TEL: (415) 221-2000
FAX: (800) 683-7569 or (415) 387-2425

**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



**CD & Cassette Prices
That Are Down To Earth!**

CD's **CASSETTES**
500 - \$1070 500 - \$555
1000 - \$1635 1000 - \$745



CD Packages Include:
Glass Master
Full Color 2 Panel Booklet
2 Color on CD Printing
And Much More ...

**Toll Free
1-800-876-5950**
We Accept VISA/AmEx

**BE A PART OF
THE LEGEND AT
MANNY'S MUSIC**

From Jimi Hendrix to Guns N' Roses, Manny's has been the first choice of legendary musicians for almost 60 years.

Experience the tradition of Manny's legendary service, expertise and extensive equipment selection.

Call 212/869-5172 or write for your FREE product catalog today and become part of THE LEGEND.

(Add \$2.00 shipping and handling outside Continental U.S.)

Manny's Mailbox Music
48th Street At Your Doorstep

Manny's Mailbox Music
48th Street At Your Doorstep
156 W. 48th Street, NY, NY 10036
Hours 10:00 a.m. - 6:00 p.m. EST M-F





**HYDRA
AUDIO**
(915) 857-1191
Custom-Wired Patch Bays & Harnesses
For All Professional Audio Applications

Radine's
MUSIC & PRO AUDIO
The Right Answers,
The Right Prices.
ALL MAJOR BRANDS
800 • 918 • 4800
(213) 464 • 7550
6251 Santa Monica Blvd. • Hollywood, CA • 90038

1000 CDs for \$2275
Master disc, full layout, full color 4-page booklet, full color
insert card, jewel box, film, assembly, and shrinkwrap.
Free shipping included!
Check out our other packages.
Call toll free for a free
brochure & sample
1-800-305-DISC
Fax: (716) 871-9317

2635 Delaware Ave. Buffalo, NY 14216

**ATTENTION: STUDIOS
AND BROADCASTERS**

C-10 Maxell XLI 29¢ 100 minimum	C-20 Maxell XLI 35¢ 100 minimum	C-30 Maxell XLI 40¢ 100 minimum
--	--	--

250 BASF Chrome Cassettes Duplicated
\$180 INCLUDES 30 MINUTE 1/2" MASTER

SOUND ADVICE
1-800-987-6830
(CA 909/987-6930)

Better Quality, Lower Prices, Faster Turnaround

Look Ma, No Hands!

Introducing the IRI, the world's first automatic microphone switch. The IRI's body sensing technology keeps mics off until performers are within an adjustable range. Now you can mute unwanted sources of stage noise & feedback, increase system headroom, & clean up any mix without using your hands! The simple to use, compact and affordable IRI is compatible with most mics. Call and order the IRI today, in singles or our handy six-pack.

*"This innovation truly provides a large improvement in a live mix for a very small price."
Geoff Ganiford, FOH Eddie Money Band
What a great idea, Sounds Great!"
Eddie Money*



1012 Morse Ave. Suite 19
Sunnyvale, CA 94089-1634
Tel: (800) 701-7899
Fax: (408) 745-7897

You Work the Audience... We'll Work the Mic!

Necessity
was the mother of our invention...



"We had 20,000 CDs and no way to label them"
— Peter Tracy
President, MicroPatent

NEAT™
CD LABELER KIT
PATENT PENDING

The only way to label a CD-ROM is NEATO.

Only **\$79.95**
Includes software templates

for complete details
800.648.6787
info@micropat.com
203.466.5055 Fax 203.466.5054

MicroPatent* 250 Dodge Avenue East Haven, CT 06512

FREE!  **BASF DENIM JACKET** 

With the Purchase of Two Reels of either
2" 900 MAXIMA or **2" 911 STUDIO MASTERING** tape




BASF Demand it!

LIMITED TIME OFFER
764 5th Avenue, Brooklyn, New York 11232
In New York Telephone: (718) 369-8273
24-Hour Fax: (718) 369-8275



CALL TOLL FREE 1-800-538-2336

**NOW! YOU CAN CHOOSE!
TDK PRO SA BULK**

CUSTOM LOADED HIGH BIAS (TYPE II) CASSETTES
UNLABELLED AND UNBOXED • MICHELEX CLEAR 5-SCREW SHELLS • CUSTOM LENGTHS AVAILABLE

Length	C-10	C-20	C-30	C-40	C-45	C-50	C-60	C-70	C-80	C-90
Price	\$0.31	\$0.37	\$0.44	\$0.49	\$0.50	\$0.53	\$0.61	\$0.68	\$0.75	\$0.82

MAXELL XLII BULK

CUSTOM LOADED CHROME HIGH BIAS (TYPE II) CASSETTES
UNLABELLED AND UNBOXED • MICHELEX CLEAR 5-SCREW SHELLS • CUSTOM LENGTHS AVAILABLE

Length	C-10	C-20	C-30	C-40	C-45	C-50	C-60	C-70	C-80	C-90
Price	\$0.32	\$0.37	\$0.42	\$0.52	\$0.54	\$0.56	\$0.61	\$0.73	\$0.78	\$0.83

PREMIUM ROUNDED-EDGE ALL CLEAR NORESCO BOXES > \$0.13 each
10 up or 12 up Cassette Label for Laser/Ink Jet Printers \$0.30 per Sheet (white)
\$0.35 per Sheet (color-call for selection) Cassette Insert Cards (I-Cards)
8 up \$0.30 per Sheet (white) \$0.35 per Sheet (color)

NOW! RECORDING SYSTEMS, INC.
32 WEST 39TH STREET, 9TH FLOOR, NEW YORK, NY 10018
Telephone: 212-768-7800 • 800-858-3579 • Fax 212-768-9740
MASTER DISTRIBUTORS of:
3M • AMPEX • BASF • DENON • DIC • FUJI • MAXELL • SONY • TDK • TELEX
AND MUCH, MUCH, MORE...
We Accept VISA • MasterCard • American Express or UPS COD Cash Only

CALL FOR FREE FULL LINE A/V CATALOG

\$25 MINIMUM PRODUCT ORDER (Shipping charges extra)

CLEAN YOUR ADAT

Eliminate unwanted drop outs and increase productivity by regularly cleaning your ADAT's head, capstan & pinch roller. Use our cassette style cleaner or clean with chamois swabs. Both feature our S-711 INTRACLEAN Professional Cleaning Fluid. In addition, we make cleaning products for all formats of analog and digital recording. For a Free Catalog or To Order Call or Write:

AMERICAN RECORDER TECHNOLOGIES

800 777-9580
FAX: 805 527-1433
4545-6A Industrial Street, Simi Valley, CA 93063

Used and Recommended by Audio Manufacturers.



If the mic you're using doesn't give you a BIG SOUND.. TRY OUR N90!

A natural sounding large diaphragm transformerless dynamic.

Ask your dealer or call us at: 1-800-873-0544

List \$399 Shock Mount \$49.50

STEDMAN CORPORATION

4167 Stedman Dr
Richland MI 49083
Phone 616-629-5930



You've come this far... don't settle!

CHEAP CD'S & CASSETTE manufacturing THIS way

it doesn't cost much more to use the best!

- ✓ INNOVATIVE MASTERING
- ✓ CUSTOM CD, CASSETTE & RECORD PACKAGES
- ✓ HIGH IMPACT GRAPHICS
- ✓ COMPETITIVE PRICING
- ✓ DEDICATED SERVICE

TRUTONE INC.
310 HUDSON ST., HAGENSAID, NJ 07601
TEL: (201) 489-9160 FAX: (201) 489-1771



Breathe...

OK. THAT'S WHAT'S ATTACKING YOUR CONNECTORS & DAT TAPES

BLOCKER

Bring back the brilliance!

Spray: Blocks O2 from connectors & fuses.
4 oz.: \$69.95.

Dat Archival Bags: A proprietary blend of MIL SPEC vapor-phase corrosion inhibitors extruded into each bag. Patented.
\$1.50 each, Minimum of 20/

800-883-1964
PHONE: 612-683-1964 FAX: 612-405-0825

MUSIC SCIENCES
1960 Cliff Lake Road, Suite 112-199, St. Paul, MN 55122

500 CASSETTES \$595

- COMPOSITE NEGS FROM YOUR CAMERA READY ART
- CASSETTE RUNNING MASTER
- TEST CASSETTE
- APEX PRINTING ON CASSETTE
- 1000 x ONE-COLOR INSERT (500 FOR REORDER)
- NORESCO BOX CELLO WRAPPED

REORDER ANYTIME \$385

1000 4-COLOR CASSETTES \$899

- CASSETTE RUNNING MASTER
- TEST CASSETTE
- APEX PRINTING ON CASSETTE
- 2000 x 4-COLOR INSERTS FROM YOUR PRINT-READY FILM (1000 EXTRA FOR REORDER)
- NORESCO BOX SHRINK WRAPPED

REORDER ANYTIME \$750

UP TO 22 MINUTES PER SIDE Ask for our free brochure!!!

Rainbo Records and Cassettes
1738 Berkeley Street, Santa Monica, CA 90404 • (310) 829-3476 • Fax (310) 828-8765

PRO LEASE

PRO LEASE Funding Group, Inc.

PRO AUDIO'S PREFERRED LEASING COMPANY

LEASE WITH THE BEST!!!

- The BEST Rates
- The BEST Service
- The BEST Terms
- New & Used Equipment
- APPLICATION ONLY UP TO 50K

For Information Please Call
TOM ROCHE
800-788-3838
(20 YEARS EXPERIENCE IN THE PRO AUDIO INDUSTRY)

DIGITAL DOMAIN™
CD & CD ROM Manufacturing
 309 E. 90 St. - B NY, NY 10128
 (800)344-4361 (212)369-2932
THE BEST CD MASTERING...

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, fades, equalization, spacing... everything is important to you and to us.

CD-ROM Pre-mastering, Replication - CD-R Data Storage & Archiving
 Manufacture of 50 CD-ROMs to thousands. Hybrids? Mixed mode? PC? Mac? ...
No Problem! Transfer Macintosh or IBM disks (hard drives or removables) to CD-R.

CD REPLICATION...
 1000 CDs at \$1.55 w/jewel, shrink, insertion. 2500 at \$1.50 and free Glass Master.

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.panix.com/~bobkatz>

ARCHITECTURAL ACOUSTIC DESIGN

ROSATI

TECHNICAL SYSTEM ENGINEERING

ACOUSTICS

BOSTON, MA 02118 • 617.423.5546 • FAX 423.5884

TW - marantz
CD-R SYSTEM PACKAGE



CDR 610 Mark II

- Complete Red / Orange Book Compatibility
- AES/EBU, IEC-958-II & TOS Line Digital I/O
- Includes a Wired Remote Control
- In Stock For Immediate Shipment



PMD 320 CD Player

- IEC-958-II digital interface can be connected to Marantz CD-R systems for convenient digital copies of both music and track information.

3M CDRs
40 CDR-63

ONE LOW SYSTEM PACKAGE PRICE*
\$4795.⁰⁰

Record your master CD with the Marantz CDR-610 from your digital or analog audio source. Then, play your master CD on the Marantz PMD-320 and digitally transfer the signal to the CDR-610 to make your additional CD copies.

**IN STOCK!
 CALL NOW**

(216) 398-0022
 or
 1-800-445-8273
 or Fax
 (216) 398-9980

*Limited Time Offer.

THE LITTLE WAREHOUSE, INC.
 5505 VALLEY BELT RD. • SUITE F / INDEPENDENCE, OH 44131



**STUDIO AUTOMATION
 I/O BOARDS**

- Sony 9-Pin RS-422
- 1,2,4 & 8 Port RS-232/422
- Parallel / GPI / Relay I/O
- Windows™, DOS and OS/2™ Compatible
- Made in USA
- Free Technical Support from the Leader in PC Communications

SEALEVEL COMMUNICATIONS & I/O

SEALEVEL SYSTEMS, INC.
 PO BOX 830
 LIBERTY, SC 29657
 (803) 843-4343

**ATTRACTIVE & EFFECTIVE
 VOLUME CONTROL!**

for
**CHURCHES, SCHOOLS
 THEATERS, CLUBS
 CONCERT STAGES
 REHEARSAL ROOMS
 RECORDING STUDIOS**

PORTABLE & EXPANDABLE!

CALL NOW FOR OUR
FREE BROCHURE!
(800)-888-6360



CLEAR-SONIC PANELS
 by ACCUSONICS MFG.

COMPACT DISCS

ESP

EASTERN STANDARD PRODUCTIONS, INC.
 37 JOHN GLENN DR. BUFFALO, NY 14228
 (716) 691-7631 • FAX (716) 691-7732

NEW CASSETTE & CD COMBO PACKAGES!

CALL TOLL-FREE
1-800-527-9225
 FOR A FREE BROCHURE

CASSETTES

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 Consulting

PRO AUDIO SERVICE
J D A
ACOUSTICS

If You're Upgrading Your Facility, Call Us First!

- ◆ Studio & Acoustical Design/Installation
- ◆ Wiring Interface & Design
- ◆ Custom Console & Rack Design
- ◆ Console & Tape Machine Repair/Modification

Studio Plans Start at \$595

- ◆ SDG Cutting Wedge Acoustical Foam
- ◆ SDG Diffusers
- ◆ Full Line Of RPG Acoustical Products
- ◆ Patchbays, Cable, Connectors
- ◆ Guilford Acoustical Fabric

Call For Free Full-Line Acoustical Products Catalog

Jon Dressel & Associates, Inc.
212 Third Avenue North, Suite 103
Minneapolis, MN 55401
Voice: (612) 338-1880 Fax: (612) 338-1527

Subscription Questions?

Call

(800) 843-4086

SILENT
Source

58 Monotuck St., Northampton, MA 01060

Your Source for Acoustical Products

BEST PRICES-NATIONAL DELIVERY
800-484-1003 ext. 0032

MC/VISA Accepted

Business Opportunities

LET THE GOVERNMENT FINANCE your new or existing small business. Grants/loans to \$500,000. Free recorded message: (707) 448-0270 (NL3).

Female Hard Rock Singer from NY w/exp., outstanding voice & stage presence seeks producer w/charisma, contacts & sales ability for development and representation. Send resume to: 3261 East Lake Dr. Nashville TN 37214.

What Are You Looking For?

Join the thousands of audio professionals who rely on *Mix Classifieds* and *Mix Marketplace* pages as their source for buying, selling, renting, & repairing pro audio gear.

MIX CLASSIFIEDS/MIX MARKETPLACE
(800) 544-5530

Employment Offered

Leading Entertainment Software Company is looking to expand its audio department by hiring a **Sound Effects Designer**. Qualified Candidates:

- Must be very creative with Sound Design, Foley, etc...
- Extensive knowledge of Digidesign software required
- Should have knowledge of PC-DOS, Windows, & Macintosh OS
- Experience required

Send resumes to: Reginald Arnedo
17922 Fitch Avenue
Irvine, CA 92714
Attn: Sound F/X Designer position

University of Miami, School of Music Assistant Professor of Music Engineering

The University of Miami's renowned Music Engineering Technology program offers both undergraduate and graduate music degrees, with strong electrical engineering emphasis. This program is seeking applicants for a full-time faculty position to teach audio theory and practice, supervise and perform maintenance in the program's recording studios, and assist in the administration of the program. Experience as a studio chief engineer, college instructor, and a BSEE degree is strongly preferred. Applicants must have knowledge of the operation and repair of automated consoles, tape and disk digital recorders, IBM and Mac computer platforms, and other professional audio equipment. Engineering and teaching expertise in current digital audio and computer technology is particularly important. Starting date is Summer or Fall, 1996. Please send a resume, five references, and other supporting narrative materials to: **Ken C. Pohlmann, University of Miami, School of Music, Coral Gables, FL 33124.**

digidesign®

Digidesign, the world's leading manufacturer of nonlinear digital audio workstations, is experiencing dramatic growth. As a result, we are seeking experienced professionals for the following position:

PRODUCT MANAGER

Ideal candidates will offer the following:

- Pro audio experience (music and/or post production)
- Product marketing experience
- Technical background
- Excellent organizational skills
- Excellent verbal and written communication skills
- Flexible team player

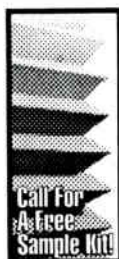
Also seeking experienced HW and SW engineers.

Please send your resume, **with salary requirements** to:

Product Marketing
Attn: SD/Mix
1360 Willow Road
Menlo Park, CA 94025
Fax: 415.327.0777



Good Gear In A Bad Sounding Room Sounds No Better Than Bad Gear.



STUDIOFOAM SOUND ABSORBENT WEDGES

There's no easier or more affordable way to make your room & mixes sound better—period. No other foam line beats our absorbcency, flame retardancy, color selection, longevity, speedy delivery...or prices. Now with free freight! We also sell great sound barriers & much more. **NEW! ACOUSTICS 101**, an easy-to-understand guide that gives real-world advice about how to build a sound studio or turn your place into one. Learn how to float floors, soundproof walls, choose the proper doors & more. You won't find better bottom-line advice anywhere else! Just **\$11.95 incl. postage**. Order your copy today!

Users: AT&T • NASA • Sony • Shure • Ford • Kodak • Warner Bros. • 20th Cent. Fox • Universal Studios • Maury Povich Show • Hitachi • Toshiba • Dennis DeYoung (Styx) • Baldwin • Editel • Mike Wanicic (J. Mellencamp) • Rockwell • US Gov't • Opryland • Dominic Guss (Stevie Nicks, The Outfield, Kurzwelt) • Guido Welsh (TBN, WalMart) • Carvin • WhisperRoom • Pat Duke (Voice of McDonald's & Miller Brewing) • Martin Marietta • Manley Labs • NJJ (NFL on Fox, Coke) • D. Ervasti (Voice of NFL on Fox)

USAfoam • 11571 E. 126th, Fishers IN 46038 • (800) 95-WEDGE • Fax (317) 842-2760

Employment Offered

Recording Engineer Radio Announcer

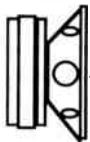
ON THE JOB TRAINING

IN MAJOR LOCAL RECORDING STUDIOS/RADIO STATIONS

Part time, nights, weekends. No experience required. Free brochure & recording tells how.

1-800-295-4433

Major University seeks energetic individual to coordinate recording and technical services within the Department of Music. Duties include coordination, personnel training, and maintenance of our digital multitrack studio. Video and live production experience necessary. Call for complete application information. **Oklahoma State University Department of Music, Stillwater, OK.** (405) 744-6133.



quality american-made loudspeakers
driver design limited
417 more Blvd #y-314 dallas tx 95616

Premium drivers for
stage, studio, and
critical listening.

Information and orders:
916-795-3244

Mix Marketplace Mix Classifieds

For Rates
and Deadlines
Call Robin Boyce
(800) 544-5530

New West L.A. sound & music facility seeks reputable audio engineer for recording V.O. & mixing radio. Great chops, friendly hip atmosphere, client service oriented a must. Please send resume, incl. salary requirements to: Andrea Crook, 11848 Mayfield Ave. #4A, W. LA, CA 90049.

Equipment for Sale

FOR SALE: 700 one-hour reels of 3M #186 tape in boxes. Used once, no edits. \$3.95 ea. Will sell partial or whole. Tascam 42, BO. Superadio (508) 626-2000.

SOUTHERN CALIFORNIA PRO AUDIO

NEW, USED AND VINTAGE
THE LAST CALL YOU'LL HAVE
TO MAKE!

Phone: (818) 222-4522
Fax: (818) 222-2248

Automatic Microphone Switch

The IR1 from D³, Inc. is the fastest, and easiest way to clean up any mix. Just plug it into your mic, and enjoy the hands free control! Call us and order a single or a six-pack today.

D³, Inc. 800-701-7899 Visa/MC

SEE OUR AD IN MARKETPLACE pg. 362

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. 361

tired of tape-based automation ?? interested in a low-cost alternative ??

convert tape based automation to MIDI automation with the
ARMS II to MIDI-CONVERTER



only \$1495.00

30-day money back guarantee

store automation on any sequencer and unleash the power of
disk-based computer automation

works with MCL, HARRIS, and SOUND WORKSHOP consoles.
from DSL ELECTRONICS 214/869-1122 fax 214/869-1435

ODYSSEY PRO SOUND

New & Used quality equipment
Ground-up Studio Design & Install

Consoles* Tape Machines* Mics*
Outboard* Vintage* Tube* Classic

Quality & Satisfaction Guaranteed!
Buy, list, trade quality audio gear.
Call for new equipment quotes!

FOR CURRENT LISTINGS CALL
Tel: (508) 744-2001
MC Fax: (508) 744-7224 VISA

The Studio POP Filter

A Great Improvement on a good Idea!



Open up the sound of your
vocals and voice overs
without annoying "POPS"
ruining your best take!

Only \$24.00
with optional clamp
and Goseneck \$44.95
plus shipping
ONE YEAR GUARANTEE

AUDIO VISUAL ASSISTANCE

933 SHERWOOD ROAD SHERWOOD MN 55176
PHONE FAX: 612-481-9715

CUSTOM AMEK/GML CONSOLE

Custom-ordered, compact 64-input digital controlled console with GML fader automation; 128-ch mix capable; 24 custom Sunset mic pre's; 1024-pt TRS patchbay; complete spares; mint cond. Asking \$175k. SUNSET SOUND (213) 469-1186.

OMNIRAX

STUDIO FURNITURE for the discriminating musician



800-332-3393

P.O. BOX 1792 SAUSALITO, CA 94966

RAE Audio

Quality Vintage Gear
NEVE PARTS AND REPAIRS
516-674-4939

Studer A-80 VU MkII w/MkIII Head Stack; Timeline Microlinks w/AGC, Third Machine Option. All \$14,000.

(505) 986-1116/voice
(505) 989-7782/fax

Attention Las Vegas & Beyond

Gamble in the casinos. Don't gamble with your sound! Buy Anthony DeMaria Labs pure tube equipment to "warm up" your sound. All ADL products now available in Las Vegas through Sound Studios. For a free demo in the Las Vegas area call:

(702) 247-8929
Lee Pepper Sound Studios

Mix Classifieds (800) 544-5530

We Specialize in Audio/Video Equipment

EQUIPMENT FINANCING

Fast, Easy Qualification To Apply or Request
No Financial Statements Necessary Additional Information Call
True Lease or Finance Lease Option Jeff Wetter Today.

FLEX LEASE, Inc.

COMMERCIAL EQUIPMENT FINANCING

Loans By Phone: (800) 699-FLEX
Fax: (214) 578-0944

Professional Audio Design Inc.

- Buy, Sell & Trade New Used & Vintage Equipment
- Custom Vintage Module Rack Systems
- Refurbishing, Repair & Maintenance Services

Premier dealers for

AKG • ADL • API • Aphex • Bruel & Kjaer • BSS • dbx • DDA
Demeter • Drawmer • Dynaudio Acoustics • Eventide
Focusrite • Fostex • GML • Hafler • KRK • K-T • Lexicon
Mackie • Neotek • Otari • Quedstedt • Sennheiser • Soundtracs
Tannoy • TC Electronic • TL Audio • Trident • Tube-Tech

Design, Sales & Installation

Currently Available: ADL 200 2 chnl Tube D.I. \$650 • ADL 1500 Stereo LA-2A type Comp \$2,650 • Api 550B \$1049 • 550A1 \$650 • 560B \$595 • API 28x16x24-Mint 60K • Amek MozartRN 48I/O \$95K • Neve 1066 \$1.6K • Neve 1272 \$500 • Neve VI-48/Necam 90k • SSL 4056E/GTR \$175K • Neumann U47-U67-U87-M49-Call • AKG C12VR 3,500 • Teletronix LA-3A \$2K/PR • Urei LA-4 \$1400/pr • Trident 80 32x24 \$25K • AMS RMX-16, 1580S \$4K • Tube-Tech CL1B \$1.7K • Telefunken V78 \$850 • TL Audio Valve Comp \$1.5K • Otari MTR-90II \$20K • MX-80 \$15K • Studer A827 \$35K Sony JH-24 w/ALIII \$14K • Neve V Rack-3 Eq/MicPre & 2 Dyn \$6k • Pultec EQH-2 \$2K • Lex PCM70 \$ 1.4K • Lex 300 \$4K • AKG C24-Mint \$7K • **More gear in stock, call for complete list • VISA/MC**

Ph 617-982-2600 Fax 617-982-2610

357 Liberty Street Rockland, MA 02370

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
(309) 346-3161
ORDER HOT LINE:
800-334-8187
FAX 309-346-6431

BUY DIRECT

London's Leading Supplier of Quality Used Pro Audio
STUDERSSL**NEVE**AMS**
TUBE MICS** AND THE WORKS**
Regular Fax Lists on Request
FUNKY JUNK
ECCENTRIC DIRECTIONS
Tel (44) 171-609-5479
Fax (44) 171-609-5483

Tascam M3700-32 automated mixing console with extended meter bridge and stand. Mint condition. \$7,400. (617) 730-9806.

STUDER A-800 MkII no remote \$25k/827, 3M-M79 24trk (dead mint, \$10k or best), NEVE 36x8x24, 12x12, 24x6, 24x8 (w/4-33314 comp) broadcast cons'l's, NEVE 24-CH mon/cue mixer \$2.5k, NEVE 32264 \$3.7k/pr, 225e 3k/pr. NEVE 1271/1272/1279/3415 line amps, NEVE 24x4 frame (holds 31105/1081, patch bay), 8048 frame, AMS RMX16 \$4k. AMEK 2500, Focusrite Red-2eq/ISA 115 \$3k. NEUMANN U47/U48 \$5k ea., U64 \$1.7/pr, KM254 \$2.6k/pr. KM56 \$1.6k, AKG C-12, C-28 \$750, 422 (stereo 414) \$1.9k, Alan Smart SSL comp/lim, new \$3.1k, FAIRCHILD 670 \$15k, Roland DIM-D \$1k, PYE comp \$1.4k, CALREC + AUDIX disc. PRE-EQ, QUAD-8 Pacifica (28x8x24 discrete) \$8.9k, SONY C38 \$1.3k/pr, V76 \$800. VINTAGE KING AUDIO. (313) 965-0645. Fax: (313) 964-3338.

RIP-TIE®

Velcro® Cable Wraps



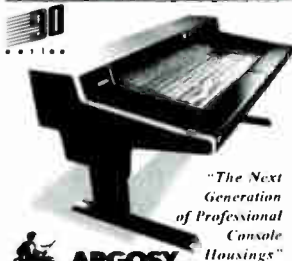
Locks onto Cord

The Rip-Tie Company

415 543-0170

FAX 415 777-9868

P.O. Box 77394 San Francisco, CA 94107



"The Next Generation of Professional Console Housings"

ARGOSY

INFORMATION: 1(800) 427-5698
Outside U.S. 314 346 8549, Fax 314 348 2769
ACI • Rt 3, Box 4374-A • Osage Beach, MO 65065

DAN ALEXANDER AUDIO
BUYS, SELLS AND REPAIRS
RECORDING EQUIPMENT.
(415) 546-0200

HARD DRIVES

Digidesign Approved

Storage Solutions For
Protocols - Session 8 - Am2
2 Gig External - \$ 799.00
4 Gig External - \$1099.00

Don't Settle For Dropouts
Get Top Performance!

Tel: (305) 749-0555
email: bigdisc@aol.com

BIG DISC
DATA STORAGE SYSTEMS

Sound thinking

The Best Prices,
The Best Service
you'll ever find on...

digidesign
ALESIS

503-386-2682

EXCITING NEW PROFIT CENTER. Premier Technologies mfrs. the highest-quality & easiest-to-use digital recorders for the Message-on-Hold ind. These trouble-free units are easily connected to existing telephone systems. Avg. retail prices for eqpt. & programs = \$1,200 to \$2,500, more than triple your investment! Every bus. should be at least telling their customers, "Thank You for Holding!" For dealer info:

Premier Technologies
(800) 466-8642.

FAIRLIGHT CMI III

WP model in excellent condition, suitable for MFX upgrade. No drives, 8 voice cards. US \$10k or best offer. Hong Kong Fax: (852) 2807-3037. Tel: (852) 2578-8632.

EVIL TWIN

...still the best direct-to-tape vacuum tube instrument interface available.
Handbuilt since 1988.
Lifetime warranty.

Eclair ENGINEERING SERVICES
PHONE / FAX (413) 584-6767

For Sale - Neve VR 36
W/Flying Faders
Automation & Recall

This is a '91 console, good condition located in the L.A. area. Please call (213) 856-1352 for more information.

CLEARANCE SALE

Vintage Modules—Full Mods
Low Prices While They Last
NEVE 1064, 1073, 1089
Telefunken V-72, \$1,600
Amek/Neve 9098, ADL tube comps
New Warranties—Best Deals!
Advanced Tech. (808) 575-2010

THE N90
A HIGH QUALITY
NATURAL SOUNDING
DYNAMIC STUDIO MIC
STEDMAN
CORPORATION

SEE OUR AD IN MARKETPLACE pg. 363

PURE AND10

We've Got Everything Under the Sun

NEW
USED
VINTAGE
Los Angeles, California

Tel (818) 887-6600
Fax (818) 887-4700

We stock ADL 1500 Stereo & 1000 Mono Tube Compressors!
Consoles, Recorders, Mics,
Outboard Equipment & MORE!
WE BUY GEAR!!!

NEUTRIK TT CABLES

\$10.95

24" Length, 5 Colors
(615) 367-9242

9 AM-5 PM, M-F (CST)
GREEN DOT AUDIO

35mm MAGNETIC DUBBERS:
Magna-Tech Reproducer/Recorders
w/Interlock: MD-235, MD-636,
MR-436 for sale. Call Michael
Temmer, (212) 206-1475. Fax: (212)
929-9082.

Telefunken U-47 tube, \$4.35k; 3-M M-79 1/2" 2-trk (saki heads), \$2.2k; Gauss 7258 Monitors, \$1.4k; Otari 50/50, \$500; (2) AKG C-501 mics, \$225 each; Orban co-operator VCA compressor/ expander, \$375; 2" splicing block, \$100; Sony PCM 501, \$250. (508) 544-7394.

Equipment Financing

- ★ New or Used Equipment
- ★ True Lease or \$1.00 Buyout
- ★ No Financial Statements Required for Transactions Under \$50,000

to apply or request information contact John McMindes

1-800-477 LEASE

AMERICOM
LEASING, INC.

Equipment for Sale

96-point, TT-balanced patch-bays. Switchcraft D1634B. Not the cheaper imitations. For a limited time, available at AVR for \$257 (Cash price only). Quantity pricing upon request. Call (617) 924-0660.

LFCI

EQUIPMENT FINANCING

Direct Lenders

START-UPS UP TO \$15,000

**NO DOWN PAYMENT
NEW & USED
EQUIPMENT
100% FINANCING**

**APPLICATION ONLY
UP TO \$50,000
(NO FINANCIALS)**

90 DAYS - NO PAYMENT

**OVER 15 YEARS A/V
EXPERIENCE**

**Audio-Video is our
only business**

800 626-LFCI

Sony MCI JH-24; (12) dbx 180; Studer A-810 2-trk; Soundcraft 1600 mixer; Lex. 200 Reverb; (2) UREI 1178; Lex. Prime Time; Clark Tec DN 30-30 EQ. MICS: (5) AKG 414; RE-20; (7) Senn. 421. \$19k/OBO or indiv. pieces. (301) 868-9529. After 4:30 wkdys, wkends anytime.

Sound Workshop Series 34 console, 40 frame, 34 modules, ARMS automation, multitrack and outboard wiring included, producer's desk and manual. \$9k. (615) 865-5272.

Good Sound is the Absence of Bad Sound

Klay Anderson Audio Inc.

PRO AUDIO SALES AND SERVICES

THE AUDIO SOURCE FOR 27 YEARS
Call **1-800-FOR-KLAY**

ADC PATCHCORDS
1/4" New cords, \$8.95; T.T. New cords, \$6.95; T.T. PATCHBAYS from only \$99. New 1/4" Patch-bays, \$169. We broker used equipment too. Trade-ins? Call audio village palm springs, (619) 320-0728.



SEE OUR AD IN MARKETPLACE pg. 362

AUDIO WORLD



Specializing in New,
Used & Vintage Gear
**MICROPHONES
PREAMPS
COMPRESSORS
CONSOLES
RECORDERS
& MORE!**

Authorized Dealers for
Anthony DeMaria Labs
We Rack Modules

Great Gear! - Great Prices!!

Sales: (818) 753-7715 or (310) 275-4277
Fax: (818) 340-4331

ADAT UPGRADES— MIC MODS

Component-level upgrades for mixing consoles, tape machines, mics and all outboard gear. Also, high-speed, high-quality mic pre-amps.

AUDIO UPGRADES
6410 Matilija Ave.
Van Nuys, CA 91401
(818) 780-1222
Fax (818) 346-2308

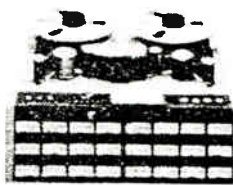
MINT STUDER 820

Only run 200 hours, 24-track heads new. Spare set 16-track heads (200 hours). Dolby SR. Full remote control. Full set of new test tapes. Best example of its type anywhere. U.S. \$68k. Be fast, call Nick in New Zealand. Ph/fax 64-9-528-6004 or mobile 64-9-25-836-978. Serious facility owners only please. Credit references available.

Studer A80 Mark IV, 24-trk, mint condition only 2,900 hours! Call (212) 967-3300.

Fully floated beautiful control room with large vocal booth in major NY-midtown studio, available for lease. (212) 496-0259.

American Pro Audio



Digidesign • Opcode • Otari
Roland • Korg • Prodiak
Yamaha • Fostex • Doiby
Soundtracs • DDA • Ramsa
Trident • Neumann • Tannoy
Eventide • TC Elect • Summit

Great Prices!!!

Digital Workstations • Software
Keyboards • Recorders • Consoles • DAT
Leasing and financing

(612) 938-7777

SINGERS! REMOVE VOCALS

Unlimited Backgrounds™
From Standard Tapes, Records, & CDs with the Thompson Vocal Eliminator™
Call for Free Demo Tape.
Phone: (404) 482-4189 • Ext. 6
LT Sound - Dept. RM-1
7988 LT Parkway
Lithonia, GA 30058
24 Hour Demo/Info
Line (404) 482-2485 • Ext. 8
Best Vocal Eliminator™, Key Changer, Voice Enhancer!

VINTAGE USED:

CONSOLES: Neve 36x8, call*Neve 8248 48/32, \$55k*Neve 8108 48/36 w/Necam, \$49k*Neve VR60 w/FF, call*SSL 56 in E/G TR, \$159k*SSL 4048 G/G TR, \$179k*Trident 80c 48 in w/auto, \$55k* MCI 500D 36 in, call*Harrison MR4 28 in w/auto, \$12.9k*Artek Big 44/32, \$28k*Sndworkhops 34C 24 in, \$9.9k*A&H Saber 24x16, \$7.5k. **24 TRACKS:** Studer A-80, 800, 827, 820, call*Otari MX80, \$15.5k*Otari MTR90II, call*Sony JH24, \$14.5k. **16 & 8-TRACKS:** call. **MICS:** Neumann U87, \$1.5k*Neumann U67, \$2,950*Neumann U47, call*AKG C414, \$650*AKG C12VR, call. **COMPRESSORS:** Neve 2264, 2254, call*UREI 1176, 1178, LA2A, call***MONITORS:** Queded 4X12, call. **REVERBS:** AMS RMX16, \$4.5k*Quantec QRS, call*Lexicon PCM70, \$1.3k.

WE BUY NEVE & API MODULES, TUBE GEAR,
VINTAGE ANYTHING!!! WE SELL NEW EQUIPMENT



HARBORSOUND

180a CENTRAL STREET & VIDEO
SAUGUS, MASS. 01906

(617) 231-0095 Fax: (617) 231-0295

DATRAX

Originator in DAT Tape Storage Systems.

- DATRAX 60 Solid Oak in Natural or Black Finish
- Nylon DAT Tape Carrying Cases
- NEW! DAT Tape Storage Drawers 320

NEW PLASTIC LINE: ▲ DATRAX 40 ▲ Video
8mm Rox ▲ Cassette Rox ▲ All \$21.95

Tel: 310.305.0317 ▲ Fax: 310.305.9167

CALL TOLL FREE: 800.9.DATRAX

BRYCO PRODUCTS, 8701 Falmouth Ave.,
Suite 201, Playa Del Rey, CA 90293



The Means Of Production



New & used audio equipment
Professional personalized service

Tel 818-988-TMOP (8667)
Fax 818-988-8600
E-mail TMOP5@aol.com

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...

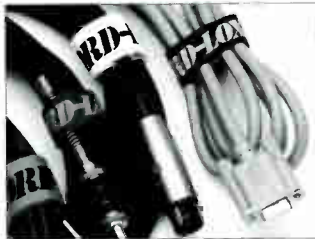
- 6 or 3.5 inch diameter screens \$32*
- with goose-neck & mic clamp \$54*
- washable, replaceable screens + plus VOICE SCREENS
- money back guarantee + shipping PO Box 1014, New Paltz, NY 12561

call, fax or write for FREE brochure (800) 252-1503 or (914) 255-3367



Telefunken V72, 76, 77, 78, U73, Telefunken Tubes UF14, EF14, EF804S, AC 701. Neumann mics, many more; for actual list, call Christian (212) 674-5712 or Akzent Audiotechnik. Germany. 49-0-721-373622. Fax 373611.

Fostex E-8 1/4" ATR with AutoLocator, \$500; Sony 1" Video Layback, Best Offer; (4) Fostex 4030 Synchronizers, \$200 each; Fostex 4010 TC Reader/Generator, \$300; Hitachi Dual Trace Scope V202F, \$275; Skotel TC Generator, \$175. (401) 732-1880.



CORD-LOX

Reusable Velcro® cord wraps.
Call for free brochure.

800-CORD-LOX

STUDERS & MORE

Studer A820 24-track with Dolby SR, full remote, low hours, \$65k. Studer A820 2-track 1/2", low hours, \$13,500. Studer A810TC with SMPTE, 2 head stacks, \$6,450. Plus lots of other class A studio gear in superb shape. For a complete listing, call (802) 862-5184 from your fax machine. Questions? Call (802) 658-1270, Ext. 201. Please, no brokers.

FACTORY DIRECT CASES

OUR PRICES CAN'T BE BEAT



Custom or stock sizes
Call for catalog or quote
(800) 645-1707
In NY (516) 563-1181
Fax (516) 563-1390

Roadie Products Inc.

MIC HEAVEN

Tube • Condenser • Vintage Mics
Call for "In Stock" Voice Message

201 • 656 • 3936

FAX: 201-963-4764

GET YOUR DRUM SOUND
UNDER CONTROL WITH

CLEAR-SONIC PANELS

by ACCUSONICS MFG.

(800)-888-6360

SEE OUR AD IN MARKETPLACE pg. 364



HUGE SELECTION OF VINTAGE EQUIPMENT

NEVE • API • SSL • TRIDENT • AKG • NEUMANN
STUDER • TELEFUNKEN • SONY

Consoles • Recorders • Microphones
Compressors • Preamps • EQ's • Effects

We specialize in precision re-diaphragming
of vintage microphones.

Let us refit your damaged or sonically
inferior mic with a brand new diaphragm.

Highest Quality • Like Original

All work guaranteed

We can redo the following diaphragms:

U47, U48, M49, SM69, UM57, U67, U87,
SM2, KM54, KM56, KM84, CMV563

& many more!

We stock: Capsules, Tubes, Connectors,
Cables, Mounts, Mic Boxes, Power Supplies

Custom Racking

Phone: (818) 992-0999

Fax: (818) 340-4331

We Buy & Trade Equipment



BUY
Studio
SELL
Liquidators
TRADE
of Used Equipment

Tape Machines
Processing
Workstations
Consoles

Sales and Service
Since 1978.
Call today for
your best deal!

EAR™
Professional Audio/Video
Phoenix, AZ
602-267-0600
24Hr Fax 602-275-3277
Merging Post Production and
Music Technology since 1977
"se habla español"

NEW, USED, DEMO EQUIPMENT BEST SELECTION OF DIGITAL/ANALOG RECORDERS, CONSOLES, DAWS, OUTBOARD GEAR

Otari Status 18R, Trident, Soundcraft DC2020, Mackie 8-Bus, Neve 5432, Otari Radar 24TK, Otari MTR-90, MX80 24TK, Tascam MS16, SONY PCM800, Pro Tools III, Avid AudioVision, Sonic Solutions, ADATs, Tascam DA-88, Apogee AD1000, Lexicon PCM80, TC Electronic M5000, Roland RSS10, API, GML, ADL, Summit, Focusrite, Demeter, Avalon, TL Audio, Neumann Mics, AKG C-12VR, Microtech UM92SZ, B&K Mics, KM184.

Studio and System Design,
Financing, Factory Service
Installation. Experienced and
Knowledgeable Sales Staff.
EAR PROFESSIONAL AUDIO
(602) 267-0600

Roland DM-800 Digital Audio
Workstation. No computer req. 4
analog in/out, 8-tracks, 100 lay-
ers/trk. Full automation of all mix
parameters. 6 mos old, perfect
cond. \$4,000. Video mon. and
ext. 3 GB drives also avail. (702)
631-0797.

STUDIO BANKRUPTCY!!!

New equipment to liquidate includ-
ing Soundtracs Megas Studio and
SOLO Logie mixing consoles,
Crown macro reference amp, lots
of processing, mics, monitors, etc.
Call Richard now (Dealer). (514)
733-5131.

RETIRING! Harrison 28-32-C
console w/brand-new auto,
640pt patchbay, 3 snakes, attach-
equip-rack w/prod-desk, re-
capped; ex-cond. & exception-
ally clean. \$13k; Ampex mm-
1200 12trk w/2 remotes, search
to cue & varispd control + ex-
tras, very clean in ex. cond.
\$9,500; Studer A-80 RC 15/30
ips 1/2" heads w 1/4" hdstk,
remote & rebuilt; new cond.
\$3,500. (313) 241-7998.

STUDIO SALES

Auctions - Appraisals

TOP CASH PRICES

Liquidation Sales - Licensed

CUE

212 496-5652 Fax 212 496-0234

AMEK HENDRIX

40-IN w/40 Channels of Virtual
Dynamics. (4) Additional ST Ins,
(4) ST FX Ret. Patchbay. Super-true
Automation. Display model, never
been used. \$85k includes warr +
commissioning. Contact Jon (312)
329-1310.

MIX

MARKETPLACE

Page 361



WE BUY, SELL AND TRADE
VINTAGE EQUIPMENT.

"this is not a problem"

(508) 543-0069 TEL
(508) 543-9670 FAX

Equipment for Sale



America's best disc, tape & component storage system
Stackable, portable oak units hold all recording formats
Free mailorder brochure (please mention Mix)
Per Madsen Design
P.O. Box 882464
San Francisco, CA 94188
(415) 822-4883

Studer A80 model II 24-tk w/ Model III heads, w/24-tk dbx NR, rem pod autolocate, \$14k; **Tascam 90-16** 16-tk 1-in 48 hrs. on new head stack w/dbx roll console, \$2.5k; **Tascam A3440** 4-tk w/dbx NAB 15/7.5 ips, \$650; **Otari MX5050A** 15/7.5/3.75 ips 2/4 tk, \$700; **Fostex E16** sys w/4030 sync unit 4035 rem cont exc cond., \$2,800; **JL Cooper** 8x8 MIDI switch w/merger, \$199; **Roland SBX-80** sync box like new, orig fac boxed, \$150. Most have svc manuals. (202) 529-1856.

KurlyTie *New!*
Spring Coil Cable Wraps

FREE SAMPLE!
CALL
1-800
587-5984

AVR Systems
AUDIO VIDEO RECORDING SYSTEMS, INC.

PROUDLY OFFERING
OVER 100 LINES OF
PROFESSIONAL AUDIO
EQUIPMENT
NEW and USED

CALL OUR KNOWLEDGEABLE SALES STAFF
* PROFESSIONAL ADVICE
* THE RIGHT PRICE

WORK WITH THE PRO'S

BOSTON
(617) 924-0660

CONNECTICUT
(203) 289-9475

28TH ANNIVERSARY
FREE CATALOG

CD-RS, HI-8,
MINI DISKS, S-VHS
MASTERING TAPE
A-DAT, R-DAT, BULK VHS
PLASTIC REELS, BOXES
NORELCO, SOFT POLY BOXES
VIDEO BOXES & SLEEVES
SINGLE & DOUBLE CD BOX
DCC, MOD, DDS2
AND MORE

4212 14TH AVENUE - BROOKLYN, NY 11219

ANDOL
AUDIO PRODUCTS INC.

LENGTH	C-10	C-20	C-30	C-40	C-50	C-60	C-70	C-80	C-90
TYPE									
TDK SA	.25	.30	.35	.39	.44	.49	.53	.58	.63
MAXELL XLII	.27	.32	.38	.44	.47	.52	.67	.70	.76
BASF CHROME SUPER	.30	.38	.47	.56	.65	.69	.80	.87	.89

WE OFFER IN HOUSE DIRECT ON CASSETTE PRINTING, FEATURING
THE LATEST APEX ULTRA VIOLET INKING PROCESS/24 - 48 HOUR SERVICE

FROM 1-100 MINUTES
100 PIECE MINIMUM

3M
TDK
BASF
AMPEX
maxell

IN NYC 718-435-7322 • 800-221-6578 • 24 HOUR FAX 718-853-2589

* **GML 64-Input Fader Automation System**
Latest Software; 8 Fader Subgroups; Standard size faceplate;
Spares; Excellent Condition. \$60,000.
* Dolby A 361 Modules w/Cat 22 Cards. \$400 each.
SUNSET SOUND (213) 469-1186

Digital Questions?
Call the Professionals!
Specializing in Digital Audio Workstations

- All Major Product Lines
- Mixing Consoles
- Recorders • DAWs
- Amplifiers • Preamps
- Microphones
- Processing
- Sales
- Design
- Consultation
- Installation
- Service

Communication Task Group, Inc.
800-367-2844
Major Credit Cards Accepted

MIX
MARKETPLACE
Page 361

Looking for new/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!** 66 Years in business. Trade-ins welcome. Visit our new **22,500-sq.-ft.** location. Call, write or fax us today for price quotes and details. Also, find us on the Internet at **sales@caruso.net**. Start saving money today! Call **Caruso Music**, 94 State St., New London, CT 06320 USA. **(203) 442-9600**. (203) 442-0463/fax.

PRO STUDIO EQUIP—DAT and hard drive recorders, voice processor, CD deck, cassette deck, mixer, effects, pro mics, stands, rack, etc. Too much to list. All new or barely used. Save up to 50%. Call (813) 962-7420 for info.

Tascam ATR-60 1/2" 8-track w/ Evertz Emulator (Transport Interface) and (10) rolls of 1/2" Ampex GM-456 virgin stock, \$3,000; Fostex E-8 1/4" 8-track with Fostex 4030 synchronizer and (30) rolls of 1/4" Maxell virgin stock, \$1,200; (2) professional ADC Ultra Patch Bay (24x2), \$300ea. (orig. \$950/ea); Calzone Floating 18 Space Road Case on wheels, \$250; Call Steve at (215) 331-1290.

TUBE MICS
Neumann, AKG, Telefunken
BOUGHT/SOLD/SERVICED
Power supplies for most tube mics.
Bill Bradley Microphones
Visa/M.C. accepted
(216) 723-6494
Fax: (216) 723-6595

NEVE 10x2 console • API Lunchbox w/ (2) 512bs & (2) 550as • '62 Strat • Lexicon PCM 42 • '85 VOX AC 30 • AKG C12 • AKG C12-A • John Hardy IM-200 Mic- pre/EQ modules • Phone (804) 464-4924, Windmark Recording.

FAX your Mix Classified
(510) 653-8171

Turbosound TMS-3 System comp. w/all flying gear, multicore speaker cables & amp racks. Precision Devices 15"s and 10"s w/JBL 2445 HF drivers. Sm. or lrg. quantities avail. These TMS-3s are regarded by many UK & U.S. engineers as the best sounding TMS-3s in the world. All equip is in exc. cond. & offered for sale w/warranty. Contact Greg or Nigel @ Oceania Audio, New Zealand for info pack via fax or airmail. Phone 64-9-8493114. Fax 64-98493307.

Equipment Wanted

EQUIPMENT WANTED
BUY OR TRADE
YOUR USED MULTITRACK
RECORDERS
AND CONSOLES
EAR PROFESSIONAL
AUDIO/VIDEO
(602) 267-0600

We want your used keyboard, recording and audio equipment. We'll airmail you \$\$\$ or take your stuff in trade toward over 350 brands of new and used products. **Come in or do it all through the mail.** 66 years in business. **Worldwide delivery.** Visit our new **22,500-sq.-ft.** location. **Call, write, or fax us today** for price quotes and details. Also, find us on the Internet at **sales@caruso.net**. Start saving money today. Call **Caruso Music**, 94 State St., New London, Ct. 06320 USA. **(203) 442-9600**. (203) 442-0463/fax.

MERCENARY AUDIO WANTS TO BUY YOUR:

NEVE-SSL-TRIDENT-AMEK
UREI-TELETRONIX-FAIRCHILD
PULTEC-LANG-LEXICON
UNIVERSAL AUDIO-NEUMANN
AKG-TELEFUNKEN-AMS

ANYTHING THAT IS OF EXCEPTIONAL AUDIO QUALITY!

"this is not a problem"
(508) 543-0069 TEL
(508) 543-9670 FAX

Equipment Rentals

DESIGN FX AUDIO

PROFESSIONAL AUDIO RENTALS

310/838-6555
800/441-4415
24-hour Service

Instruction

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, songwriting & more!
Call (415) 904-7700.

WANTED: TRAINEE FOR RECORDING ENGINEER

On the job training at major studio **IN YOUR AREA**.
Keep present job, no experience required.
Train around your own schedule.

THE RECORDING EXPERIENCE

Call: 1-800-795-5750

Mix Classifieds are your best advertising buy in the industry.
Phone (800) 544-5530.

Maintenance Services & Repairs

Trident PRO AUDIO API
Exclusive J D Authorized
North American SERVICE A Acoustics Out-Of-Warranty
Parts & Service Parts & Service

Neve SSL Studer Sony Otari Panasonic Tascam Alesis
Over 40 Years of Recording Industry Experience
Jon Dressel & Associates, Inc.
216A Third Avenue North, Minneapolis, MN 55401
Voice: (612) 338-1880 Fax: (612) 338-1527

HEAD RELAP/REPLACEMENT
multitrack analog specialists

iem

Palatine, IL
(800) 227-4323

DAT Machine Service
Digital Audio Tape

Fast, expert repairs on all DAT recorder brands & models including ADAT and DA-88
Warranty Service on Most Brands
Over 2000 Machines Serviced!

UPS Pickup Service Available
Compare Our Rates!

Pro Digital Inc.
DAT Recorder Service Specialists
(610) 353-2400

ATR Service Company

**Ampeg Custom Parts
Technical Support
World Class Service**

- 1/2" Mixing / Mastering conversions featuring Flux Magnetics™ precision heads. Proofs provided with each conversion.
- Ultra low flutter ATR100 & ATR124 Urethane Capstan Assemblies. Limited quantities available.
- Electronic, Mechanical and Cosmetic upgrades and repairs.
- Complete Restorations at reasonable prices.

Contact: Michael Spitz
Voice or Fax: 415-574-1165

LEXICON 200 & 224 DIGITAL REVERB SERVICE

Expert repairs on all models. Quick turnaround and warranty. Service for Lexicon Prime Time Delays also available. Phone (508) 875-1076 after 6 p.m. EST, or leave message.

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!"

NXT GENERATION

201-579-4849 Fax 201-579-6021

Music Products/Software

Music Hardware & Software
& Software
For Your PC

• Interfaces • Cables • Sound Cards • Software • Accessories

800 524 6073

Visa, Mastercard, American Express and Discover Accepted

Subscription Questions?

Call

(800) 843-4086

New Products

ATTENTION ENGINEERS!

Correct impedance and level adjustment is now possible from all professional audio equipment to any instrument amplifier.

The Reamp is designed and built for this and other applications by engineer John Cuniberti for records with Joe Satriani, George Lynch, Michael Manning and The Neville Brothers.

Built from the finest components available, this small black box will open the door to your own creative ideas by solving an age old interface problem.

Look at who's been Reamping: The Rolling Stones, Van Halen, Steve Vai, Chris Isaak, Neal Schon, Charlie Sexton, Andy Johns, Matt Wallace, Joe Blaney, Tom Sizemore to name a few



For more information call
(510) 530-2402 or fax (510) 530-2404

Recording Services

"Let us enhance your mix with digital mastering"
(for as little as \$10 a track)

Don't wait 3 weeks for your CD's, call us for the fastest service!

1000 CD's for \$1250

500 CD's - \$875 1 CD - \$30

packages include: Glass Master, 2 color on CD, JewelBox, Test Pressing, insertion of your graphics, Packaging & Shrinkwrap, add \$400 for 4 jewel insert, 4 color on front & traycard.

NEW 5 CD's - \$100
1000 Promo CD's for \$999

24HR 713-781-1963

FREE CASSETTE DUPLICATION

Real-Time—Ships/3 days. Lowest Prices Guaranteed! Order 90 C-30s and Get 10 Free with boxes for \$116! We will beat any advertised price! Accurate Audio Labs Inc. (800) 801-7664.

Your music on Compact Disc

Any quantity from 1 to a zillion
Lowest prices, Best service

Big Dreams Studio, Ltd.

708-945-6160

CUSTOM COMPACT DISCS

Affordable single-copy CDs starting at \$35. Write, call or fax for information.

46 PRODUCTIONS

42W557 Hawk Circle
St. Charles, IL 60175
TEL: (800) 850-5423
FAX: (800) 203-1725

Southern Recording Supplies

Recording & Duplicating Supplies

**AMPEX
3M
maxell.**

- DAT, ADAT, D-88 and Reel to Reel Tape
- Bulk Audio & Video Cassettes and Accessories
- Cassette Duplicators/Pro Sound Equipment

No Minimum Order

Call For Our Free Catalog

Southern Recording Supplies

700 Woodruff Rd. Greenville, SC 29607

1-800-450-8273

STUDIO TECH SUPPLY

WORLD CLASS QUALITY - COMPETITIVE PRICING
INSTALLATION * CONSULTATION * LEASING

AKG AMEK/TAC API Behringer Beyer B&K Brainstorm Bryston Calrec Canare DDA Demeter Digidesign Dolby-Pro Drawmer Dynaudio Equi—Tech Eventide Focusrite Fostex-Pro Genelec Hafler JVC KRK Lexicon Mackie Microtech-Gefell Mogami MRL Neutrik NTI Optifile Otari Pro-Co Sonex Sony-Pro SPL Soundcraft Soundfield Studio-Technologies Summit-Audio Timeline TL-Audio Tube-Tech Uptown Vac-Rac 4000 Z Systems and many more

AUTHORIZED SERVICE

AMEK/TAC DDA Fostex Mackie MCI OTARI Soundcraft Tascam...
9982 MONROE #407 DALLAS, TEXAS 75220

PHONE: (214) 358-0050

FAX: (214) 358-0947

DRT Mastering

- You will have the big, punchy major-label sound that sells discs... or the work is free!
 - Why settle for a DAT transfer when real, high-end mastering is affordable? Call us first!
 - Free evaluation of your DAT by serious, experienced ears
 - 1630 or CDR 24hr rush work
- 800-884-2576 603-924-2277**
davidt@drtmastering.com

Recording Services

DB PLUS
DIGITAL SERVICES, INC.

CD MASTERING
DIGITAL EDITING
CD PRODUCTION
DIGITAL TRANSFERS

250 West 57th. St, Suite 725
New York City, NY. 10107
212-397-4099 397-2207 (Fax)

CD & CD ROM Manufacturing
The Best CD mastering...
CD Booklet Printing and
Graphic Design ...

DIGITAL DOMAIN (800) 344-4361
(212) 369-2932
See us in Mix Marketplace

SEE OUR AD IN MARKETPLACE pg. 364

Need CDs?

We Make 'em, and...
We Offer The Best
Price On CDs of
This High Quality

CD RECORDING SERVICE:
✓ Digital Xfer to Full Redbook CD
✓ Disc Labeling ✓ Color Insert
✓ Digital SRC ✓ Standard Shipping
➤ **Unconditional Guarantee** ➤

Need Large Qty? 1000 CDs = \$1400

Sonic Solutions™
Mastering Also Available
Call NOW for FREE Brochure
(800) 524-5706
Ext. 115

SOUND CONCEPTS 1011D101000
943 Manhattan Beach Blvd.
Suite C
Manhattan Beach, CA 90266

Records Tapes CD Services

SEALED BID SALE
For Account of Underwriters
New Broadcast Video/Audio
Tapes. Wholesale value approx.
\$650,000. Ampex, Fuji, Maxell,
Sony, 3M, TDK

Tuesday, OCTOBER 10—11 AM
(609) 933-2211
Eastern Service & Recovery Co.

MANN ENDLESS CASSETTE INDUSTRIES
3700 SACRAMENTO ST., S.F., CA 94118
TEL: (415) 221-2000 FAX (800) 683-7569

RELIABLE "ON HOLD" TAPES*PLAYERS
*MADE IN USA
CALL OR FAX FOR SAMPLE TAPE

SEE OUR AD IN MARKETPLACE pg. 361

CD'S FAST

*300 CD Special: \$849
*500 CD Special: \$999

*with client provided CD-R label film & inserts.
Digital Mastering, CD-Rom & Graphic Design Available

Silicon Graphics Digital Printing
Full color inserts from \$275
10 Free Posters w/complete package

Call (800) DIGIDOC
DIGIDOC
PRODUCTIONS

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

mWORKS
(617) 577-0089

• CD Replication • Complete Mastering Services
• CD-RDM • 1630/CDR Transfers • One-Diff's

955 Massachusetts Ave #137 Cambridge, MA 02138

AAPEX

ULTIMATE FIDELITY

The world's largest Nakamichi real-time cassette duplication system. Full-service packaging. 50 to 50,000 qty. Outside CA, call toll-free (800) 323-AAPX or (415) 492-1300
—Call AAPEX today!

Recording and Duplication Supplies
Featuring
3M, BASF, TDK and Maxell
Professional Blank Audio and Video Cassettes
Mastering Tape, DAT's, CD-R's and Accessories
Any length custom loaded blank cassettes
Reels & Boxes, Norelco & Poly Box, Labels,
Splicing Tape, Leader Tape, Splicing Blocks,
Headphones, Cables & Connectors and much more

JSP
Jackson Sound Products, Ltd.
3301 W. Hampden Ave., Unit A
Englewood, CO 80110
(303) 761-3301 • 24 Hour Fax (303) 789-0557

Audiomation

Compact Disc
Cassette
Manufacturing

1-800-375-2060

Call us before you
order your CDs and
Tapes, we will save
you money.

Orders... Large or Small, We Have It All!

Everything in stock.
Wholesale distributors of:

AMPEX • AGFA • 3M • SONY

- Audio video tape
- Assorted reels and boxes
- Splicing/leader tape
- Prepackaged cassettes
- We load bulk cassettes in custom lengths

Call or write for FREE catalog
(800) 854-1061
TEL (619) 277-2540 • Fax (619) 277-7610

Advance Recording Products
8859 Balboa Ave Ste E San Diego, CA 92223
Visa and Mastercard accepted
WHOLESALE DISTR

RECORDING & DUPLICATING SUPPLIES

ARCAL **TDK AMPEX 3M BASF SUNKYONG**

Cassettes • Reel-to-Reel Tapes
C-O's • Cassette Albums • Labels
R-Dat's • CD-R's • Video Tapes
Data Storage Media

ARCAL CORP.
2732 Bay Rd., Redwood City, CA 94063
TOLL FREE 1-800-272-2591
FAX 415 369 7446

Disc Cutting & Pressing
CDs, 7" & 12" Cassettes
CD REFS \$50 and up
THE CUTTING EDGE
Box 217M
Ferndale, NY 12734
(914) 292-5965

CD'S • CASSETTES • VIDEO

State of the Art Real Time and High Speed Cassette Duplication
CD's • VHS HI-FI Duplication • Complete Graphic Design Services •
Printing/Packaging • Blank Tapes & Accessories • Free Color Catalog!

500 Chrome Cassettes & 1000 Full-color inserts: \$795 Complete! • 1000 CD Package: \$1599!!

CASTOVIDEO Audio/Video Corporation 40 Gardenville Pkwy. W. • Buffalo, NY 14224
(800) 365-TAPE (8273) • Phone: (716) 656-1296 • Fax: (716) 656-1589

KLARITY
KASSETTE

1(800) 458-6405

SEE OUR AD IN MARKETPLACE pg. 361

NOW! YOU CAN CHOOSE!

TDK PRO SA BULK MAXELL XLI BULK

C-60	C-90	C-60	C-90
\$0.58	\$0.78	\$0.61	\$0.83

MASTER DISTRIBUTORS OF 3M • AMPEX • BASF • DENON • DICI
FUJI • MAXELL • SONY • TDK • TELEX
TELEPHONE: 212.788.7800 OR 800.888.3679
FAX: 212.788.9740

SEE OUR AD IN MARKETPLACE pg. 361



LOW Prices!
FREE Brochure!
MAJOR Label Quality!
FRIENDLY Customer Service!

**Compact Disc &
 Audio Cassette Production**

(802)453-3334 FAX (802)453-3343

TAAG

- Posters
- T-Shirts etc.
- J-Card & CD Design
- Stationery
- Press Kit Covers
- Logo Design
- Stickers
- Stage Passes

The All Access Group caters to all your merchandise & promotional needs you require to make your project a success in today's music industry.

Just send us your photos, we do the rest.
 Call for your brochure today

1-800-410-4855

Crystal Clear
 manufacturing

COMPLETE CD AND CASSETTE PACKAGES

Graphic Design 500 CD's and
 10 - 15 Day Turnaround. 500 Cassettes
 Major Label Quality. only \$2,195
 Money Back Guarantee. w/full color book

CALL FOR A FREE CATALOG
 404 881-6645 404 881-6646

MASTERING

Sonic Solutions • Apogee AD/DA • Lexicon 20bit FX • CD-R

Black Mountain 800 398 7770

20th Anniversary **THE WAREHOUSE** Since 1975
Studio Sales & Services

Full color • CD & Cassette Album Packages • Fast
 CDRs overnight • CDR blanks • R2R • DATs • ADATs • Hi8 • VHS
 Blank cassettes • PC/Windows digital audio workstations
 Small to large orders • Warehouse prices
 Call for Free catalogue • 800-483-TAPE • fax: 904-398-9683
 Visa • MasterCard • Discover
 2071-20mx Emerson St., Jacksonville, FL 32207 • Internet: warehouse@jax.jaxnet.com

Subscription Questions?
 Call
 (800) 843-4086

YOUR CD'S ARE ONLY AS GOOD AS THE MASTER



AUDIO ORCHESTRATIONS
 mastering facility

- mastering
- digital editing
- complete cd prep

CALL TOLL-FREE
1-800-500-0556
 ask about our discount CD connection

WE TAKE YOUR MASTER TO THE NEXT LEVEL

DIGITAL BIN CASSETTE DUPLICATION

100 C-30 & 1 CD REF W/B&W J-CARDS, BOXES & ON SHELL PRINT \$279
 250 C-30 W/B&W J-CARDS, BOXES & ON SHELL PRINT \$375
 500 C-30 W/B&W J-CARDS, BOXES & ON SHELL PRINT \$575
 1000 CDs & 1000 CASSETTES W/B&W INSERTS \$2799

TOM PARHAM AUDIO PRODUCTIONS
SONIC SOLUTIONS™ digalog®
1-800-BIN-LOOP

PC SW pacific coast sound works

1,000 CD'S FROM:
\$1,500!

- ▶ SONIC SOLUTIONS
- ▶ NOISE™
- ▶ MASTERING
- ▶ CD-R
- ▶ GRAPHIC DESIGN
- ▶ PRINTING
- ▶ PACKAGING
- ▶ SONY 1630

1 (800) 423-2834
 TEL: (213) 655-4771 FAX: (213) 655-8893
 8455 Beverly Blvd., Ste. 500 LA, CA 90048

1-800-TAPE WORLD or 1-800-245-6000
 We'll beat any price! 5.95 SHIPPING • FREE CAT.

SONY	MARVELL	TDK	FUJI
DAT-120 7.49	DAT-12C 7.99	DAT-120 6.99	SVHS-T120 6.69
DAT-120 mag 9.99	XL11-90 1.69	SA-90 1.59	DR-35 74 10.99
T-120V 2.09	XL11S-90 2.09	SAX-90 1.99	DR-90 6.99
L-750MG 3.99	T120MGX 2.79	T-120HG 2.49	DEFEND
JVC T120 1.79	ST-120 6.99	HI-8-120 5.99	DAT-120 6.49
JVC ST120 5.99	ST-160 8.99	CD-R-74 9.99	DAT-EI 4.99

TAPE WORLD 220 SPRING ST. BUTLER, PA 16003 FAX 412-263-8296
 OVER 500 DIFFERENT. SAME DAY SHIPPING. M-F 8-5

sell it. rent it. fix it. teach it.

To place your Mix Classified Ad, call (800) 544-5530.
 Deadline: 15th of the month, six weeks prior to cover date.

#1 Major Mfg. Values!
CD HOTLINE:
800-323-7225
 CA + WEA DIGALOG NY

Incredible COMPACT DISC & CASSETTE packages

TOLL FREE 1-800-835-1362

Limited Time Offer - 500 cds: \$1099.00
 CD package includes: color 1 panel booklet, 2 color CD label, all mastering, jewel box, shrink wrapping, graphic insertion

Our Everyday Low Price - 1000 cds: \$1649.00

American Clients: No Tax... No Duty... No Problem!

\$1.45/cd package price! Includes: jewel box, graphics insertion, 2 color cd label

Don't compromise your hard work... go with the experience and expertise of... Healey Disc Manufacturing.

Order Now for your Christmas Release!

HEALEYdisc
 Manufacturing

CD-ROM
 CD-Audio
 CD-I
 Mixed Mode
 CD-ROM
 Audio & Video
 Cassettes



Graphic Design
 Printing
 Interactive Media
 Slides
 Floppy Disk

RAW CD's
 75¢

From your PCM 1630 or CD-R Master & Film Label!

CD Sonic Tel: (617) 424-0670 Fax: (617) 424-0657

FULL COLOR CASSETTE INSERTS FROM

\$75 Includes FREE Typesetting & Design

Vox Vax 22 @ Studio X Chicago
1.800.720.9788

Records Tapes CD Services

ESP CASSETTE & COMPACT DISC MANUFACTURING

CALL FOR A FREE BROCHURE
1-800-527-9225

EASTERN STANDARD PRODUCTIONS, INC.
37 JOHN GLENN DR. BUFFALO, NY 14228
(716) 691-7631 • FAX (716) 691-7732

SEE OUR AD IN MARKETPLACE pg. 364

OUTRAGEOUS PRICES!

Real Time Cassette Duplication
20% Off!

Limited Time Offer
Call for details

SoundSpace Inc. 1-800-767-7353

★ a+r ★

902 N. Industrial Blvd.
Dallas, TX 75207
214-741-2027
1-800-527-3472

CD's Starting at \$900⁰⁰

No Hidden Costs!
Compact Discs - Cassettes - Records
Great Package - Great Price

1000 Compact Discs
All Setup Fees
All Typeset & Composite Film
2-Color Label - Printed 4-Color 2-Page Booklet
with Black & White Back & Tray Card - Jewel
Box with Shrink Wrap

2150.00

W/M/C ACCEPTED

Crystal Clear Sound TAPEMASTERS

Your music on CD \$50
Custom One-off CD-Rs

1000 Compact Discs \$1750
1000 CDs/500 Cassettes \$2150

From DAT master, includes assembly
with customer-supplied inserts

1-800-880-0073 MC/VISA ACCEPTED

CDs IN 3 WEEKS!

500 CDs and 500 Cassettes
only **\$2,599**
with B&W inserts

• FREE Graphic Design • Includes Insert Printing
• Major Label Quality • No-Finish-Print Guarantee

Call today for your FREE,
1995 full color catalog:
1-800-468-9353
24 HOURS TOLL FREE

809-663-9030 **DISC MAKERS** FAX 809-661-3458

1000 COLOR CD'S-\$1995

4 COLOR/4 PAGE GLOSSY BOOKLET & TRAYCARD

ALLEN • DISC

GLASS MASTER-2 COLOR LABEL-PACKAGING-SHRINK

1-800-57-DISCS (34727)

Good Vibrations—RJR Digital

500 Bulk CD—\$890
500 Finished CD—\$1600
1000 Finished CD—\$2040

—Call For Details—
Fax On Demand & Customer Service:
1-800-828-6537
619-267-0307 • FAX 619-267-1339

HEY!! I DON'T NEED 500 CD'S!!

NEW KLARITY from KASSETTE

300 TAPES & 300 CD'S only **\$1,749**

WHEN YOU SUPPLY PRINTED MATERIALS
This is a Complete Retail-Ready Package

800-458-6405

BR & WHITE COMPLETE PACKAGE ADD \$ 100.00
TWO-COLOR COMPLETE PACKAGE ADD \$ 200.00
FULL-COLOR COMPLETE PACKAGE ADD \$ 300.00
PURE CHROME TAPE ADD \$ 30.00

Lowest Combo - PRICE IN THE INDUSTRY!

KLARITY KASSETTE, INC.
MAIN STREET - 1ST FLOOR BLDG.
WATERVILLE, MAINE 04901 USA

ASK FOR OUR FULL COLOR CATALOG

SEE OUR AD IN MARKETPLACE pg. 361

PROFESSIONAL RECORDING AND DUPLICATING SUPPLIES

CUSTOM AUDIO CASSETTE BLANKS
1 Min. - 126 Min.
Loaded With:
BASF CHROME PLUS, CHROME SUPER & MAXELL XL II HIGH BIAS TAPE

BASF **AMPEX**
3M **TDK**
maxell **SONY** **SHAPE**

AUDIO/VIDEO CASSETTES, DIGITAL MULTITRACK PRODUCTS

ON CASSETTE PRINTING - PRINTED LABELS & J-CARDS - SHRINK WRAPPING

CALL FOR OUR FREE CATALOG **764 5th Avenue, Brooklyn, New York 11232**
In New York Telephone: (718) 369-8273
24 Hour Fax: (718) 369-8275

NRS National Recording Supplies Inc.

TOLL FREE 1-800-538-2336

SEE OUR AD IN MARKETPLACE pg. 362

OpSonic

Optical Media 1-800-476-8211

Manufacturers of CD's, CD-Rom, CD-interactive, and Cassettes

- Competitive prices on all projects
- Extraordinary customer service
- Accessible through the Internet

1000 CDs from \$1399
10 CD Promo Packs from \$375

VISA NOW ACCEPTING MasterCard

Internet address: <http://www.birstream.net/opsonic>
E Mail address: opsonic@birstream.net

Classified Ad Deadlines

15th of the month,
six weeks prior
to cover date.

.....

Call Robin Boyce
(800) 544-5530

Complete CD & Cassette packages!

WAVE

Retail ready including full color inserts.

Bar-codes, CD-Rom, CD-R, Mastering, Design and Film services available.

	300	500	1,000
CD's	\$975	\$1075	\$1637
Cassettes	\$396	\$506	\$752

1-800-928-3310
World Audio Video Enterprises

Studios

FOR SALE BY OWNER: Sound-proofed & designed penthouse condo for hm. studio. Mint cond., great views, indoor garage, 24hr. security, indoor & outdoor pool, gym & sauna. \$227,500. (914) 993-0489. Westchester County, 1st county north of NYC.

**A & M AUDIO
RECORDING STUDIO**
Excellent! Reasonable!
Audio/Video brands
Music Instruction
Peter....415-459-1080
Pager...415-459-8480

3 bed/2 bath home + 1,500-sq.-ft. studio on 1 acre! Very private, mature trees, fully landscaped. Control room built to a Jeff Cooper design. Red oak wood. 2 isolation rooms. Main room 36x20. Stage, upstairs viewing area. Located 1 hour outside L.A. \$169,000. Call Flip. (909) 245-2765.

24-Tk. Recording Studio For Sale/Lease Prime Hollywood Location, 2,500 sft., 2-studio facility Amek Mozart, Sony APR 24-sep. dig. suite w/V.O. booth. Excellent condition, go to work next day, lease of premises: \$2,500/mo. Large client base, av. Sept. 1, 1995. Contact: Michael @ (213) 462-5718.

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/(212) 206-1475. Fax: (212) 929-9082. Michael Temmer.

Miscellaneous

A select line of professional music technology products
Featuring: Akai • Apple • Digidesign • J.L. Cooper • Linncon
MOTU • Opcode • OMI • OSC • Passport • Steinberg • Twelve Tone

The Midi Station™

10 years in business... Only the best stuff
Voice> 914.534.7683 Fax> 914.534.9220
E-mail> SMIDIJACK@AOL.com

Mix Marketplace • Mix Classifieds
(800) 544-5530

ISDN & SW56 USERS

The DIGITAL DIAL-UP LIST

A Worldwide Directory of Studios, Broadcasters, Producers, Artists... with Digital AUDIO CODECS &/or FILE TRANSFER CAPABILITIES All algorithms. Inclusion on the list is FREE. Single issue price: \$35
DIGIFON 203-254-0869, Fax: 203-256-5723

MASTERING • MANUFACTURING • PRINTING

DIGI-ROM™

FOR COMPACT DISCS • CD-ROM
REAL TIME & HIGH SPEED AUDIO CASSETTES

COMPLETE PACKAGES • COMPETITIVE PRICING
GRAPHIC DESIGN STUDIO • FAST TURN-AROUND
PERSONALIZED EXPERT SERVICE



1-800-815-3444
(212) 730-2111



130 West 42nd Street • New York, NY 10036

DIGITAL FORCE™

MASTERING

212 333-5953

GRAPHIC
DESIGN

REPLICATION

TOTAL CD, CD-ROM
& CASSETTE PRODUCTION

PRINTING

PERSONAL
EXPERT
SERVICE

330 WEST 58th ST
NY, NY 10019

COMPLETE
PACKAGING

The Power of Excellence SM

POSTERS

HitRack® CD⁴

1-800-446-7677 • Made in U.S.A.

Set in Classic
Black & Bronze

Deluxe
Wall Mount
C.D. Display

\$35.95 plus s&h



BEST

PRICES
SERVICE
NAMES

CANARE
AMPEX
MOGAMI
NEUTRIK
Switchcraft
3M
MAXELL
SONY
BELDEN
Whirlwind

Call for our NEW CATALOG of
Professional Audio & Video Tape, Cable,
Accessories, Equipment & Supplies

(800) 999-HAVE/4283



309 POWER AVE
HUDSON, NY
12534

RUSSIAN DRAGON

TIMING ACCURACY METER

RD-R \$499 RD-T \$249
Try a Russian Dragon for 2 weeks
If not satisfied, return for a full refund!
800.880.8776 FAX 210.344.3299

Mix Classifieds are your best
advertising buy in the industry.
Phone (800) 544-5530.

MIX CLASSIFIEDS WORK FOR YOU

- Text rate:** \$90 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. \$90 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:** \$115 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 payment to:** Mix Magazine Classifieds: Attn: Robin Boyce, 6400 Hollis St., #12, Emeryville, CA 94608, tel. (800) 544-5530 or (510) 653-3307; fax (510) 653-8171.
Payment must be included with copy: check, Visa, MasterCard, or American Express accepted. Sorry, no billing or credit available.

FEEDBACK

SOMEDAY, SOME WAY

Right now, my favorite feature in your magazine is the "Classic Tracks" column, and I loved the piece on "Papa Was a Rolling Stone" a few months ago. Motown was, of course, the MGM and Paramount Pictures of American music, and I think that anyone interested in record production should learn all they can about Motown. So thanks for the details.

I hope that you'll continue this column, and would like to see some pieces about influential recordings that predate the multitrack era. How about a "Classic Tracks" essay about "My Babe" by Little Walter or some other great Chess Records production from the '50s? Those tracks continue to be a huge inspiration, and very little has been written about the recording sessions themselves. Likewise, for stuff like Johnny Mathis' '50s hits and other classic non-rock/pop productions.

Marshall Crenshaw
Woodstock, N.Y.

BJ Replies:

Whoa—not only does Marshall make great records, he's psychic! See next issue's "Classic Tracks" for the low-down on cutting Howlin' Wolf's "Wang Dang Doodle" at Chess.

WATCH YOUR SPEED

The debris of those who couldn't hack the speed leaves the fast lane littered with some pretty crazy trash—like Dan Quayle's report cards and Woody Allen's Polaroids. I'm worried that it's time to ask Steve St.Croix to go back to wearing a helmet. I'm amazed that in "Dualing Subs" ("Fast Lane," August '95), Steve let those subwoofer manuals get away with the claim that "It's pretty hard to get two subwoofers physically far enough apart to lose coupling gain." In my old Manhattan apartment, maybe. Between the inverse square law and the lowering of the cut-off frequency for coupling, increasing the distance is a "pretty

easy" way to affect coupling, even at long wavelengths.

But the slip that tells me that Steve has hit and had too much unprotected intimacy with high-output VLF is crediting "Funk 49" to Grand Funk. Check for pupil response, ask "How many fingers?" and check out one of those quiet upstate New York yoga farms (and hope that the James Gang aren't there, too!).

Joseph Jurchak
Dalton, Pa.

HARD TRUTHS

In response to the "Hard Drives" feature in the July 1995 *Mix*, "Access time" is the time it takes to move the disk read/write head over the desired data. Access times published by disk drive manufacturers are often "average" access times—usually the time for the head to move over one-third of the disk surface, but some manufacturers use different values. The 8- to 15ms values quoted would be average values and would not include rotational delays (the time for the data to spin under the head). In a 3,600 rpm drive, the rotational delay may be as much as 16.6 ms (again, average times are commonly quoted, usually half of the maximum, or in this example, 8.3 ms).

"Throughput" is not an "ability...to coordinate"; it is the rate at which data can be "put through"—the data transfer rate with access (seek) and rotational delays factored in.

RAID is not simply a system where "more than one drive stores identical information to avoid data loss." RAID is an array of drives accessed in parallel (e.g., if there were four drives, data would be simultaneously accessed from all of them). This means that RAID provides very high throughput. Also, RAID does not usually store identical information. More commonly, extra parity information would be stored (e.g., in an array of eight disks, seven would contain the actual data, while the eighth would contain the parity in-

formation. Then, if any one of the seven disks fails, the parity information could be used to reconstruct it). There are different kinds of RAID arrays using different strategies for avoiding data loss.

In the article, it is stated that "less than 7,200 revolutions per minute are not fast enough to provide high-quality video and multitrack audio... the higher the spindle speed, the higher the data throughput." Actually, throughput is related to several factors including seek times, data placement, etc. The author probably means the data transfer rate (the speed at which data is transferred once the disk head is over it), but even then, the statement is not true. The data transfer rate depends on spindle speed and data intensity. A disk spinning at 3,600 rpm with twice the data density (i.e., twice as much data accessed during a single revolution) will have the same transfer rate as a 7,200 rpm disk. Lots of multitrack audio has been done on 3,600 rpm disks!

For the most part, A/V is an addition to computer systems, not something that is supported at the very heart of the operating systems. Therefore, rather than having proper support in the operating system, which would allow efficient A/V use of hard disks, A/V data is stored just like any other text or graphics, and the user is advised to throw costly hardware at the problem to make up the difference. However, researchers (including myself) have established methods that could make the use of much cheaper hardware possible. Once these methods find their way into conventional operating systems, digital A/V work will be more economical.

D. James Gemmell, Ph.D.
Torvue Computing Ltd.
Langley, B.C.

Send Feedback to Mix, 6400 Hollis St., #12, Emeryville, CA 94608; fax (510) 653-5142; or 74673,3672@compuserve.com.

WE LEFT OUT THE NOISE, TOO.



though it's become something of a pro audio standard, the CR-1604 isn't the only 16-channel compact mixer around. Compare 'em job-for-knob, button-for-button and you'll also discover that the CR-1604 is not the leader when it

116dB INTERNAL DYNAMIC RANGE. That's 19 times more dynamic range than the 90dB range of a compact disc! This is especially important in live sound mixing.

WE LEFT OUT COMPLICATED INTERFACES. You have instant, hands-on access to 3-band EQ, constant-power pan, 7 Aux sends per ch. and 4 stereo Aux returns.

ULTRA-LOW NOISE. When you compare noise specs, look for the test that counts: all 16 channels at Unity Gain. The Mackie CR-1604 leaves the others behind.

WE LEFT OUT 10 MIC PREAMPS! Instead of sixteen "acceptable" microphone preamps, the CR-1604 features six big-console-quality preamps, more headroom, greater bandwidth and less noise and distortion than the competition.

comes sheer number of whickies and ingamabobs. For example, the CR-1604 has less microphone preamps than competition. That's because we correctly assumed that most mixer users would get more benefit out of 6 low noise, studio-grade preamps than out of 16 cheaper ones. If you DO need a total of 16 ultra-wide-bandwidth, high-headroom preamps, simply add our CR10 Mic Preamp Expander. Quality over quantity... that's the CR-1604 design philosophy. Yet it seems to have enough of something, because the CR-1604 has mixed and tracked more CDs, more commercials, more TV program music — and more feature film soundtracks — than any other compact mixer. period.

3-WAY CONVERTIBLE DESIGN DOESN'T LEAVE OUT ANY APPLICATION. The Mackie CR-1604's rotating input/output pod lets you change from a 7-rack space mixer with jacks to back to a tabletop design with jacks to top in minutes. Add our optional RotoPod bracket and rotate inputs and outputs to the same plane as the mixer's controls (a favorite for small recording set-ups).

RFI PROTECTION KEEPS NOISE OUT OF YOUR MIX. Our metal 1/4" jacks and washers plus internal blocking capacitors keep radio frequency interference caused by broadcast transmissions, microwaves, cell phones & computers out of your recordings. **WE DIDN'T LEAVE ANYTHING OUT OF OUR FREE 40-PAGE BROCHURE.** Call toll-free, speak to a real person and get the most complete compact mixer information ever offered — including a 16-page applications guide.

IF YOU OWN AN 8-TRACK DIGITAL RECORDER, YOU'RE NOT LEFT OUT. Unlike other compact mixers, the CR-1604's split console design with post-fader channel inserts lets you simultaneously track on eight channels and monitor/mixdown on eight more. **WE LEFT OUT OBSCOLESCENCE.** Only the CR-1604 can grow with your needs. If you add a second or third digital multitrack, you can add one or two more CR-1604s with our Mixer/Mixer active combiner.

IMPRESSIVE MIC PREAMP SPECS. -129.5 dBm E.I.N, 300,000Hz bandwidth, 0.005% THD. **WE CAN'T LEAVE OUT HOW GOOD OUR PREAMPS SOUND.** Top percussionists cite the CR-1604 preamps' headroom. Direct-to-DAT audiophile recordists rave about the clarity and ultra-low noise floor. Vocalists like the robust dynamic range. And several of the world's top microphone manufacturers use CR-1604 mic preamps to demo their finest condenser mics at trade shows.

MACKIE

16220 Wood-Red Road NE • Woodinville • WA • 98072 • 800/898-3211 • 206/487-4337
mackie.com • Outside the US, 206/487-4333 • Represented in Canada by S.F. Marketing • 800/363-8855

USE READER SERVICE CARD FOR MORE INFO

See us at AES Booth #572



First gig.
\$100 bucks.
245 stairs.



SOMETIMES THE DIFFERENCE between taking a gig and not taking it isn't the money. Or the exposure. But the schlep. Which is why we created the new EON Portable System. At about half the weight of any other system, it's made to be portable. Yet it gives you all the sound quality and reliability that JBL is known for. At a price that is noticeably lighter. In fact, it may be the perfect first step for any rising



star who's just starting out. And plans to get to the top.

H A Harman International Company

S O U N D T H A T C A R R I E S