

September 1992

Recording ■ Engineering ■ Production

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We wanted to list *all* of the features on SOLO consoles but we ran out of space. If you want to find out more about



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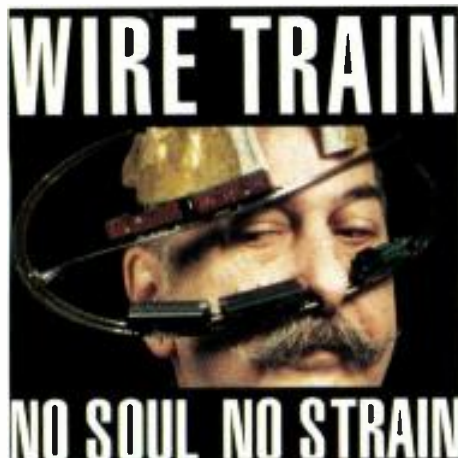
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On the Cover

It's only appropriate that 414s are depicted holding up the spans of the beautiful and majestic Golden Gate Bridge. After all, how many sessions have you done that were supported by that noble and long-lived microphone? Not to mention, AKG's U.S. headquarters have been in the Bay Area ever since the aquisition of Orban. Artistic realization digitally achieved by Lai, Venuti & Lai's art director Steve Souza and artist Allen Walker.

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R•E•P and Live Sound! and Touring Technology now have a presence on the CompuServe Information Service network! Submit article ideas, create Letters-to-the-Editor, download articles from our On-Line library or have a "live" conversation with our staff and contributors on the R•E•P: On-Line Forum. To receive a free CompuServe membership and sign-up kit, courtesy of R•E•P, dial 1-800-624-3388 in the U.S. or Canada and ask for representative #232. Once on the network, type GO REPMAG at any prompt to navigate directly to the MIDI VENDOR FORUM, SECTION 14. Or reach the Editor's Mailbox at 75300,3141 by typing GO MAIL at any prompt. See you On-Line!

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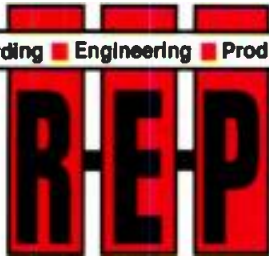
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From The Top

R•E•P: 1970 - 1992

It's A.E.S. time once again, a time for new products, financial hope and artistic enthusiasm about the future. A time to get energized all over again. But not everywhere. By the time you receive this issue, R•E•P, the periodical that defined an industry for more than 22 years, will be history — along with N.E.D., Adams-Smith and a number of facilities. And no doubt there are more to come ...

The present combination of writers, editors, personal contacts, experiences and assembled knowledge will be no more, victim of the same advertising malaise and heavy price-cutting competition that has killed off so many other magazines in so many different industries; victim of the same continuing downturn that has driven large numbers of production facilities, various manufacturers and so much talent from our creative ranks.

Today's economic reality is such that no biz in studios means less gear purchased from suppliers. A lot less. Fewer sales by manufacturers mean fewer ads for magazines. And *that* means you can't get a book like R•E•P for free. The subscription prices we'd have to charge our 25,000+ circulation to compensate for lost ad revenues would be prohibitive at best. The numbers don't add up. Intertec corporate, our owners, pulled the plug.

In a very real, microcosmic way, what has happened to R•E•P is exactly what is happening to the recording industry in general. Whether you blame R•E•P's demise on the industry-wide dearth of advertising, on the nature of technology-driven changes forever altering pro-audio (any single musician or computer/video freak can record top quality sound in their bedroom or office on a workstation/MIDI stack, as N.E.D.'s demise will attest to), on R•E•P's non gratuitously-compliant product review philosophy (not a popular item with advertisers), or even on demographics (we're getting older, and the high-end recording industry is getting smaller via attrition), arguably this biz isn't as glamorous, important, attractive or profitable as it used to be. In short, it's not the cultural focus it was in the '70s and '80s. These are TV couch-potato(e) times.

If you want to fully understand what's up, search out Robert Doerschuk and Mark Vail's excellent article on the current status of the audio industry from a magazine and a manufacturer's perspective, titled "How Bad Is It?," in the April 1992 issue of *Keyboard* (page 66). Then go back several R•E•P issues and pull out my own "From The Top" editorial in the January 1992

issue (page 5), and David Scheirman's timely "Live and Direct" column (page 45) from June 1992. There's really nothing more to add.

On the positive side, we'd like to take this opportunity to deeply thank the manufacturers that regularly supported R•E•P, that continued to believe in the audio production industry, that highly respected the quality of industry-active readers like you, and that never for a moment doubted the value and worth of R•E•P: The Harmon companies, including JBL, UREI, Soundcraft, DOD, Audio Logic, Digitech, and Allen and Heath; Sony; Audio-Technica; Crown; Peavey; Shure; AKG, now including BSS, dbx, Quedsted and Turbosound; Ampex; Apogee Sound; Carver; Dolby Labs; Aphex; The Hardy Company; The Hollywood Edge; Rane; Lectrosonics; Ramsa; TAD; Tascam; Yamaha; Studer/Editech; Soundtracs; Behringer; Drawmer; Genelec; M.T.U., and a handful of others. Thank you all! Your support was crucial.

So, what does the future hold for R•E•P? Possibly, another publishing concern will buy the circulation list and title rights, incorporating elements into an existing magazine, making trade on R•E•P's good name. There exists the chance that a maverick from inside the industry will put their heart, soul and blood into turning out a hard-hitting, dynamic magazine, championing truth, justice and informational honesty. That's what R•E•P (a.k.a.: Recording Engineer/Producer) has always been known for. It's a tougher road, but satisfyingly noble. Time will tell.

There has been a fair amount of conversation among the anointed as to whether individuals in the industry (that's you) would support, with your checkbooks, a pro-consumer professional newsletter or audio magazine providing *real* in-depth product reviews, uncensored comments from end-users, and the kind of editorial coverage reflecting the things that audio production people in the trenches *really* want to read about. In other words, all political tightropes removed. Is this industry big enough to support same? Would you? Write me personally, and let me know. Enough support and anything can happen.

And as for us? The industry's only editors who fly consoles themselves will probably go back to doing same. The projects are already lining up. In the meantime, let's all try to keep those creative juices flowin'. I believe it's called "suffering for your art." ■

Mike Joseph, Editor

The Truth Hurts

From: Kurt Gebauer 70317,3615

I was astounded by the misinformation masquerading as humor in Dan Levitin's review of "The Sullivan Years: Happy Together — Sixties Rock" in the June 1992 R•E•P. To quote:

"Regardless of whether the vocalists were merely singing over backing tracks (come now, you don't really think all the groups had full horn and string sections brought in) ..."

Yes, not only do I believe that the groups all performed "live," I know it. I was there for many of the performances included in the compilation. The "full horn and string sections" were courtesy of the Ed Sullivan Show's resident 40-piece Ray Bloch Orchestra, which not only backed the rock acts, but also provided the accompaniment for the opera singers, the Broadway show excerpts and the jugglers.

In fact, it was my understanding that Bob Precht (Sullivan's producer and son-in-law) had a policy against lip-synching. I was also told about a conflict between Precht and Tim Kiley, the director, when Kiley wanted to use the then-new chroma-key technique for visuals to the Lovin' Spoonful's "Do You Believe In Magic," having the group disappear and reappear in different locations on the set during the song. As I understand it, a compromise meant that the Spoonful performed the song live to tape for the initial video shoot, and then used that audio playback for the remaining visuals, which were edited back in.

Some more "Sullivan" trivia: 1) Davey Jones (later of the Monkees) appeared on a February 1964 show that featured The Beatles' first appearance. He was in the cast of *Oliver* and sang "I'd Do Anything for You" with Georgia Brown. 2) The Grass Roots' first appearance on the Sullivan show was as the backup band for Barry McGuire's singing "The Eve of Destruction."

Dan Levitin responds:

Dear Mr. Gebauer,

I received your E-mail about the Sullivan Years. Maybe I was wrong — I assumed that not all bands performed live on Sullivan's show because, to my ears, some of the backing tracks sounded uncannily like the records,

down to such details as tempo and balance. I was only making an assumption. I did not intend to mislead anyone.

Certainly it is not true that the Sullivan show categorically featured only live music, because it is well-known that the Beatles' first performance was lip-synched. (Note the absence of guitar cords in all of the photos of their appearance. Of course, this was years before wireless systems were commonly used.)

You say in your letter you "were there." Were you one of the engineers or technicians for the Sullivan show? I'd be curious to know more about your experiences.

Opinions, Please!

From: Robin Coxe-Yeldham 70621,2252

About a year ago I ABC'd (Meyer) HD-1s against the small KRKs and the smallish Genelecs — don't recall the model numbers. I wound up with the KRKs — felt they were easier on the ears and the wallet, which was nice! They're not as open/transparent as I would like for pure acoustic material, but the KRKs are great rock/pop monitors.

HD-1s struck me as a tad harsh in the upper mids. They seem a bit bright. They do weird things with sibilance (and are) therefore hard to listen to over time, and are just not as realistic.

(That model of) the Genelecs seemed phase-y at the crossover points, although I heard the new little ones (1031As) at the last AES and they sounded much better. However, I'd take any of them over the 4311s and Altecs of old! It is truly amazing what these guys are doing with little boxes and their CAD programs.

Stop Teasing

From: Ken Brenner 73240,1112

OK ... so I get my copy of the June R•E•P today ... I couldn't wait until the next issue... I wanted to know about the rest of the reverbs NOW!! (I assumed it was already written.) I wanted to know if it was possible to either put the article (part 2) here ... in my E-mail ... or fax it? (Pleeeeeease!)

Features Editor Anthony McLean replies:

Glad you liked it. We had lots of other calls immediately requesting Part II. The process of evaluating digital processing was like a cross between heaven and hell. Lots of thrills and lots of spills. It's dangerous, but we are always glad to try to shed some light into the fog that often surrounds pro audio.

Distilling the essence of any product into 2-dimensional reality is tough work. You can do a shallow overview with features as claimed by the manufacturers, but those claims don't always represent the naked truth.

However, you wouldn't believe how often we are faced with threats to "pull all advertising" when R•E•P editorial content doesn't match the expectations of certain parties. Still we are all scratching to survive. It is that kind of world! And audio has always been better than ditchdigging in my booklet. Keep reading...

From: Jeremy Roberts, 72630,2350

I second Ken's opinion on the (processor) issues. R•E•P has become the coolest of the audio mags ... congratulations on the great work and I was also interested to see what you guys thought of the other boxes in the July issue.

One thing I'd like to see in the future is a chart (a la MacUser) comparing all of the devices in each category. This would be useful for apples/oranges comparisons.

And Timeliness

From Chris N. Julson 72727,1127

What a timely article on processors! (1992 June and July R•E•P). I have some extra dollars to spend on one or two units. Geez, wish you had published the data on the Roland RSP-550 and the Sony DSP-R7 in (the June) issue.

Could you see your way clear and post some info on these units here on the forum? My budget deadline did not give me the luxury of waiting 'til the next (July) issue, plus I didn't have ready access to these units for personal inspection. Soooo, what do you say? Thanks, and keep up the great work with the mag! ■

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LAST LOOK

By Laurel Cash-Jones and Fred Jones

On this, the occasion of our last issue, we are departing from the usual style of this column (where we talk about new products) to give you a "First Look" at some of our thoughts on the 1992 AES convention and the industry in general.

Just as we moved into the '90s, one of our friends made a very fateful observation: "You know, the status symbol for the '90s will be a JOB!" At the time, it seemed very funny, but then we recalled the end of the '60s, '70s and '80s. As each decade has come to an end, so have the idiosyncracies of that decade.

In the '60s it was "take one" on a mono tape machine in a garage studio that gave way to the birth of multitrack recording. The '70s were the free-spending, high-budget days of yore. Four tracks became 24 tracks. Studios put in personal masseuses and jaccuzzis. Disco happened.

Laurel Cash-Jones is an editorial consultant to R•E•P and a legend in the industry. Fred Jones is a free-lance engineer, producer and writer.

In the '80s, album budgets shrank. Studios went back to peoples' garages and homes. Big studios closed. Drum machines became all too popular and replaced the jaccuzzis (too bad). Instruments gave way to the mechanized voice of music for yuppies. Not everything was bad, however. Disco died. The '90s? Hopefully, drum machines will go the way of disco.

While we have enjoyed being involved in many of the 20 some-odd years of R•E•P in its various forms, and are sorry for its demise, we have discovered what you are about to experience for yourself: It's time for things to change.

The AES Convention and trade show is upon us once again. Promises. Resolutions. Meetings. Appointments. Parties. Changes.

Those of us who attend the AES convention regularly use it as a chance to look back at the past year and complain about the changes in the business, and be thankful we are still alive and employed. It is also that time of year when we get to see all of the changes the past year has made in the people we know, and the changes the equipment manufacturer's have made in all of the toys that we use to make a living.

This year it's a little different. Because, in our humble opinion, it is time for things to change.

ARE YOU READY?

Change is a frightening thing. How wonderful. Change is an enlightening thing. How horrible. Change is in the air. Political. Social. Economical. Musical. Analog. Digital. Optical. It will affect this business. It will affect how you do your job. It will affect your purse or wallet. IT WILL AFFECT YOU.

All of this reminds us of a joke actors use to describe the rise and fall of their career. We guarantee that you can use it as a guide to the various stages of your own career. To use this joke/guide, just put in the blank spaces the name of any company, individual or artist you choose.

1. Who is _____?
2. Get me _____!
3. Get me someone like _____!
4. Get me a new/younger _____.
5. Who is _____?

But seriously, let's dissect this joke and see what it means to all of us. Overall caveat: Change is inevitable! Stage one: You are the instrument/instigator of change. Stage two: The world is reacting and changing with you. When you reach stage three, it is time to change what you are doing or oblivion is necessary in order for you to change.

The only way you can avoid oblivion is when you reach stage four, where you re-invent yourself or your company. Michael Jackson is perhaps the best example of this.

Hopefully, you can do this and stay relevant with the current business, political, social, musical climate *without forgetting who you are and what got you there*. If you do not, stage five applies.

In a nutshell, do not be afraid of change. Embrace it. Grab on to it like the race horse it is and go with it. Just make sure you're on the right horse.

To quote The Firesign Theatre from its album *We're All Bozos on This Bus*, "Welcome to the Future!" Enjoy it. It is time for things to change! ■

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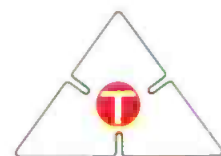
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Studio Sound Recorders, North Hollywood, CA
Chief Technical Engineer: Phil Cipolletti (left)
Studio Manager: Chuck Hohn (right)



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Random Access

RELATING RECORDING SCIENCE • TO RECORDING ART • TO RECORDING EQUIPMENT

(Original cover line of R•E•P)

The audio business has always been tiny, but also far from obscure. And for a over a generation R•E•P staked out the high ground of this high profile industry. From the cinematic swell of strings in a John Williams score, to Zeppelin hammerin' "When the Levee Breaks" at Knebworth, to Sinatra working the country club formal on cassette, our work (the recording business) continues to touch damn near everybody.

When Martin Gally founded R•E•P in 1970, 8-tracks were standard and 16-tracks were the promised land. And for many, R•E•P defined the evolution of the multitrack recording industry. Later, during the music/cultural explosion that escorted baby boomers from adolescence to adults, R•E•P was there. Then, as those same artists we had in the studio suddenly needed mega-scale touring/concert sound, R•E•P became the string of knowledge that tied together an industry that literally invented itself on the road.

As time passed, R•E•P chronicled the boomtown splendor of the late '70s and early '80s when a wide-eyed optimist with a better audio mousetrap could conquer our little universe. The R•E•P archives are stuffed with photos of techno-dreamers flush with the glow of entrepreneurial hope. Some fared better than others, and as in all things, those who applied marketing skills too seemed to fare best. During the '80s and '90s R•E•P detailed MIDI, audio workstations, flown sound systems and the future world of digital recording and processing technologies.

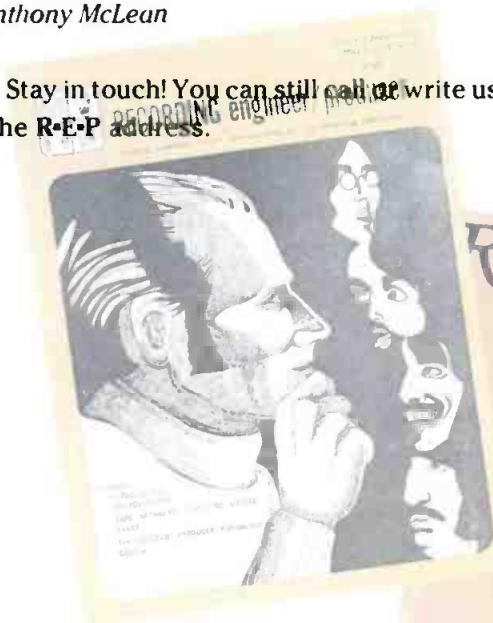
And, like it or not, that future is undeniably tied to the software paradigm. Soon or later, black box digital audio engines will drive all recording/processing systems and we'll stand at the trade shows and "Ooh" and "Ahh" over the new CD-ROMs with the hottest upgrades. Back-to-analog zealots will resist. But this is the future.

In my personal future, not working on R•E•P will be like losing a friend. Like many of you, I made frequent engineering quantum leaps while reading R•E•P. And when Mike Joseph asked me to join R•E•P last October I was honored and found the offer too good to refuse.

But I digress. The theme here is that pro audio remains a small universe ... so small in fact, that in terms of knowing each other, audio pros are probably never more than two or three people away from each other in the so-and-so knows so-and-so continuum. And the common denominator is that audio pros are driven by a passion to advance the art. We love the work!

— Anthony McLean

P.S. Stay in touch! You can still call or write us at *Live Sound!* magazine at the R•E•P address.



PEOPLE

Don Davis makes sure every Syn-Aud-Con grad knows the names and achievements of the audio gods. And while neither Fletcher, nor Nyquist, nor even the venerable V.M.A. Peutz were regular contributors to the magazine, some serious audio minds have graced these pages over the past 23 years.

Included in that group are **Rupert Neve, John Eargle, F. Alton Everest, Carl Countryman, Martin Polon, Dean Jensen, John Storyk, Jim Furman, Gary Davis, Jeff Baxter, Ralph Jones, Steven St. Croix, John Meyer, Chips Davis, John Hardy, Adrian Weidman, Russ Berger, Ken Deloria, Pat Quilter, Jim Williams, Curtis Chan, Larry Winter, Barry McKinnon, Bob Todrank, Marvin Ceasar, Peter D'Antonio, Daryl Dragon, Will Eggleston, Eric Wenocur, Paul Lehrman, Alan Parsons, John French, Jerry Milan, Paul Buff** and many more.

COMPANIES

From the Impossible-to-Buy-New Department. (Audio gear once advertised in R•E•P.)

We spent a full August weekend rooting through the R•E•P archives and being constantly waylaid by the urge to read and re-read portions of the R•E•P body-of-work. It was a mondo trip to view the evolution of our industry in one long stack of magazines. And the advertising covered everything from the ridiculous to the sublime leaving one certain conclusion: bellbottoms and fu-manchus have become sillier looking over time.

Mixing Consoles: Canary, Interface Electronics, Pandora Systems, el²tech, Trouper II, Multi-Track, Quantum Audio Labs, Spectra Sonics, Sphere, Maze, Bushnell, Audio Designs, Langevin, Helios, Triad, Tangent, Audiotronics, HH Electronic and 2005 AD.

Tape decks: MCI, Telefunken, Stephens Electronics, Sculley/Metrotech, Accurate Sound, Bouse, 3M and Ampex.

Processing boxes: MXR, Sound Workshop, Allison Research, Melcor, Tempo, Gately, Clover, Aengus, Tapco, Scamp, Delta Lab, Stocktronics, Audi-ence, Adams-Smith, BTX, Ursa Major, OC, Orange County Electronics Corp., Bandap (Barclay Analytical), Z-Line Datatronics, AXE and Audio Processing Systems Inc. Electronic Keyboards: Buchla, ARP, McLeyvier, Sequential Circuits and Synclavier

TREND WATCH

A continuum of seemingly significant events.

April/May, 1970, Volume 1, No 1. Launched by Martin Gally in Hollywood, R•E•P was just in time for the 38th AES convention in Los Angeles. As much a newsletter as anything, the magazine was hard core how-to, featuring hand-drawn block diagrams and published bi-monthly until acquired by Intertec in 1985.

May/June, 1971, Volume 2, No 3. Cover story examined "The Promise of Digital Technology Applied to Audio Recording".

March/April 1974, Volume 5, No 2. John Eargle returns from Japan and predicts, "Japan's attention to technical excellence and progress is likely to be their ticket to even greater success in the world consumer electronic market."

October 1976, Volume 7, No 5. Feature on "The Emerging Importance of the Concert Sound Stage Monitor Engineer."

December 1976, Volume 7, No 6. Cover story posed the question—"Small Studios — What \$20,000 can buy?" describing how you can get in cheap. The first (of many) R•E•P features on Alan Parsons appeared.

April 1978, Volume 6, No 5. The Crystalab system 40-channel input, 4-output mixer with a digital logic system. The trend was clear.

February 1978, Volume 9, No 1. Cover Story: "Microprocessors in Audio," and a feature: "A Standard Digital Interface For Peripheral Equipment" by Richard Factor.

March 1979, Volume 10, No 5. R•E•P gets big. Glory days for audio entrepreneurs. Sony PCM-1600 ads appear. Kenneth Fause writes a definitive article about disco sound systems, and a feature "dBs Can Be Hazardous to Your Health" warned about the damage done. Late Late news announced "The first SPARS National Convention" beginning 10/31/79 in NYC.

December 1980, Volume 11, No 6. Mel Lambert joins R•E•P as editor at large.

August 1983, Volume 14, No 4. Feature article by John Eargle (then at JBL, Inc.) "Applications of the Central Array Design Program for Computer Assisted Optimization of Loudspeaker Systems." And the race for computer design superiority had begun.

February 1986, Volume 17, No 1. Intertec, at the time owned by Macmillan publishing, acquired R•E•P from Gally Publications. Mel Lambert is chosen as Editor.

October 1987, Volume 18, No 1. Michael Fay is named Editor.

September 1989, Volume 20, No 9. Michael Fay's tenure as editor ends.

November 1989, Volume 20, No 11. Mike Joseph joins R•E•P as technical editor.

May 1990, Volume 21, No 5, 20th anniversary issue with a handy article index of the first twenty years. (Just in case you wish to find something later.)

March 1991, Volume 22, No 3, Desktop Production "Right here, Right Now".

August 1991, Volume 22, No 8, The first National Audio Test.

September 1992, Volume 23, No 9, Intertec publishes its last R•E•P magazine.

Did you know that J. B. Lansing's (1902-1949) real name was Giovanni Martini? ■

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Wire Train: "No Soul No Strain"

Label: MCA

Produced by: Bill Bottrell

Engineered by: Bob Salcedo

Recorded and mixed at: Toad Hall (Pasadena, CA)

Mastered by: Steve Hall, Future Disc Systems (Hollywood)

Comments: Wire Train releases its most mature and accessible album to date. This recording displays a real studio effort. Layers of electric guitars, enhanced by various kinds of distortion, delays, and weird reverbs combine to produce complex and unnatural soundscapes, which are expansive and full without being cluttered. As the album goes on, producer Bottrell adds trippy mellotron-like strings and flutes, while dry and fittingly stark vocals crawl out from all over the stereo field, ensuring that the band's raw energy isn't lost in a sea of effects.

Of Special Interest: The drum and percussion tracks are arranged as in dance music, with solid sixteenth-note rhythms keeping the songs moving along at all times. Yet the sounds themselves are those of wood, metal and skin hitting one another, rather than computerized pops and gated reverbs. Plain rock-and-roll drums are complemented by tambourines, bongos, wood blocks and noises that aren't really identifiable at all. In "Other Lover," most of the drum kit is apparently replaced by the sound of a guy building a wooden cabinet of some sort. This impressive repertoire of sounds is harnessed in a very musical way,

with percussion parts changing subtly to help build and release tension in each song.

— *Reviewed by Bill Copen.*



Yo-Yo Ma/Bobby McFerrin: "Hush"

Label: Sony

Produced by: Steven Epstein and Bobby McFerrin

Recorded and mixed by: Chris Tergesen

Recorded at: Dreamland (Woodstock, NY)

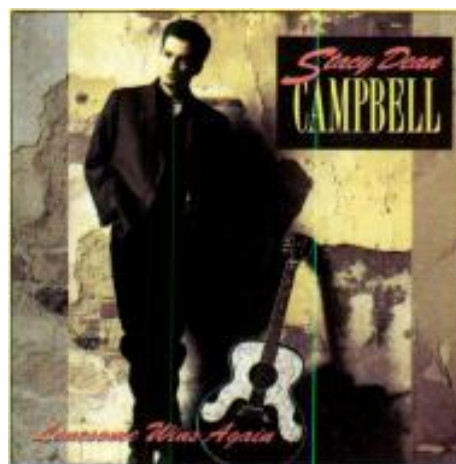
Mixed at: Power Station (New York)

Mastered by: Bud Graham

Comments: I never knew how good this guy was until this record. Yes, he's made it impossible to tell the difference between a musical instrument and the human voice. He's done it in every imaginable musical setting. Am I talking about Yo-Yo or Bobby? Both. The pairing of these two couldn't be any more natural, or any more spectacular. McFerrin, who has made a career out of making his voice sound like a musical instrument, and Ma, perhaps the greatest living cello player in the world, makes his cello sound so much like a human voice it is uncanny. But still, before this record, we didn't realize how good these two really are. They blend their respective instruments so seamlessly and beautifully that it's often difficult to tell who is who.

Of Special Interest: The album is a wonderful and stately piece of work, not the slightest bit prone to mere exhibitions of technical skill, but rather a comprehensive musical statement, a true work of art. The recording is clear, supportive and unobtrusive. There is never a moment when we find ourselves thinking about technical qualities of the recording, which is perhaps

the highest compliment that can be paid any recording. With "Hush," this may be either because the recording so complements the performances, or because the performances are so captivating that it is hard to turn attention from them to anything else. The recording is most deserving of a Grammy, notably for the vocal and classical performance. The production itself was all digital, using Sony's 20-bit resolution technology.



Stacy Dean Campbell: "Lonesome Wins Again"

Label: Columbia

Producer: Brent Maher

Engineered and mixed by: Brent Maher

Recorded and mixed at: Creative Recording, Inc. (Nashville)

Mastered by: Glenn Meadows, Masterfonics (Nashville)

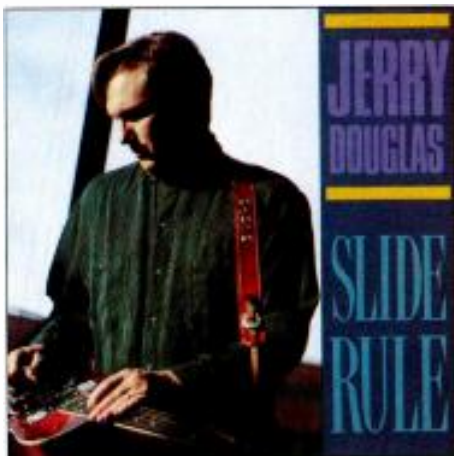
Comments: Stacy Dean Campbell hails from the New Mexico/Oklahoma/Texas axis and his music is as spacious as the horizons of his native environs. Drawing on a rich musical past and invoking Sun Records-era Cash, classic Cline, yearning Robbins and an untouched Everly Brothers, Campbell's music evokes much of the yearning sentiments indigenous to country music of all eras. A friend remarked that Stacy Dean writes songs the way Rodney Crowell might if he had Phil Everly's voice. This is not to say that the production is dated. Producer Maher, known for his excellent work with Wyonna Judd, creates contemporary sounds that are clean and yet have plenty of room to breathe. Indeed, copious attention has been placed on making sure even the smallest details weren't overlooked. Not-

Fresh Tracks

ing comes off as being “studied” or too careful.

Of Special Interest: On the plaintive “Would You Run,” we hear the last trails of the lines evaporating like the oil slicks on a too-hot Texas highway. The tension in the vocals is captured in its subtlety and nuance. “That Blue Again” is supported by the waftingly classic quartet vocals of a near-perfect Jordinaires arrangement. As much as Campbell brings a retro feel to his work, the world is wholly reinvented through the production, and through his songwriting partners, former O’Kane Jamie O’Hara, Maher and Don Schlitz. Lonesome establishes Campbell as country’s Chris Isaak — talk about a cool world, indeed.

— *Reviewed by P.J. Daugherty*



Jerry Douglas: Slide Rule

Label: Sugar Hill

Produced by: Jerry Douglas

Recorded and mixed by: Bil Vordnick

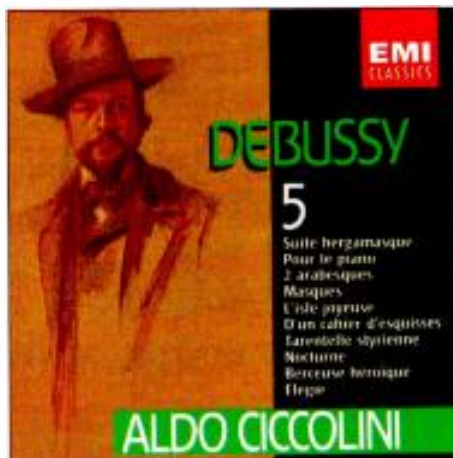
Recorded at: Music Row Audio (Nashville)

Editing by: Bruce Dees

Mastered by: David Glasser, Airshow (Springfield, VA)

Comments: Ace dobroist Douglas brings adroit performances to this solo outing. The album is not a mere showcase for Douglas’ dobro playing prowess as much as it is for his eminent musicality, both as a band leader and player. This is not your typical superstar show-off album, but an album to be enjoyed over and over again, accessible, easy to listen to and fun. The talents Douglas has lent to countless others as a session man, he brings to full light here. The recording is clean, warm and sports good, solid engineering. Douglas’ version of “Hey Joe” is smokin’ with some real fine picking.

Of Special Interest: The independent label Sugar Hill produces consistently excellent quality product, from both an engineering and musical standpoint. Another recent title, *Remembering Merle* by Doc and Merle Watson, features classic live performances from 1970-76, all well-recorded and also a must-have.



Aldo Ciccolini/Debussy Piano Works, Volumes 1-6

Producer: Etienne Collard

Engineered and mixed by: Daniel Michel

Recorded at: La Chaux-de-Fonds (Suisse), Salle de Musique

Comments: What Ciccolini did for Satie a decade ago, he does now for Debussy. Ciccolini’s recording of Satie’s piano music brought the often misunderstood, enigmatic composer to a popular audience with the brilliant, mischievous, almost psychotic rendering of the composer’s works. The production on this series is boldly powerful and unique. Ciccolini again “blends pathos and mischief” (as Roy Howat describes Debussy’s music in the liner notes) with a piano that perpetually sounds as if it is off-camera.

Indeed, the recording is quite remarkable for its unconventional approach, one which it also shares with the Satie release. (The balance engineer — Tonmeister, in German — is the same on both, which causes one to wonder, is this Michel’s vision or just the way Ciccolini plays?)

Of Special Interest: There is something unnerving and tension-producing in the juxtaposition of this distance between the listener and the physical instrument of the piano, and the delicate intimacy with which Ciccolini plays. Even during the more

powerful (and louder) parts of the pieces, it doesn’t sound as if the listener is in the same room as the piano. If anything, during these passages the piano sounds “on-camera” and the listener is relegated to off-camera. The performance is allowed to affect the listener because it is not right in the listener’s face. It is this production value, coupled with Ciccolini’s genius, that makes the music so strongly imagistic and visual.



Mary-Chapin Carpenter: “Come On, Come On”

Label: Columbia

Produced by: John Jennings and Mary-Chapin Carpenter, Steve Buckingham

Engineered and mixed by: Bob Dawson, Marshall Morgan

Recorded at: Bias Studios (Springfield, VA); The Doghouse (Nashville)

Mastered by: Denny Purcell, Georgetown Masters

Comments: Carpenter’s fourth solo album features some of her best work to date. Her deep, throaty vocals propel songs like “The Hard Way” and “I Feel Lucky” with a resonant conviction few singers today can achieve. The production is somewhere between modern “new” country and rock singer/songwriter. The tones are clear, the reverb tails are light, and the focus is on Mary-Chapin, which is as it ought to be. She does a smashing version of Mark Knopfler’s “The Bug,” and the album contains a good balance of up-tempo numbers and ballads.

Of Special Interest: Carpenter is one of those rare songwriters who can write a song that could stand alone as an instrumental; the vocals lay on top of strong rhythm tracks that are not mere bedding for the melody, but strong musical and rhythmic pieces on their

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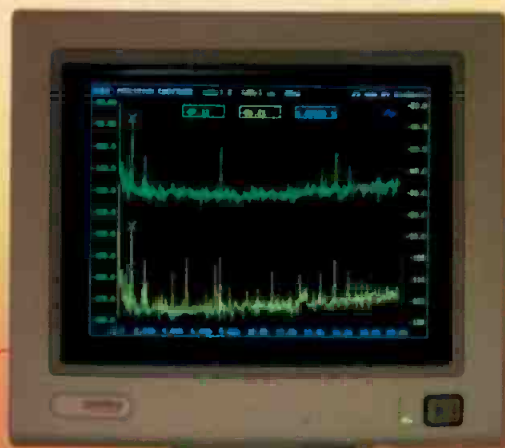
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own. Dawson and Morgan have the self-assuredness and vision to create different sounds as required. The kick drum is primarily puffy and deep on most of the songs, with very little top

end. But on the up-tempo "The Bug" ("That song doesn't really rock; it sort of lopes," Mary-Chapin told us), the high end of the kick emerges, as it also does on the beautiful ballad "Walking

Through Fire." On "The Hard Way" the guitar parts are all easy to distinguish. Throughout the CD, the bass guitar hangs tight with the kick. A great album on all levels.

FOCUS:

JOHN JENNINGS, MARY-CHAPIN CARPENTER, Producers, "COME ON COME ON"

R•E•P: How did you 'verb the acoustic guitar in "Rhythm of the Blues"?

JJ: That was Sony R7 on plate along with PCM70 Tiled Room. The R7 is great. The box I'm most impressed with is the Lexicon 480, because the reverb trails are all smooth. There's not a lot of dither in them. And the R7 has that same sort of sound.

R•E•P: What kind of vocal mic do you use?

JJ: We bounced back and forth between a U47 and a U87, both stock. For compression, I used an LA2A and an API 525 during tracking, then a little of them again during mixing. The nice feature of the 525 is that it has a de-essing function in it, and that is really useful. Other than that, Mary-Chapin uses her technique, and she is very good at controlling it. I used a stereo pair of KM84s on acoustic guitars most of the time; sometimes a pair of 451s, 460s or 87s.

MCC: The thing about the mics on my voice — we have a running battle conceptually with what to do — (is that) there's always sort of a conflict about which one to use. There are some songs where hearing myself back in the cans, it sounds good with the 47 but I get in the control room and it doesn't sound good. Or it will work on one song but not on another.

Whichever mic it takes to get a warm voice, we're happy to throw it up there, but John and Bob's contention is that depending on how hard I'm bearing down, that can make the difference.

We use the on-the-ear Sony headphones. I was getting headaches from these other headphones because they were so heavy. So I went out and got the regular over-the-ear Sony headphones and they are most comfortable. But I started singing and I couldn't get my pitch. We were baffled and mystified by it and some other singer came in and told me they had the same problem so I switched to the on-the-ear foam type.

R•E•P: John, you play a lot on this record — guitar, bass, background vocals and some keyboard. How do you balance your role as performer and producer while keeping on top of all the engineering?

JJ: With this record my role's pretty much in regard to music and performance. The engineer, Bob Dawson, and I share some brain cells — I am an engineer, but I'm not the engineer that he is. If you're playing and producing and engineering, it gets to be too much.

R•E•P: How do you balance being an artist and producer, particularly judging vocal performances?

MCC: I've always worked with John as my co-producer, and Bob Dawson, my engineer, has also been involved in the

process of doing vocals for a long time. It's almost like, you don't know how to explain it, but you know it when you hear it. Often there's been a vocal where it might not be absolutely perfect, but there's something about it that makes it better than a perfectly executed one. The three of us all know it when we hear it. We're pretty intuitive with each other.

Other times Jennings will say "that's a keeper" and I'll listen to it over a period of time, and I'll know I can do it better. It might kill them for me to want to redo something, especially if there's no extra tracks, but they trust me. Sometimes I've been able to beat it.

R•E•P: The intro to "The Hard Way" reminds me of the opening of an REM song, "Radio Song," with the arpeggiated triad...

MCC: Really? I don't know that. I can tell you how that part of the song happened. There's a place in the song — (sings) "Some will call on destiny/but I just call on faith." I wanted to take that section and link it to the beginning of the song, musically. It's a reference point from the bridge to the chorus; it was just me trying to link the two together. You know, with all due respect to REM, they didn't invent chimey 12 strings.

R•E•P: How did you sequence the album?

MCC: I probably had less time to really think about that part than I've had before. Usually I've been home and I have my tape recorder and I can experiment with sequences. This time I was on the road and they needed it the next day, and I sat there with pieces of paper and thought and listened to the music in my head.

R•E•P: Everyone is saying that the lines between country and rock are becoming blurred. You seem to be at the forefront of the battle to obliterate them. What is country?

MCC: That's a damn good question. I think it's really hard to define. Whatever it is, it's very broad because if it wasn't, I don't think an artist like myself would get played on it. I'm not doing enigmatic things, but I'm not doing mainstream things. I listen to what is the mainstream, and I'm not right there with it. The audience for this music has grown very diverse and that obviously is what accommodates the fact that you have everyone from Mark Chestnut, a traditionally oriented artist, to Rodney Crowell or Joe Ely or Lucinda Williams in country. There's a real breadth to the idiom.

I'm just a singer/songwriter who happened to get a deal out of Nashville at a time when they were embracing such singer/songwriters. As far as pushing the boundaries, I'm not on any mission. I'm just trying to play the music that I like to play. And that's what I want to do. ■

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THE R•E•P
INTERVIEW:

GEORGE MASSENBURG

A brief conversation
with the
main man himself.

By Dan Levitin

Because GML celebrates its 10-year anniversary on Oct. 5, we took this opportunity to salute our favorite manufacturer/recordist and find out what he's up to and how he works in the studio. As this may be the *last* R•E•P Interview, it seems fitting to end with a man who is a pretty hard act to follow.

R•E•P: Your recent Lyle Lovett record [*Joshua Judges Ruth*, MCA] has a great sound and a great feel. How do you balance all that feel with taking care of the engineering?

GM: I think one important thing is how great the cats were; this is something that is often underplayed. Particularly Leland (Sklar, bassist) and Russell (Kunkel, drummer). I don't think they get anywhere near enough credit, but their work separately or together is magic. They have tremendous sensitivity and flexibility — and competence.

Lyle had strong ideas about almost everything. He felt he hadn't had the right attention paid to the approach to his music. He was very attentive to the attitude in the studio. The focus on the tunes was paramount. All of us learned to be careful to listen and respond from the heart to the songs, rather than dialing in old riffs. The concentration level on this record was high. I remember at one point Lyle saying to Russ, "Don't play that ch-ch-ch thing." And Russ said, "What do you mean?" "You know, that thing that goes ch-ch-ch." And Russ said, "You mean my *highhat*!?" And Lyle said, "Yeah." "So ... you don't want me to play my high hat?" Lyle says, "Yeah, it bothers me." To many drummers this would have presented a substantial obstacle. Lyle got the players to do some amazing things.

R•E•P: And Kunkel, especially, has a great right hand.

GM: He has a great everything — great tone and texture, taste and time — but for Russ to find out where the holes were was a painstaking experience. Everyone was trying very hard. After a solo, one of the musicians came walking into the control room with his pants down. He said, "All right, name it, I'll do

Dan Levitin is R•E•P's music production editor, bon vivant and a recent relocatee to Eugene, OR.

“All of us learned to be careful to listen and respond from the heart to the songs, rather than dialing in old riffs.”

it. I'll do anything!" Our requests often exposed nerves.

R•E•P: So was the session tense?

GM: Yeah, but tense in the sense of the opposite of mellow. I'm not big on mellow. I don't think it's important to be mellow. So, yes, the sessions were tense in all the right ways. We spent a lot of time talking about the tiniest details, even on song order sequencing. Now, the things I generally spend a lot of time on, which are overdubbing vocals (which often takes four weeks between cutting and mixing) and other instruments, didn't happen here.

By the way, in the July R•E•P Focus on that record, I had said we used a Demeter preamp on the bass, but it was a DI from Eclair Engineering.

R•E•P: I first became aware of your equalizers when I was doing a session some years ago. The studio manager asked me if I wanted to rent two channels of these things and I looked around and thought, "Why do I want to pay money for outboard EQs?" The studio had a good collection already, including Pultecs, Langs, some SAE graphics, and so on. The manager said, "No, these are different." He said, "Look, use them for free today. If you like them, pay me at the end of the session." And I loved them. The musicians and I all agreed — they were incredibly ... musical. Whatever we put them on, they increased the musicality of that instrument. Within reason, of course. I couldn't add 20dB of 3K. How do you design components for *musicality*?

GM: I don't know if anything would improve musicality, in and of itself, but preserving it is what I've been trying to do. I went to a high-end hi-fi show last weekend, and the bullshit factor was staggering! People spending a *hundred bucks* each for these tiny pillows that you put on your windows and walls to supposedly control acoustics. We saw some great engineering,

too, but I would sure like to know the science behind the little hi-fi speaker whose claim to fame was that its stand was made of pre-Cambrian Welsh river-slate.

R•E•P: What's the most important thing in design then to preserve the music?

GM: Just keep it clean. Every active stage is in some way going to color, or, worse, cast a shadow or corrupt music. Say you're really trying to get to the heart of the artistic experience, to the art of a guitar, for example, with all of its artifacts and its detail ... its ambiguity. You're dealing with a source with a dynamic range of 130dB or more! You get down to that level and everything you do changes the illumination of that experience.

So, all we're trying to do is be honest. Our designs have their shortcomings; we just try to know them and balance them. Any gain stage has its shortcomings so we decided to put ours in parallel instead of putting five bands of two op-amps each in series. That helps the sound a lot. The hit that you take is that when you turn two knobs all the way up, instead of being 24dB up it will only be 18dB up. But how often does that stop you? The other part of our design rule is that all signal handling is with discreet transistor, hand-built stages.

And the ICs are important, particularly 5534s. When you talk about the difference between an Amek and a Soundcraft and a Neve, you're talking more about differences in looks and differences in the designers' topology than differences in the actual electronics. Mostly everyone uses a variation on 5534s and TL071s. And the corruption caused by these gain stages usually overwhelm corruption by topological errors (except in the case of the Neve VR equalizer, where better op-amps probably would not improve it).

But overwhelming that, in most cases, is the choice of the IC. So we chose to go discreet. We build a preamp out of carefully selected and tested transis-

tors. We have a hell of a time doing it. In the last year we had a reject rate of 50% in this new design, but we still choose to do it that way, long after everyone else has decided to compromise and go to ICs.

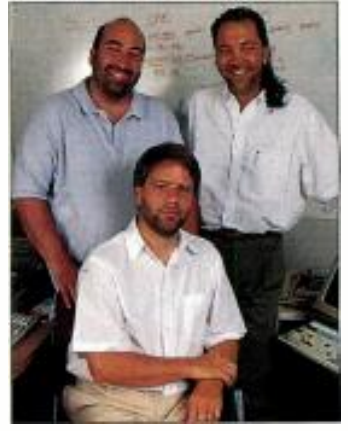
R•E•P: What was your background in engineering?

GM: I was a horrible student. I went to college at Johns Hopkins in electrical engineering. By the time I got to college, I had pretty much worked out the so-called parametric equalizer. I was part of a company called ITI in the late '60s, and I wrote the professional paper for the 1972 AES convention using the name "parametric" for the first time. We introduced the first parametric equalizer unit. Other people (notably Dan Flickinger) had this on their minds at the time, but we were first to market. Users picked up on the idea and it spread. I don't know that I so much as invented it as I got there first and named it.

So I was a year and a half at Hopkins and I dropped out. It was pretty much a waste of time for me. I remember once I was in a systems course and this zombie graduate-student professor and I got into a fight about a circuit design using gyrators. He was telling me such a circuit was impossible and I had already *built* one! I just walked out. It was oppressive. I was spending most of my time in the studio by then, anyway.

R•E•P: Most of the lead vocals you record sound pretty dry. On Lyle's record, for example, it sounds like just a slight bit of compression with an 87.

GM: Well, actually this is a custom 67 that I've had for a while, with a very, very fast diaphragm. It's hard to make, it's one mil thick, and expensive, but it extends the U-67 response a bit. Some engineers don't like it because they think it's too harsh. The great chase in this town is for the puffy sounding microphone and I am not a fan of puffy. I hate paying a lot of dough for old C12s



that just sound puffy. That's exactly the opposite of what I'm listening for; I want to expose as much detail as possible.

Occasionally an artist will ask me to do things contrary to the idea of chasing a natural sound. With Linda (Ronstadt), for example, there was one song where she made me turn on, and subsequently way up, an amazing number and amount of effects on this drum fill in the middle of a record. And the result is the drum fill jumps right out of the speakers and bites your nose. This is the kind of thing that makes me drive off the road. She loves bringing it up.

R•E•P: Do you mean the single "All My Life" she did a couple of years ago?

GM: So you knew. I had a gun to my head.

R•E•P: Is Focuswrite your favorite console?

GM: Yes it is, and it was my favorite before GML decided to distribute it. I like the equalizer, it sounds musical and open; I *hate* the VR. I haven't worked on the VR for some years. I won't. Linda and Peter (Asher) and I just did a project up at Skywalker (Studios) with a mostly live, 20-odd piece

mambo ensemble. It was all acoustic. I used my mixer and my pre's and EQs and we bypassed the Neve altogether and it sounds a lot better for it. It is not the console it used to be; it is not the company it used to be.

Some time ago I asked Rupert (Neve) if he could find it in him to forgive me for saying, "That f'ing Neve!" so often; he said he found himself saying it as well.

R•E•P: Do you try to make your records sound like a band on a stage with the listener in the hall or do you try to create an aesthetic experience that's removed from reality?

GM: Well, either way, I don't think you can convey an experience, aesthetic or documentary, if you don't know where to look for the art. With the records I do, we really try to be honest to the style. With the mambo stuff, we tried to be sensitive to the players who knew how that shit worked, who knew that feeling and how to play it, how to record it and mix it and listen to it. The question really is, "Is it contrived?" And although I would be as quick to say that almost all performances, music to mixing, are contrived to some degree, I am trying to tell the truth. You do have limitations that ask for

some compromises to be made.

I went to the Grand Canyon a few years ago with Alan Sides and John Potoker and Barry Wilson and heard these beautiful, natural reverbs, and I came back and mixed some of the Jennifer Warnes record, *Famous Blue Raincoat*. And my mixes have 7-second reverbs on them!

REP: That is a very different sounding record for you.

GM: That's Jennifer's record. But my mixes may well sound that way because I was so enamored with those ambient sounds. There remains that question, "Is it art or is it contrivance?" One big problem with popular music today is that radio programmers and record companies have reached, sometimes literally, into the studios to get their hands on the board, and they are definitely more interested in contrivance in the manner of making records that sound like what's already on the radio.

When Linda and I were finishing the Aaron Neville record last year, David Anderle, our A&R champ, loved and appreciated and nurtured Aaron and this record. On the other hand, he knew they had to sell it; eventually they felt they had to remix "Everybody

“One big problem with popular music today is that radio programmers and record companies ... are definitely more interested in contrivance in the manner of making records that sound like what's already on the radio.”

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The 414 is available in two models, the C414 B-ULS and the C414 B-TL.



“I too often compress the hell out of everything. On the Lyle Lovett record there’s sometimes 30dB of compression on his vocal, and you can barely tell.”

Plays the Fool” and that we would object to the remix and the remixer.

So Al Cafaro, the president of A&M, came in to the studio and sat down and told us the story of deregulation and Reagan in the '80s.

What happened was that as radio was deregulated, the FCC had its teeth pulled and consortiums of people who had never had access to radio now owned radio stations. So with the toothless FCC, maybe a group of 80 dentists would get together and spend \$60 million on an FM station that had never been valued higher than a tenth of that. Then the professional money managers started looking for people who could guarantee the success of these pyramid schemes. So programming services sprung up and they established close ties between radio and record companies, to the effect that radio now had a channel to tell the record companies what they thought would sell.

As a result, radio has been corrupted in a way that it may never recover from. You may remember the great radio stations from the early '70s, where you turned on a station and right away you heard seven or eight songs that you really loved and that resonated deeply in you.

So Al Cafaro tells us that if we want to sell this many records, we need to get in a remixer. Now, the remix producer

is sitting with David, Al, Linda and I, and Linda says to him, “What exactly do you want to do?” And he says, “Well, we’ll get rid of the drums, get rid of the bass, replace them, and then see where we want to go from there.” My jaw dropped and Linda turned red and she said to him, “Look, if you want to make a record, why don’t you go out and find a song and an artist and do it yourself?” And he says, “Because I don’t have the reputation.”

They remixed it; it’s full of stupid mistakes that we would have wanted to see fixed — A&M did get it on the radio and it was a hit. Do I dislike the system? Yes. But a very deserving Aaron Neville had his biggest solo success in 30 years and sold a lot of records.

R•E•P: So karmically it was worth it.

GM: If you want to put it that way.

R•E•P: What do you think about some of the mixes that are made just for radio, where they compress the hell out of everything and then you get it home and it sounds about two inches big?

GM: Well, I too often compress the hell out of everything. On the Lyle Lovett record there’s sometimes 30dB of compression on his vocal, and you can barely tell.

R•E•P: How do your records sound so big with all that compression?

GM: My compressor. I spent a lot of time designing it.

R•E•P: What about records that sound like nothing but production?

GM: I’m not exactly sure which one you have in mind. I think I like a lot of them. Aerosmith’s “Annie’s Got A Gun” is a milestone. I like C+C Music Factory. I love Def Leppard. I like Metallica, but I’m not happy about the deterioration of the drum sounds. I’m a huge Nirvana fan — that’s back to good ‘ol rock and roll — they make great garage records. I like the way George Duke pieces records together. The Trevor Horn record was my personal record of the year last year.

I think Jimmy Jam and Terry Lewis are terrific producers and writers. I thought they did some great things on Janet Jackson and they deserve the money. I like what comes out of Britain because it sounds fresh.

R•E•P: Who are your heroes?

GM: Engineering? Phil Ramone was my hero — he did the first recordings that sort of woke me up to the possibility of hi-fi *and rocking*. Bones Howe. Rudy Van Gelder. Val Valentin. Later, Gerhard Lehner. Paul Goodman and Chuck Gerhardt. Glyn Johns. Bill Schnee. Later, Alan Sides, too. ■



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The PCM-7010 features high-speed search, variable-speed playback, punch-in/out with cross-

fade and confidence monitoring. And, with its advanced options, you can record, playback and display SMPTE time code and store digital audio in memory for instant-start playback. If you want a workhorse DAT recorder that can do it all, today and tomorrow, you want the Sony PCM-7010. For more information, call the Sony Professional Audio Group at 1-800-635-SONY, ext. 7010.

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AES Product Directory

HARMON Audio Logic Turbosound JBL Soundcraft The Hardy Company Peavey Shure AKG Quested Apex dbx ESI DDD Digital Design Everest Sony Audio Source JBL Labs Audio-Technica Crown Aphelion The Hollywood Edge Rane Lectrosonics UREI Ramsa Genelec M.T.U. Drawmer Studer/itech Tascam Yamaha TAD Behringer Soundtracs HARMON Audio Logic Turbosound JBL Soundcraft

Time marches on, and technology leads the way. The proof? This year's crop of professional audio products is better than ever. Audio devices in general are sporting more features and offering higher performance, with more bang for the buck. Interconnectability via digital protocol is rapidly becoming the norm. And fidelity isn't being sacrificed for features. Witness the vast recent improvements in mic preamp and speaker system design.

Following is an alphabetical listing of some of the **many** new products that will be shown at the San Francisco AES show. If you won't have a chance to be at the show, feel free to contact the marketing departments at any of the manufacturers listed in the industry-complete directory section. Or stop by your local audio showroom and take a spin. We guarantee you won't be disappointed. Happy perusing!

ADAMSON ACOUSTICS DX4000 CONTROLLER

Adamson Acoustics DX4000 Digital Loudspeaker Controller uses advanced DSP technology and updatable EPROMs in a 2-input, 4-output single rack-space package. Four different operating modes can be selected via the front panel interface. Infinite Impulse Response filters (IIR) are used for the crossover and system equalization functions, with the benefit of very little processing delay introduced. Frequency response is 10Hz to 20kHz \pm 0.5dB with 103dB dynamic range and less than 0.01% THD.



ADAMSON ACOUSTICS AF212 FLOOR MONITOR

Adamson Acoustics' AFM212 active floor monitor speaker features two high-powered 12-inch drivers coupled to the unique Adamson Waveguide, offering a better defined and more precisely controlled coverage pattern. The high frequency section will accept user-supplied EV DH1A or TAD 4002 drivers. Dimensions are 16.9"x26.5"x26.2", with a dispersion of 60 degrees horizontal and 50 degrees vertical. Frequency response is stated as 55Hz to 18kHz \pm 3dB.



AKG TRI-POWER MICS

The Tri-Power series of live performance mics from AKG Acoustics combines



the acoustic standards of AKG studio mics with live performance demands for ruggedness and high output. The unique triangular body shape, trade-named "PowerGrip," and matte-black finish are generic to the line. Top-of-the-line models D3800 and D3900 feature AKG's Moving Magnet Suspension system for cancelling the cable and handling noise common to vocal mics. All Tri-Power vocal mics use a vocal-contoured frequency response curve and uniform hypercardioid polar pattern to provide maximum gain before feedback in high-level monitor environments, and they employ cardioid pickup patterns for isolation.

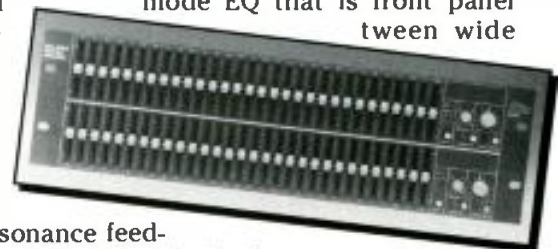
BSS DPR-901 DYNAMIC EQUALIZER (DIV. AKG ACOUSTICS)

The BSS DPR-901 is a signal processor integrating parametric equalization with dynamic expansion and compression. Four fully parametric bands of frequency-selective expansion (to +16dB) and compression (to -30dB) allow level-dependent equalization, dynamic loudness contouring, mix enhancement, de-essing, noise reduction and broadcast limiting. The unit will find applications in live sound monitor mixing, duplicating and transfer, audio recording and broadcasting.



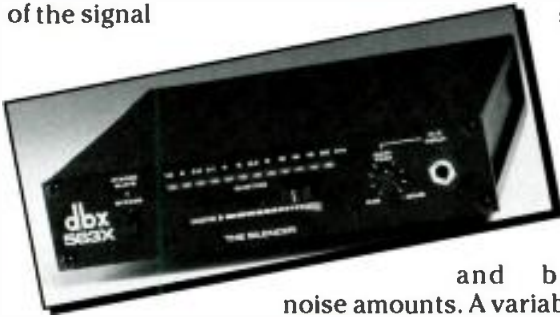
BSS 1/3 OCTAVE GRAPHIC EQUALIZER (DIV. AKG ACOUSTICS)

The BSS FCS-960 1/3 Octave Graphic Equalizer is a dual channel, dual mode EQ that is front panel between wide and narrow bandwidth characteristics, for use in response contouring and resonance feedback applications. The 45mm faders feature true, grounded center detent positions, ensuring absolute zero cut/boost when centered. The FCS-960 also offers a hardwired relay bypass, floating electronically balanced outputs, a high-pass filter sweepable to 250Hz with an independent bypass and output gain trim with peak clip LED.



DBX 563 HISS REDUCER (DIV. AKG ACOUSTICS)

The compact, stand-alone 563X Hiss Reducer automatically lowers steady-state hiss, of the signal



regardless source. A front panel slider can be adjusted to match varying signal levels

and background noise amounts. A variable filter network evaluates the spectral content of the signal, instantaneously "opening up," so useful transient high frequencies can pass through unaffected. Operation is automatic after the filter level has been programmed.

ALLEN & HEATH GS-3 MUTE AUTOMATION MIXER

The Allen & Heath GS-3 series of mixing consoles is designed to interface with the latest generation of studio equipment and multitrack tape machines. Available in 16x8x2 or 24x8x2 standard in-line formats, there is an optional 8-channel expander allowing both 16- and 24-channel, 8-bus standard sizes to be expanded to a 32-channel format. The in-line format allows up to 32-track recording



and mixdown to 2-track mastering machines without the need for re-patching. Four dedicated stereo effects returns and two signal paths per channel provide a maximum of 40, 56, or 72 inputs with EQ available for mixdown. The GS-3 also offers an on-board MIDI mute automation system called the V4 plus, which features FET switching for silent muting of channel, monitor, and effects send and returns.

APHEX SYSTEMS AURAL EXCITER

The Aphex Systems Aural Exciter Model 104 is the newest edition of Aural Exciter technology. The Type C2 features two processors; a totally new Aural Exciter design that's virtually noise free; and Big Bottom, a new bass enhancement circuit that dramatically increases bass presence



without changing peak output. Special new designa-

tions of overhang and girth control the unique Big Bottom process. This 2-channel unit will operate at +4 or -10 (rear panel switch) with 1/4-inch connectors.

APOGEE SOUND-AE-1S2 LOUDSPEAKER SYSTEM

The AE-1S2 (Series 2) is redesigned as a true nearfield monitor. The enclosure has an appearance similar to the Apogee SSM loudspeaker with a perforated metal grill and the familiar Apogee tapered front. The new unit features a titanium-domed tweeter with



output to 25kHz and a long-excursion, 8-inch cone driver. Frequency range is 63Hz to 19kHz (+/-3dB) with very low distortion. The result of the engineering changes is more consistent tonal quality, clarity and high intelligibility at any listening level. Meeting the diverse needs of close-range professional sound reinforcement, studio monitoring and permanent installations from night-clubs to churches, the new AE-1S2 fulfills a wide range of requirements with ease.

APOGEE SOUND AE-5NC SOUND REINFORCEMENT LOUDSPEAKER

The AE-5NC (Narrow Conical high frequency horn) loudspeaker is a variation of the Apogee AE-5. The AE-5NC provides a long throw, tightly defined 60-degree conical dispersion pattern, particularly effective in reverberant environments, such as theaters, concert halls and churches. The AE-5NC is frequently used with conventional AE-5s, giving the sound designer an additional tool for overcoming



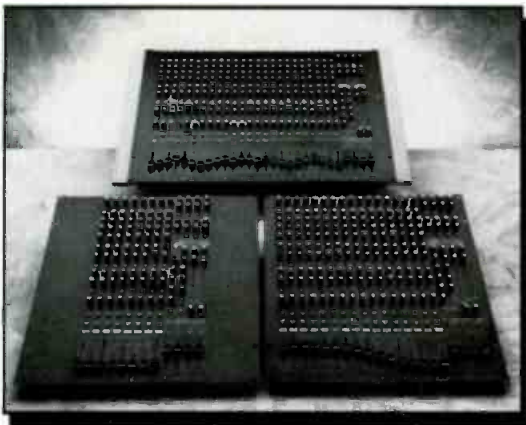
problems. The bi-amplified enclosure is capable of extremely high acoustic output of 125dB continuous, with low distortion and a wide frequency response of

53Hz to 17kHz (+/-3dB).



A.R.T. (APPLIED RESEARCH AND TECHNOLOGY) PHANTOM MIXING CONSOLES

The A.R.T. Phantom Series includes three new consoles that offer eight, 16 or 24 mic inputs plus eight unbalanced inputs, respectively called the 1608, 2408 and 3208. Designed primarily for recording applications, each model's eight unbalanced inputs can be used as tape returns with panning and soloing functions. Because



each desk provides four submixes, Phantom consoles (especially the rack-mounted 1608 and 2408 models) can also double as keyboard racks or drum submixers for live applications. Additional features include multifunction metering, solo and muting on each channel, four monitor sends and four post fader aux sends.

A.R.T. (APPLIED RESEARCH & TECHNOLOGY) MDC-2001 SYSTEM CONTROLLER

The MDC-2001 signal system controller offers two channels of stereo processing, with more than 45 LEDs to monitor all functions and level variations. The compressor allows independent control of all functions, including input gain, slope, attack and release time. The expander and gate functions can be controlled separately or used in tandem. The System Master Limiter/Clipper serves as an absolute gain threshold that cannot be exceeded. Separate left and right output levels control the main balanced output feeds to the tape machine for amplification system.



ASC (ACOUSTIC SCIENCES CORPORATION) MONITOR STANDS

ASC Monitor Stands are designed around 11-inch and 16-inch Tube Traps. The stand consists of a Tube Trap, a spiked base and a custom end cap. The monitor sits on a ring of dense felt that decouples it from the stand and the floor. The stands are available in custom lengths. ASC Monitor Stands are a perfect place to put your nearfield or midfield monitors. They are broad band absorbers with a limp mass



diffusor on one side. The diffusor backscatters mids and highs into the room, improving the stereo image. The entire monitor stand is a low-frequency absorber that cleans up low and mid-bass resonances.

AUDIO LOGIC 266 DUAL GATE COMPRESSOR LIMITER

The Audio Logic 266 Dual Gate Compressor Limiter. The Audio Logic 266 simultaneously combines smooth, "soft knee" compression and automatic variable-knee soft limiting with versatile, natural-sounding gating. The 266 also includes soft touch knobs for a better grip, superb quality components and the highest manufacturing standards. Housed in a 1U standard 19-inch rack-mount chassis, the 266 has a frequency response of 10Hz - 40kHz, +0/-1dB; THD plus noise: less than 0.05%; maximum input: +24dBu; maximum output: +24dBm; noise gate offers a threshold of -60dBu (open) to +10dBu with attenuation of 0dB to 72dB and attack time of 1 millisecond; compressor threshold: -40dBu to +20dBu, with a ratio of 1:1 to 30:1; Output gain range: -20dB to +20dB.



AUDIO LOGIC 440 QUAD NOISE GATE

The Audio Logic 440 4-channel noise gate features feed-forward design of gain control circuitry, separate key inputs for each channel and gate LED for each channel to provide multiple noise control techniques, including extremely short signal paths, no audio signal through front panel controls,

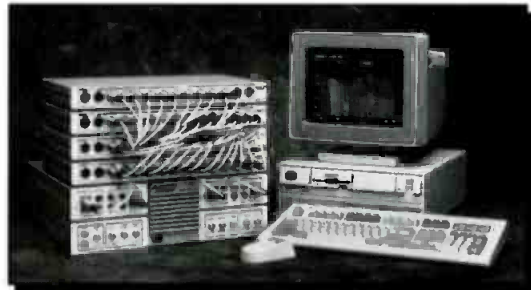


toroidal power supply transformer and extremely low-noise

VCA's. Threshold control for each 440 Quad Noise Gate channel is variable from -60dBu (open) to +20dBu. Frequency response is 10Hz to 50kHz, +0/-1dB. THD plus noise is less than 0.05% at +4dBu, 20Hz to 20kHz unweighted. And dynamic range exceeds 115dB with the gate open, and 126dB with the gate closed.

AUDIO PRECISION FASTTRIG ANALYZER

FASTTRIG is now available for use with any of Audio Precision's DSP-equipped System One audio test sets. FASTTRIG recognizes, acquires and analyzes multitone test signals whether they are generated locally, reproduced from tape, or transmitted from a distant location. After acquiring as little as 1/4-second of the FASTTRIG signal, FASTTRIG reports measurements for frequency response, distortion, noise and crosstalk. FASTTRIG is ideal for high speed testing of all types, including multichannel testing, manufacturing QC, and audio network distribution testing to and from multiple locations.



BRAINSTORM-R-15+ TIME CODE DISTRIPLYZER

The R-15+ Time Code Distriplyzer combines a 1x5 distributor (with reshaping on all 5 outputs), a stripper (sync tone from code, video or ac mains) and an analyzer. The analyzer checks format, frame rate, video phase, field alignment and time code errors. A comprehensive report can be sent to a printer via the RS-232 port. The SR-26, Dual

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Whatever your signal processing needs ... touring sound, post production, recording, broadcasting, fixed installations ... space problems are a fact of life. But, once hooked on Aphex signal processing, people have an insatiable appetite for more and more ... taking more and more space. Which is why we developed the Aphex Modular System.

These modules feature all the processing power and performance of their standalone counterparts, including servo-balanced inputs and outputs. You can fit 11 modules in our 3RU Model 9000R rack*. And, they are compatible with the dbx® 900 Series.

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Time Code Distributor/Reshaper cleans up time code and dis-

tributes it through six individually buffered outputs, eliminating mults. The SR-26 can configure as 1x4 (master) + 1x2 (slave) or as a single 1x6 unit. Each output level is adjustable individually via front panel pots.

CERWIN VEGA SPEAKER

The 3-way CVX/253C speaker system uses two 15-inch low frequency Kevlar-coned drivers, a 4:1 compression ratio on the mid-range driver for low throat distortion, and a new suspension design for extended high frequency response from the TI-1 compression tweeter. System response is 40Hz to 20kHz, with and 8Ω total impedance. Output is stated as 103dB 1W/1m. The enclosure offers multiple hanging points and is constructed from 13-ply Baltic Birch.



CROWN MACRO-TECH MA-5000VZ POWER AMPLIFIER

The Macro-Tech 5000VZ is ideal for touring, providing up to 5,000W of power from three rack spaces. Crown's patented VZ technology allows the amp to dynamically adapt itself to both signal and load requirements. Other unique features are the 2-color I-Load/I-Limit indicators, which enable the user to accurately match the load to the amplifier to provide the most efficient use of available power. The Crown Macro-Tech MA-5000VZ delivers 5,000W at 4Ω, 4,000W at 8Ω (bridged mono); 2,500W at 2Ω, 2,000W at 4Ω and 1,300 at 8Ω (stereo).



THE CROWN—PCC-170 SURFACE-MOUNTED MIC

The PCC-170 is designed for use on a boardroom table or lecturn for telecommunication and conference applications. A version with a silent operating membrane switch is also available, as well as a version featuring internal gating circuitry. This version turns on when you speak into it, and turns off during pauses in speech. The PCC-170 uses a phase-coherent cardioid condenser element to produce 50Hz to 20kHz frequency response at 30° incidence to surface. Open circuit sensitivity is 22mV/Pa within a maximum 120dB SPL. Operating voltage is 18V to 48V phantom power.



COMMUNITY N-SERIES FB LOUDSPEAKER

Community's new N-Series FB loudspeaker uses a 3-way Wavefront Coherent design incorporating a true long excursion subwoofer

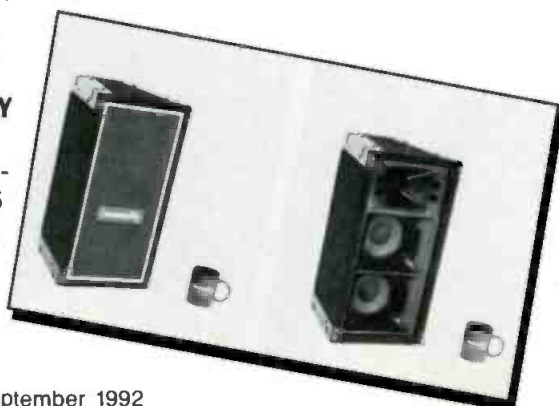


specifying strong bass response from a single enclosure, the N-Series FB is operable between 45Hz and 18kHz, has an impedance of 8Ω and produces 124dB

of maximum continuous SPL at 1 meter. Ferrofluid cooled and supported by a triple-spider and cast frame, the 12-inch woofer receives frequencies up to 200Hz. Above this level, signals are directed to dual 6 1/2-inch horn-loaded midrange drivers until 1800Hz, at which point a single high frequency driver with a 1-inch exit and a titanium diaphragm takes over.

COMMUNITY RS JR. MICRO-ARRAY SPEAKERS

The Community RS Jr. Micro-array is ideally suited for provid-



DENON DN-102FX CD JUKEBOX

The compact Denon 200 disc CD jukebox interfaces to a personal computer or dedicated remote controller via RS-422 or 232C selectable ports. The AES/EBU



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This is real life. The frog won't turn into a prince and his voice won't sound like Diana Ross — at Brüel & Kjaer capturing reality is what we're all about.

Today's studios are full of good sounding microphones but, fortunately, we are not one of them. With Brüel & Kjaer you are the artist. We supply you with a blank canvas and you get to add the colors, not us.

The B&K 4000 series offers 6 different condenser mics, featuring true omni or cardioid pickup which can be passively and accurately altered by our exclusive *acoustic pressure equalizer (APE)* adaptor. They're available in both 48 Volt Phantom or 130 Volt powered versions offering unmatched 168dB dynamic range for the most demanding snare drum crack to the subtlest details of nature's acoustical ensembles.

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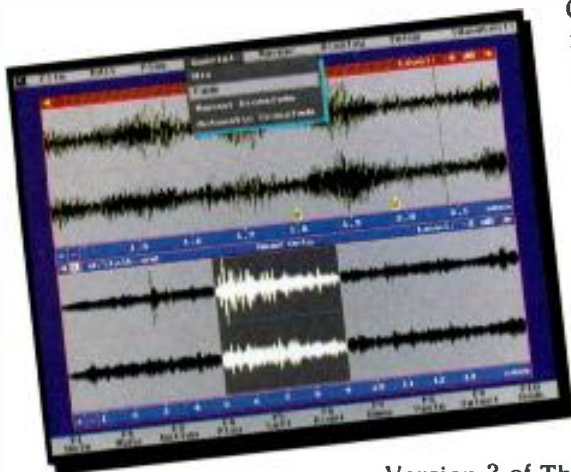
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digital output is compatible with standard digital preamps or D/A converters. The easy-handling design allows fast access to discs and rapid cueing to any track on any disc.

DIGITAL AUDIO LABS THE EDITOR, VERSION 3

Digital Audio Labs is introducing Version 3 of The Editor. This version of the software



will make The CardD System more powerful and more user-friendly. The CardD System is a low-cost, professional quality hard disk recording and editing system for IBM-AT compatibles.

Version 3 of The Editor operates under Windows 3.1 and adds many features. In addition to the non-destructive waveform editing of Version 2, the new Editor adds MIDI triggering, waveform reversal, decision list editing, pitch shift and other new operations.

DIGITECH VOCALIST PITCH SHIFTER

The DigiTech Vocalist uses a proprietary digital splicing system, which pitch-shifts basic vocal notes with changing vocal cavity overtones or resonance. A total of 256 programs are included, along with MIDI programming, program dump, footswitch programming and many other functions.



Each program/preset has four variations that can be instantly accessed. An on-board synth and keyboard give you cue-in tone plus simplified harmony editing and selection. The Vocalist S/N specs are better than 88dB (A-weighted) with THD: less than 0.03%

DIGITECH RP-1 GUITAR EFFECTS PROCESSOR/CONTROLLER AND PREAMP

The foot-controlled RP-1 provides studio-quality effects, superior sound quality and user-programmability found in sophisticated, expensive rack-effects processors. It eliminates the need to drag a rack to small gigs or jam sessions. The RP-1 allows the user to pre-program patches, with up to 10 sets of either five or 10 patches available. Patches can be randomly selected, and individual effects can



be turned on/off "on the fly." Super-twist LCD provides easy viewing at any angle, with headroom LED and program number LED also included. Each program has master volume and 7-band graphic EQ that is programmable. Up to 9 of the 23 different effects can be selected at one time. A total of 128 programs, 64 user-definable and 64 presets, are also included.

be turned on/off "on the fly." Super-twist LCD provides easy viewing at any angle, with headroom LED and program number LED also included. Each program has master volume and 7-band graphic EQ that is programmable. Up to 9 of the 23 different effects can be selected at one time. A total of 128 programs, 64 user-definable and 64 presets, are also included.

DOD 430 SERIES II DUAL-CHANNEL EQUALIZER

The DOD 430 series II packs two channels of 12dB boost and cut with no loss of controllability. The single rack space unit's features include center-detented potentiometers, LED level indicators, low-cut and bypass switching and gain control with optional XLR-balanced connectors. The 430 series II Dual-Channel Equalizer Frequency response: 20Hz to 20kHz, +0/-0.5dB; maximum input level: +18dBu; output impedance: 102Ω balanced, 51Ω unbalanced; maximum output level: +18dBm into 600Ω or higher; harmonic distortion: .006% at 1kHz; S/N ratio: greater than -90dB.



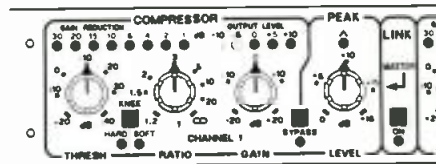
DOD 1642 PROFESSIONAL MIXER

Configurable for 16x4 and 16x2x2 operation, the DOD 1642 Professional Mixer is an excellent choice for a variety of live sound and recording applications. The 1642 input stage is a state-of-the-art monolithic preamp, ensuring ultra low noise and distortion, along with extremely high bandwidth. Each channel incorporates unique 3-band EQ circuitry. DOD's exclusive Soft Turn-On power distribution system gently brings up the 1642 power bus, keeping drivers and power amps safe from damaging transients. The 1642's 24 inputs can be assigned to any of four active or six aux sends.



DRAWMER DL 441 QUAD AUTO COMPRESSOR

The Drawmer DL 441 Quad Auto Compressor operates via exclusive Zero Attack, Zero Overshoot peak level circuit, which drives the 441's limiting functions. Also featured are selectable hard or soft knee compression, automatic attack and release times,



threshold and ratio controls, and extensive metering for input, output, peak level and gain reduction. The DL 441 can be configured for either independent 4-channel operation, dual mono plus stereo, or dual stereo modes. All inputs and outputs are symmetrical fully balanced XLRs.

DRAWMER DL 251 SPECTRAL COMPRESSOR

The Drawmer DL 251 Spectral Compressor employs a Spectral Enhancement control circuit, which restores and enhances high-frequency content and dynamics during compression without increasing noise or output level, simulating the action of a 2-band



WHEN IT CAME TO BEHRINGER WE LET THE EXPERTS MAKE THE NOISE.

Leading experts in recording, film post-production and live sound are discovering the many advantages of the Behringer 2-channel and 8-channel DeNoisers. They know Behringer takes the noise out of the dirtiest signal path without altering the audio quality. Their reactions show why Behringer is now the most talked about name in professional audio circles.

"Simply lovely. Smiles all around. Room agreement was unanimous: We want this thing on all our tracks." **Mike Joseph—Editor REP, March 1992**

"I have used similar 'single-ended' devices on the mixes of 'Ghost' and 'Godfather III' and found the Behringer Mark III to be superior in every category—from ease of operation to final result.

"Consequently, I am—without hesitation—recommending to LucasArts/Skywalker Sound that they buy at least four channels of Behringer Mark III DeNoising for each mixing console here and in Los Angeles; a total of twelve mixing rooms."

Walter Murch—Film Editor and Music Mixer, LucasArts/Skywalker Sound

"If the phrase *noise floor* is in your vocabulary and you would prefer that it was not, get a Behringer single ended noise reduction unit to the top of your *got to have one* list." **Robert Scovill—Sound Engineer/Mixer, Rush/Def Leppard**

The experts know why Behringer DeNoisers let them take the noise out and leave the audio quality in. Isn't it time you discovered all the good things Behringer can do for your audio?

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compressor. Stereo linking includes the ability to choose average or peak-hold compression. Other features include hard knee/soft knee, front panel monitor selection of sidechain inputs, automatic or manual attack and release tracking, a peak level LED and switchable high or low level balanced inputs and outputs.

ENSONIQ KS-32 MIDI STUDIO

The Ensoniq KS-32 Weighted Action MIDI Studio 76-key synthesizer is 32-note polyphonic with up to three oscillators per sound. Internal are 3Mbytes of mostly 16-bit wave memory, comprising 168 multisampled waveforms. The 180 onboard sounds cover an assortment of acoustic and electric pianos, organs, clarinets, harpsichords, orchestral and pop instruments. 20 dedicated drum kits are supported by Ensoniq and general MIDI mapping. SQ-compatible external RAM or ROM cards allow access to 340 sounds. A 24-bit internal dynamic effects processor provides 13 different effects algorithms, including reverb, chorus,

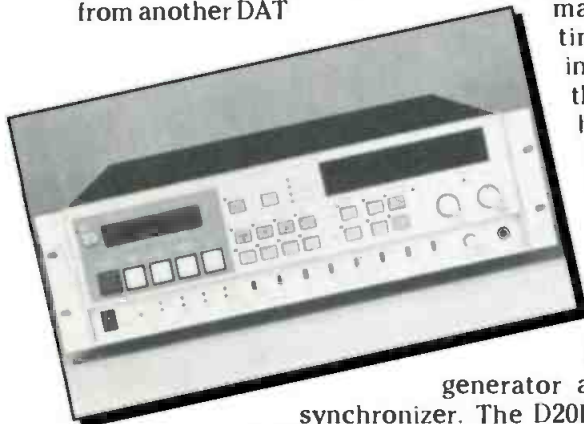
rotospeaking, distortion and assorted modulation effects.



FOSTEX D20B DIGITAL MASTER RECORDER

The Fostex D20B is designed to work exactly like a 2-track analog recorder with center track time code, pre or post stripe time code. The D20B can accept tape from another DAT machine without timecode; stripe in time code after the recording has been made; edit over the same time code address on the tape without affecting the subcode data; and offers a time code generator and chase lock synchronizer. The D20B can be set to playback the format you are using and chase the master, eliminating conversion problems.

The D20B also stripes the tape with either IEC or Fostex time code formats, so there are no compatibility problems. The D20B can generate SMPTE time code from absolute time, enabling engineers to use DAT tapes with no time code as pseudo time coded masters for fast sync solutions.



GENELEC 1031A POWERED STUDIO MONITOR SYSTEM

The Genelec 1031A self-powered 2-way monitor system uses active crossover filtering to perfectly phase-align the drivers at the crossover frequency of 2.2kHz. Dual 120W amps connect directly to the 8-inch polymer composite cone woofer and 1-inch metal dome tweeter on the proprietary DCW (Directivity Control



Waveguide), with full protection circuitry. Peak SPLs of 121dB are possible at one meter, without degradation or limiting of dynamics or frequency response. Free-field response is 48Hz to 22kHz, +/- 2dB. Each monitor speaker measures 15"x10"x11" and weighs only 27 pounds, including drivers, amplifiers, protection circuitry, crossover filters and enclosure.

GENELEC 1037A POWERED STUDIO MONITORING SYSTEM

The Genelec 1037A is a 3-way active monitoring system including drivers, amplifiers and active crossovers. The system can be used in vertical and horizontal orientation by rotating the DCW unit. Bass frequencies are reproduced by a 12-inch bass driver loaded with a 65 liters vented box. The -3dB point is 38Hz and low frequency response extends down to 30Hz. Midrange frequencies are reproduced with a 130mm direct radiating driver loaded with a proprietary DCW. The high frequency driver is a 1-inch metal dome. Bass, midrange and treble amplifiers respectively produce 160W, 120W and 120W of short term power, and the system incorporates a special automatic circuitry for driver overload protection and amplifier thermal protection. The amplifiers are capable of driving the stereo system to peak output levels in excess of 125dB SPL at 1.7m with program signals.



HAFLER PROFESSIONAL TRANSNOVA 9500 POWERED AMP

The 9500 high power 2-channel power amplifier, using patented Trans-Nova technology, employs a low voltage middle drive stage, with 16 solid state devices hooked up as a grounded cathode output stage, yielding voltage and current gain, as in tube amps. It delivers 250W into an 8Ω load, or 750W bridged mono into 8Ω, with a 150 V/μs slew rate and a full power bandwidth of .7Hz to 300kHz.



HOT HOUSE STUDIO POWER AMP

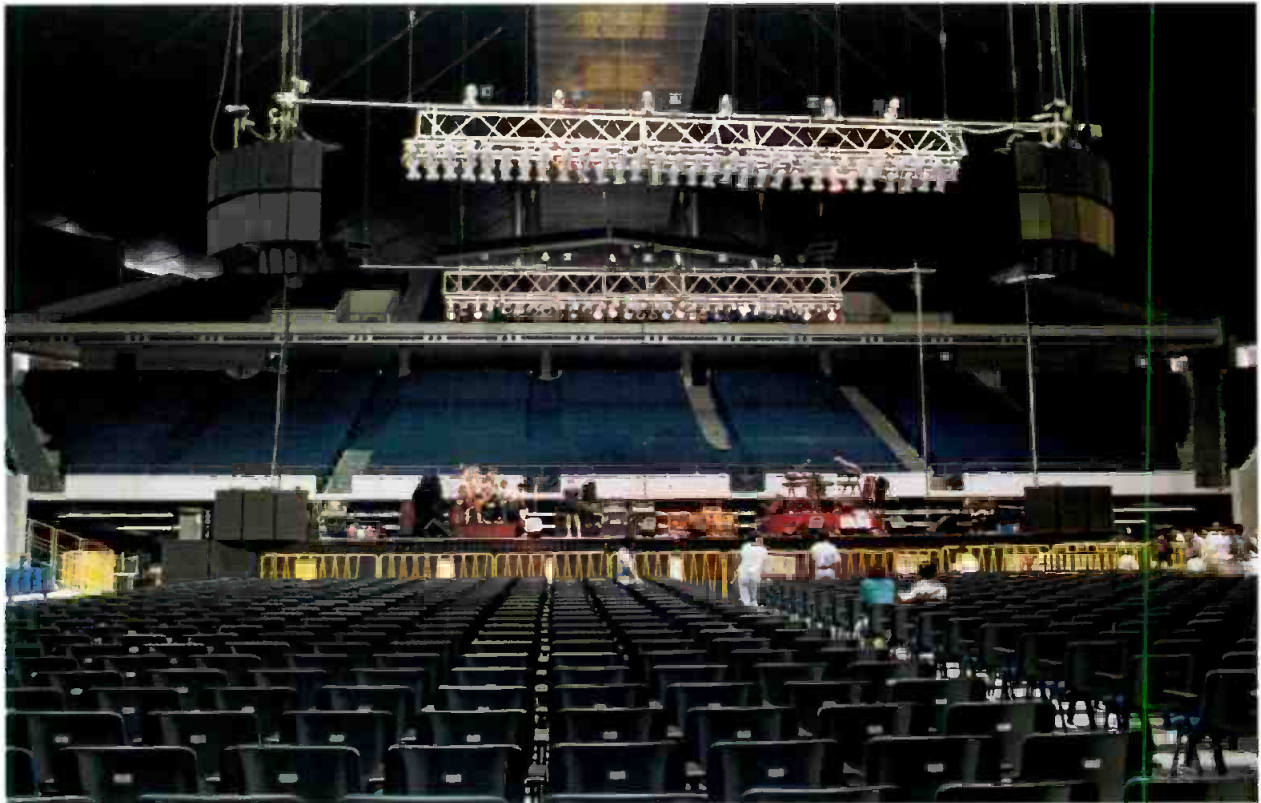
Designed for studio control rooms, the Hot House S400 amp



features discrete high speed front end, class "A" voltage gain stage and constant current bias network. Its 2-rack space, convection cooled high current MOSFET design allows for under-console use with no fan noise. Silver mica and polyester capacitors and metal oxide resistors allow the S400 to

Apogee Sound manufactures high performance, processor-based, sound reinforcement systems for virtually any application; from arena touring systems...

TOURING



Apogee system used for rock legend Eric Clapton while on tour in Singapore



"Dreams Come True" performs live with an all Apogee system at the 20,000 seat Yokohama Arena



One of the largest JumboTrons in the world with its Apogee system on display at Expo '92, Seville, Spain

INSTALLATIONS



Apogee 3X3s installed in the 140,000 seat Aztec Stadium in Mexico City

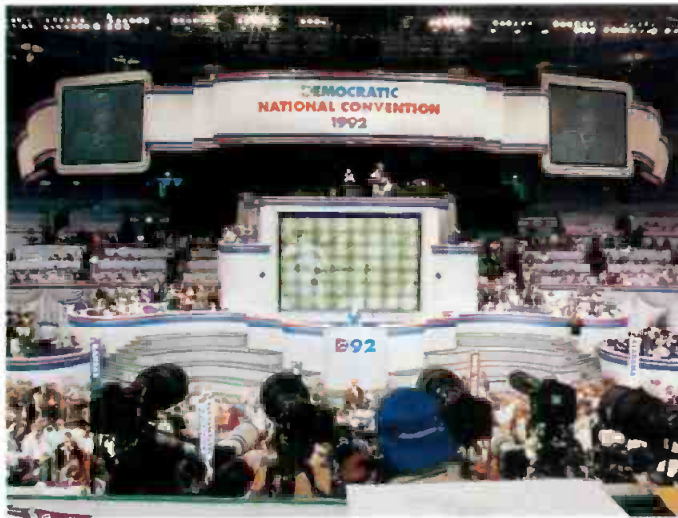


Apogee system covers all 32,000 seats at the University of Nevada, Las Vegas

...to system installations in outdoor stadiums, performance facilities and worship centers.



Center cluster array of AE-5s at the 2500 seat Valley Cathedral Worship Center, Phoenix



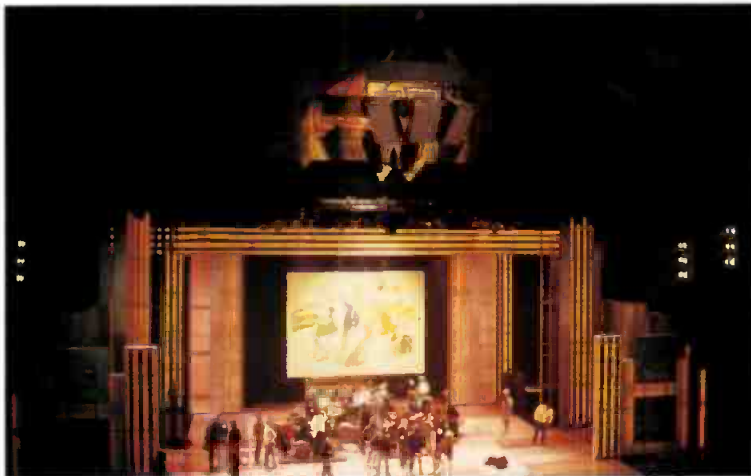
1992 Democratic National Convention, Madison Square Garden



1992 Republican National Convention in the Houston Astrodome

SPECIAL EVENTS

When high quality music *and* speech intelligibility are vital, audio professionals choose Apogee.



Apogee sound systems used for the last four Grammy Awards shows



Apogee 3X3s, AE-5s and AE-2s provide clear sound for the Academy Awards (1989, '90, '91, '92)

Every Apogee loudspeaker system delivers performance, flexibility and value. From modular flying arrays to custom installations, Apogee Sound makes a perfect system for your next application. Call or fax us and hear what you've been missing.



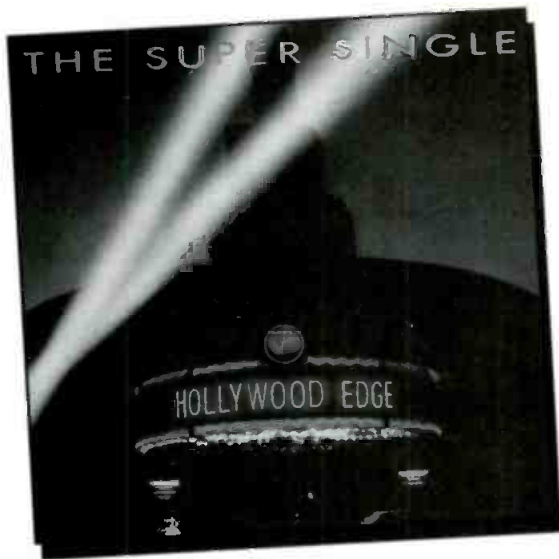
Attended by the King of Sweden, an Apogee system is utilized for the 90th anniversary of the Nobel Prize in Stockholm, Sweden

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resolve fine detail and spatial information while keeping noise to a minimum. The transformer uses multiple parallel secondaries to achieve low source impedance, which provides a damping factor for cone motion control and gives the transformer long-term supply capability. The low ESR allows for faster discharge with a proportional increase in low frequency transient capability.



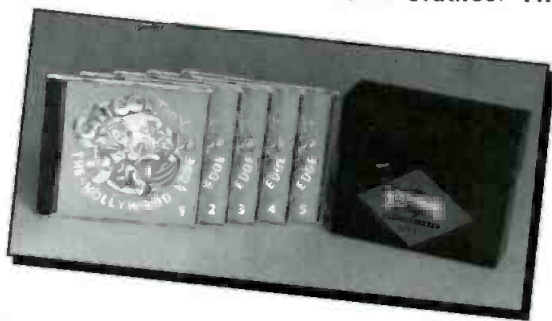
**HOLLYWOOD EDGE
THE SUPER SINGLE**

Called "The best sound effects library without a doubt," by Oliver Stone, this "best of" collection of sound effects covers a broad cross-section of sound categories. Indexed and on one CD, the collection is an indispensable addition to any sound effects library.

HOLLYWOOD EDGE CARTOON TRAX

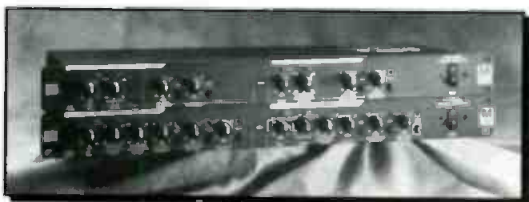
Also collected into a "best of" set are high energy cartoon sound effects created by Hollywood's most beloved animation studios. The

Hollywood Edge has digitally restored these sound effects, including red hot, newly sampled, musical cartoon sound. The finest cartoon and comedy sound effects package this side of "Toon Town," Cartoon Trax is available on five CDs and is cross-referenced and indexed.



JBL PROFESSIONAL M552 CROSSOVER

The JBL M552 is a 2-way stereo/3-way mono unit, and the M553 is a 3-way stereo/4-way mono unit. Providing 117dB of dynamic range, both units combine low noise and greater headroom characteristics for exceptional transient response with low distortion characteristics. A low frequency summing feature combines left and right low frequency signals into a single output at the crossover, allowing the use of a single subwoofer.



JBL PROFESSIONAL ARRAY SERIES LOUDSPEAKERS

Two new JBL Array Series systems, the 4893 High Power Compact Subwoofer system and the 4894 High Power 2-way loudspeaker system, feature vented-gap cooling woofer technology, S.A.F.E. (Secure Array Flying Ergonomics) rigging hardware, and a high power performance in a compact box. The 4893 features a linear SFG motor structure, and both units are integrally designed to work with the JBL ES52000 Digital Controller. The 4893 and 4894 join the existing Array Series model 4892 compact 2-way loudspeaker system.



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KORG

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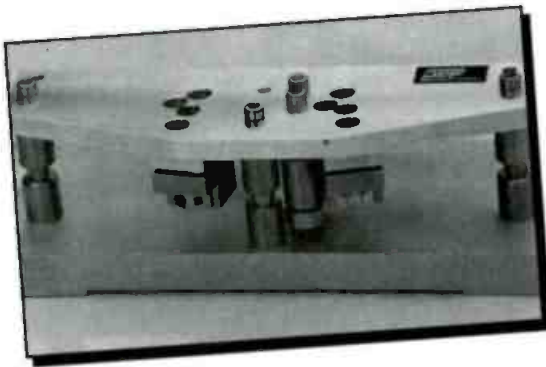
**JLCOOPER
MEDIA
CONTROL
STATION**

The JL Cooper Electronics Media Control Station works as a universal controller with multimedia software, disk-based recording systems and sequencers. Features include five programmable function keys and two modifier keys that allow for a total of 19 possible key combinations. The Media Control Station offers functionality with any software program, and can be used with multimedia applications like Hypercard, Macromind Director and others. It is available in Macintosh, MIDI (this version supports MIDI Machine Control) and RS-232.



JRF MAGNETICS ADJUSTABLE HEAD ASSEMBLY

The fully adjustable head assembly for the Otari DP1610 cassette quality control tape machine provides control and precision of all mechanical head alignment requirements.



Tape path control adjustments for Track Placement, Zenith, Wrap and Azimuth can now be performed quickly with ease and smooth control. The head assembly has a location for an optional Otari

Scrape Flutter Idler. The assembly can be added to any vintage Otari DP1610 machine an individual assembly; with Saki Premium Quality Extended Performance Ferrite heads; or with original Otari Sendust heads. All assemblies are supplied assembled and optically aligned.

KLARK-TEKNIK DN-800 CROSSOVER

Klark-Teknik has introduced the DN800 configurable crossover with four inputs and eight outputs. The DN800 can be configured a stereo 4-way, stereo 3-way, or 4-input 2-way system. Plug-in frequency cards allow a choice of 12-, 18- or 24dB per octave slopes with Linkwitz-Riley, Butterworth or Bessel responses. Each output includes a gain control and signal, limit and over LEDs. Inputs and outputs are electronically balanced, while output balance transformers, fixed EQ cards and high quality limiters are available as internally fitted options.



KRK MODEL 13000 3-WAY MONITORING SYSTEM

The KRK 13000 monitoring system is offered in 3-way passive, bi-amp or tri-amp configuration. The unit's 13-inch composite woofer and powerful magnet combine low distortion with maximum low-end and transient response. The 5-inch midrange is an all-Kevlar cone driver. The 13000's 1 1/2-inch

Kevlar tweeter produces the lowest possible distortion and excellent off-axis response. The system can generate spls above 115dB and has an efficiency of 91dB with 3-way time arrayed crossover design.

KRK MODEL 7000 2-WAY MONITORING SYSTEMS

The KRK Model 7000 monitoring system is a new, higher-powered version of KRK's 703. Kevlar tweeters use KRK's customer-invented dome design for low distortion and excellent off-axis response, providing an optimum combination of strength vs. weight. The 6-inch woofer uses a copper wire edge-wound voice coil for increased power-handling. The Model 7000 is a high-performance 7-inch, 2-way system capable of generating spls above 108dB and efficiency of 91dB with 2-way time-arrayed crossover design.



KURZWEIL K2000R SAMPLING KEYBOARD

The K2000R rack-mount version of the K2000 keyboard is equipped with almost all the features of the K2000, plus four outputs, making a total of ten. Its two SCSI ports make it possible to integrate multiple units (daisy chain) with one external hard drive. The SMP-K and SMP-R sampling options for the K2000 and K2000R allow for user stereo sampling and analog, digital and



optical input and outputs. This option also will add Version 2 firmware, a new operating system featuring extensive on-screen sampling and editing. The SMP-K for the K2000 will be available in July, and the SMP-R for the K2000R will be available in September.

**MCCAULEY
SOUND FIELD
SERVICEABLE
COAX
SPEAKERS**

McCauley Sound's newest product is actually a combination of 2-horn assembly units that can be configured into six different coaxial models. Using either the #6510



Leading Edge Today... Leading Edge Tomorrow!



Frequency Response: 10-22KHz, +0/-0.5 dB, Fs=48KHz; THD: < 0.06% 1kHz, 0 dBm; Dynamic Range: >95 dB; Digital Conversion: Linear 18bit 64x in, 20bit 8x out, Max. Level: +22 dBm

Imagine a new signal processor with state-of-the-art presets and unequalled performance.

The M5000 is the machine of the future and designed to stay that way.

Other units may be obsolete before you make the last lease payment, but the M5000 Digital Audio Mainframe is here to break that cycle! It's the first user upgradeable digital effects processor, a 24 bit system for today and tomorrow.



The 60 Sec. Upgrade - All system files and standard factory presets are written directly to Flash ROM via the 3.5 inch disk drive, eliminating costly and time consuming EPROM changes. And because the disk drive is DOS compatible you can back up vital data on your PC as well as receive updates by mail or modem and burn them directly into the unit's non-volatile memory without removing the M5000 from your rack! Use the floppy drive or JEIDA/PCMCIA memory card slot to save your sounds and you can have thousands of presets archived and available for use without an external computer.



Protecting Your Investment - The 18 bit resolution 64x oversampled A to D and 20 bit resolution 8x oversampled D to A module provides superior phase and group delay linearity. (Translation = It sounds great!) Should you want to upgrade in the future, we have modularized our AD-DA and DSP sections so you can keep up with advancing technology without having to purchase a whole new piece of equipment. Using analog I/O you can expand your system to two stereo processors for half the cost of an additional unit!

Sounds that Astound - And more to come! High dynamic range and wide-band frequency response are hallmarks of all t.c. products and the M5000 is no exception. One listen to the true stereo algorithms will tell you this is no ordinary reverb. Imaging is wide and all rooms decay smoothly into total silence. The Pitch Shifter is equally impressive and is optimized for noise-free, lightning-fast transpositions. Chorus programs are rich and delay programs are clean and precise. MIDI control of various program parameters and SMPTE time code patch change is standard. World class DSP developers are continuously working on additional algorithms to be available on disk or memory card.



The Heart of "Darcness" - The DSP module uses t.c.'s exclusive Digital Audio Reverb Co-processor technology. DARC boosts the M5000's digital processor well beyond the normal level of performance. How far? For critical early reflections DARC can deliver an astounding 600 early reflections per second, almost 3 times that of competitive units. Each DSP module has its own AES/EBU, SPDIF and Optical ins and outs. All digital studio? Expand your system to a maximum of four stereo processors using Digital I/O.



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1-inch compression driver or the 6520 2-inch compression driver, any of three field serviceable McCauley low-mid speaker baskets (10-, 12- or 15-inch) can be joined to create the six coaxial combinations. The low-mid frequency of these coaxials extend as low as 60Hz on the 15-inch carbon fiber model #6342, and to 300Hz on the sealed 10-inch model #6310.

MCCAULEY SOUND EXTENDED LOW FREQUENCY LOUDSPEAKERS

McCauley has introduced its new line of high powered, extended low frequency loudspeakers in 12-, 15- or 18-inch sizes. All speakers use the same field-serviceable magnet assembly. The inter-



changeable magnet system enables users to upgrade speaker sizes by simply unbolting the basket and switching cones and eliminates the need for reconing. The #6254 extended low 18-inch speaker takes up

to 450W of RMS power across a frequency range of 20Hz to 800Hz. Power handling for the 15-inch #6242 is also rated at 450RMS, with a frequency response extending from 1.2Hz down to a clean, tight 25Hz. Model #6232 12-inch has a frequency response from 40Hz to 2.5kHz and a 400W RMS power rating.

MICRO TECHNOLOGY UNLIMITED 911-022-1H RACK MOUNT I/O

Rack-mounting of the analog and digital MicroSound Direct to Disk recording/editing/mixing peripheral for IBM-compatible 386/486 computers is announced by Micro Technology Unlimited (MLU). The 2U-high, 19-inch rack I/O module continues MicroSound's high quality noise-shielding with studio-quality 16/18 bit A/D/A converters and a -100dB (-110dB typ.) noise floor. Balanced analog and AES/EBU connectors are 3-pin XLR while digital APDIF input/output are RCA phono. Peripherals include the rack I/O module, 5-foot cable, AT-SDP56 processor board (for IBM-compatible 386/486 IS or EISA computer), Windows 3.1 and MicroEditor 2.0, which allows all digital mixing and playback of 38 sounds simultaneously.



OPTODIGITAL FIBER OPTIC NETWORK TOPOLOGY - GENERATION TWO

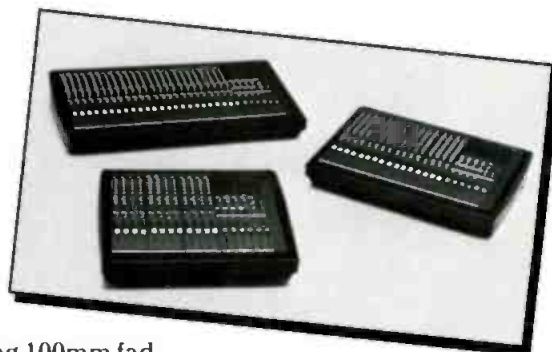
Generation Two of Opto-digital's Fiber Optic Audio and Video Network Topology includes new hardware and



software solutions for digital connectivity. For audio, the full LSA-12 (12 channel) product line includes Encoders, Decoders, Multiplexers, Switchers, Routers, and Summers. All products use digital transmission and are available in a variety of form factors (rack mount, wall mount, flat pack, drop box). To adapt the units to specific user needs, a wide range of front panels (i.e. with a variety of displays, connectors, level switches, remote control, etc.) and rear panels (i.e. with a variety of connectors and level switches) are offered.

PANASONIC/RAMSA WRS 4400 CONSOLE FAMILY

Ramsa's WR-S4400 console series includes 12-, 16- and 24-channel, 4-bus mixing desks. Featuring 100mm faders, two selectable inputs per channel, individually switchable 48V phantom power and 3-band EQ with sweepable midrange, the WR-S4400 series is baby brother to the WR-S840 concert consoles. Each WR-S4400 output offers four main groups, left and right stereo masters from channels or groups and four Aux sends. A D-out switch on each input channel can route the channel's signal through its aux bus control and to its direct output. This configuration yields up to 27 effects sends on the 24-channel console.



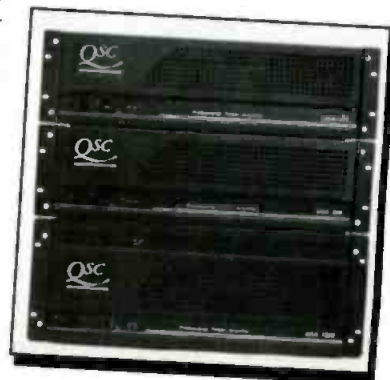
PANASONIC/RAMSA WIRELESS ENG/EFP MIC SYSTEM

Working at the UHF/800MHz radio frequency, the WX-RP410/RP700 wireless ENG/EFP microphone system features the WX-RP410 UHF transmitter and the WX-RP700 UHF receiver. It offers a phase locked loop synthesizer system that uses digital switching to assure stable, long-range transmission. Both receiver and transmitter feature 30-channel selection, allowing users interference-free operation in crowded situations and inventory flexibility.



QSC AUDIO PRODUCTS INC. USA LINE OF AMPLIFIERS

The new USA line of amplifiers from QSC features full complementary circuits, clipping indicators, active balanced inputs, 1/4-inch TRS and barrier strip input connectors, patented output averaging-short-circuit protection plus independent dc and sub audio speaker protection on each channel, mono-bridging switch, direct-mounted power transistors and a 1-year



If you want to know what an SV-3700 sounds like, listen to these people.

OUTSTANDING TECHNICAL ACHIEVEMENT WINNER 1991 **TEC** RECORDING STORAGE TECHNOLOGY



You're hearing them already, but now listen carefully. Each recording listed here was produced (and often mastered) using the SV-3700 Pro DAT. **Aire LA Studios** *Chuckii* produced by Chuckii Booker; *Tuff* produced by Howard Benson; *Brian Wilson* produced by Brian Wilson & Eugene

Landy; *Timmy T.* produced by Jon Ryan. **The Castle** *Lee Greenwood* produced by Jerry Crutchfield; *Ricky Skaggs* produced by Mac McNally. **Chung King Recording Studios** *Run DMC* produced by Jam Master Jay; *3rd Bass* produced by Sam Sever, SD-50, KMD, Prince Paul & Marley Marl; *L.L. Cool J* produced by Marley Marl; *Nikki D* produced by Sid Reynolds. **D & D Recording** *Vanilla Ice* produced by Gail "Sky" King; *Big Audio Dynamite* produced by Jr. Vasquez; *Herb Alpert, Ziggy Marley* produced by Bobby Konders. **Electric Lady Studios** *Queen, West World* produced by John Luongo & Gary Hellman. **Emerald Sound Studios** *Hank Williams Jr.* produced by Barry Beckett, Jim Ed Norman & Hank Williams Jr.; *Alabama* produced by Josh Leo & Larry Lee. **The Enterprise** *Winger, Warrant* produced by Beau Hill; *Nelson, Trixter* produced by Mark Tanner; *The Fixx, Rebel Pebbles* produced by Tony Peluso; *Gladys Knight* produced by Michael J. Powell; *Henry Lee Summers* produced by Ric Wake; *Nia Peeples* produced by Howard Hewitt. **Mad Hatter Recording Studios** *Chick Corea Elektric Band* produced by Chick Corea and Co-Produced by Dave Weckl and John Patitucci; *Lee Ritenour, David Benoit* produced by Mike Abene for "Shannons' Deal." **Magee Audio Engineering** *Los Angeles Philharmonic Orchestra, Pacific Symphony Orchestra, Terry Trotter & Friends* produced by Joseph Magee. **Mobile Fidelity Sound Lab** *Igor Oistrakh Trio* produced by S. R. Britton & Edward Shakhnazarian; *Gennadi Rozhdestvensky & The USSR Symphony Orchestra* produced by Krieg Wunderlich & Tori Swenson. **Music Mill** *Eddie Rabbitt, Earl Thomas Conley, Oak Ridge Boys* produced by Richard Landis; *Anne Murray, Tanya Tucker* produced by Jerry Crutchfield. **One Up/TMF** *Mussingtons, Dumpa* produced by Dianne Norris; *Anita Baker* produced by Michael J. Powell; *Natalie Cole, Smokey Robinson* produced by Terry Marshall. **The Plant Recording Studios** *M.C. Hammer* produced by Felton Pilate; *Mariah Carey, Michael Bolton, Peabo Bryson* produced by Walter Afanasieff; *Tony!Toni!Toné!* produced by Tony!Toni!Toné!; *De Anna Eve* produced by Shake City Productions. **Royal Sound Studios** *L.A. Guns* produced by Michael James Jackson; *Art Laboe* produced by Art Laboe; *Festival Fountain at Caesar's Palace* produced by Champ Davenport. **Sixteenth Avenue Sound** *Ziggy Marley* produced by Ziggy Marley & Glenn Rosenstein; *Michelle Shocked* produced by Michelle Shocked & Glenn Rosenstein. **Studio 4 Recording** *Phil Collins* produced by Phil Collins; *D. J. Jazzy Jeff & The Fresh Prince, Schooly D.* produced by Joe "The Butcher" Nicolo. **For information on the SV-3700, contact Panasonic, 6550 Katella Ave., Cypress, CA 90632 (714) 373-7278. For more great music, listen to:** *Taj Mahal* produced by Skip Drinkwater. **Studio PASS** *Defunkt* produced by Bob Appel; *Nic Collins* produced by Nic Collins; *Paul DeMarinis* produced by Paul DeMarinis; *Tom Cora* produced by Tom Cora. **Keith Thomas** (producer) *Whitney Houston, Amy Grant, Carman, BeBe & CeCe Winans.* **Triad Studios** *Queensryche* produced by Peter Collins; *Michael Tomlinson* produced by Dan Dean & Michael Tomlinson. **Trevor Rabin** *Yes.* **Unicorn Studio** *Roger Hodgson.* **Unique Recording Studio** *Mariah Carey, Lisa Lisa & Cult Jam* produced by Robert Chivilles & David Cole; *Madonna* produced by Lenny Kravitz; *Lisette Melendez* produced by Carlos Berrios. **Don Was** (producer) *Bonnie Raitt, Glenn Frey, Paula Abdul, Neil Diamond, Lyle Lovett.* **And this is just the beginning.**

Panasonic

Professional Audio Systems

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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)

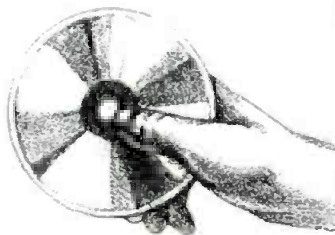
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warranty. The USA 370 features passive cooling, the USA 850 and USA 1300 use a 2-speed fan for cooling. Power output for the USA line with both channels driven 4Ω is rated at 185W/side for the USA 370, 425W/side for the USA 850 and 650W/side for the USA1300.

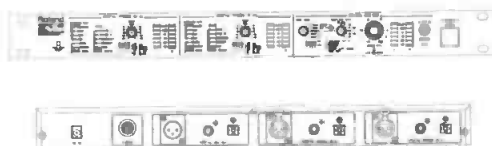
RENKUS-HEINZ C-3 LOUDSPEAKER SYSTEM

The Renkus-Heinz trapezoidal C-3's 3-way design features dual 1-inch drivers coupled to a 2-inch horn for the highs, a 10-inch cone-driven mid-frequency horn and dual 12-inch woofers in a highly efficient horn-loaded bandpass arrangement. Dimensions for the compact, 3-way medium throw loudspeaker system are 32.5"x21"x 23.75", and the C-3 weighs 160 pounds. The unit handles more than 1kW of power, delivers an output SPL of 131dB from 70Hz to 20kHz and provides 80° by 50° coverage.



ROLAND SRC-2 DUAL SAMPLE RATE CONVERTER

The Roland SRC-2 provides a multitude of digital conversion and mixing features including the capability of mixing two stereo digital signals at differing sample rates into one stereo digital output at any selectable sample rate with balance and overall level control. With full 24-bit AES/EBU implementation and an overall processing delay of less than three digital samples, the SRC-2 offers superior real time sample rate conversion. The 2 Digital Inputs and 1 Digital Output, each selectable between AES/EBU Professional Format Type I (XLR) and AES/EBU Consumer Format Type II (Coaxial or Optical) allow you to mix two different sample rates together.



SEIMANS AUDIO-AMS LOGIC 1 SPECTRA

The AMS Logic 1 SPECTRA is a fully automated digital workstation that allows you to mix on a real control surface. It features an on-line Mag-face. It features an on-line Mag-face. It features an on-line Mag-face and editing



SEIMANS AUDIO-AMS SOUNDFIELD MKV MIC

The AMS SoundField MkV mic is a unique, single-point mic system capable of capturing all the sounds



in a 3-dimensional environment. New on the MkV: upgraded electronics, improved system diagnostics, improved ergonomic design, 40Hz high-pass filter, easy standard 4x4 B-format interfacing capability, able to engage M/S equivalent for broadcast and post production applications. Based on a patented design of four separate capsules in a tetrahedral array, the SoundField MkV gives the ability to produce a

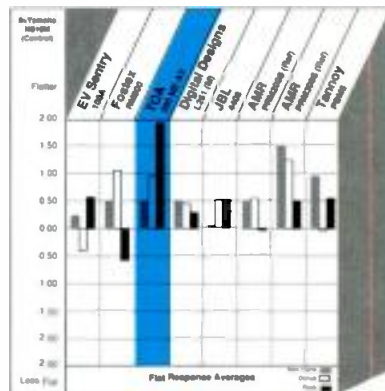
THE JUDGES WERE BLIND, NOT DEAF.

BLINDFOLDED. TEN OF THE BEST EARS IN THE BUSINESS – PRODUCERS AND ENGINEERS – GATHERED FOR AN UNBIASED, COMPREHENSIVE KNOCK-DOWN DRAG-OUT AUDITION OF THE FOURTEEN BEST STUDIO REFERENCE MONITORS UNDER \$1,000. TOA FINISHED AT THE TOP – AHEAD OF BOTH TANNOY AND YAMAHA. SURPRISED? YOU WON'T BE ONCE YOU'VE HEARD WHAT ARE FAST BECOMING AN ESSENTIAL PART OF BETTER STUDIOS EVERYWHERE.

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truly coincident, phase-coherent stereo image, plus the ability to "datalog" all the sonic information in a specific sound field for later manipulation in post production.

SONY PCM-2700 PROFESSIONAL DAT RECORDER

The PCM-2700 Professional DAT recorder has a frequency response in standard mode of 20Hz to 20kHz, +/-0.5dB; THD less than 0.05%; signal-to-noise ratio of more than 90dB; and a fast



forward and rewind time of less than 60 seconds. Features include absolute-timing recording, balanced analog I/O and AES/

EBU digital I/O, parallel remote port, wireless remote control, digital fade function and selectable sampling frequency (48kHz, 44.1kHz and 32kHz.)

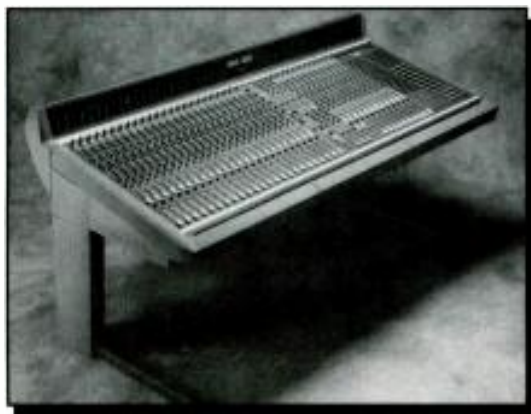
SONY C-800 SERIES STUDIO MICS

Sony's C-800G large diaphragm condenser vacuum tube mics use a 6AU6A vacuum tube and have selectable uni/omnidirectional directivity patterns and a frequency response of 20Hz to 20kHz. The C-800G is intended for vocal applications and has a signal-to-noise ratio greater than 74dB. The mic incorporates a Peliter semiconductor device and radiator system that cools the vacuum tube to ensure low noise and high sound quality.



SOUNDCRAFT SAPPHYRE IN-LINE CONSOLE

The Sapphyre is Soundcraft Electronics' newest recording console. It is available in 20-to 44-input versions with or without integral patchbay. Each I/O module incorporates individual noise gates with an advanced 4-band EQ design, splittable between the two signal paths. A combined I/O module gives access to dual signal paths, one for monitoring and the other for recording, with sub-grouping and routing architecture enabling different



modes to be easily configured and controlled. Sapphyre boasts eight subgroup buses that can be used

as virtual patchcords, allowing signals to be re-routed to any tape channel directly, or to an input, and then sub-grouped to tape.

SOUNDCRAFT VIENNA CONSOLE

The Soundcraft Vienna is an 8-bus live reinforcement console with eight auxiliary sends, eight VCA subgroups, eight mute groups and eight stereo effect returns. Up to 40 mono inputs can be specified. Each input has a 4-band

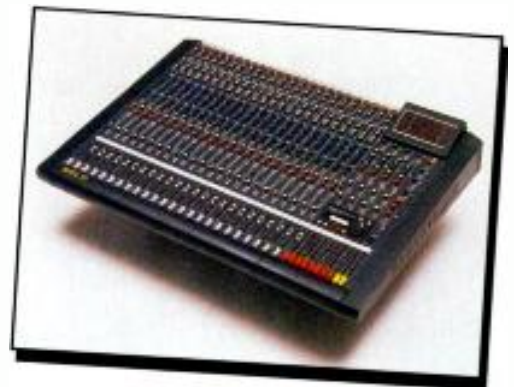


sweepable EQ with 2-position Q and Peak/shelf switches on selected bands. A variable high pass filter and polarity reverse

are also included. A 16-segment input meter, located in the meter bridge is included for each input. Each audio group output has illuminated PFL and CUT switches along with facility to route to the stereo and mono buses.

SOUNDTRAX-SOLO LOGIC CONSOLE

The Solo Logic has all the features of the SOLO MIDI with the addition of full fader automation. The 8-bus in-line format is available with 16, 24 or 32 inputs, all with the precise Soundtrax 4-band equalizer and six auxiliary sends. The Solo Logic's built-in automation system is frame accurate for faders, and uses a 12-bit fader system to give smooth control over the fader range. Control of the automation is via an LCD and rotary dial on the front panel but all modules have read and write keys for quick operation. Mixes can be saved internally or to a MIDI sequencer and the Solo Logic can also be controlled via the MIDI Manager page of a sequencer. This console also has remote machine control for tape machines fitted with MMC.



SOUNDTRAX-EXIOM CONSOLE

The EXIOM represents a revolution in console technology to provide up to 64 stereo channels, all with total recall and mix automation via a MIDI sequencer, in a compact 1U 19-inch rack mountable mixer. The Exiom features eight stereo channels each with gain control, 2 band EQ aux send, pan, mute and level. Expansion via rear ports allows for up to 64 stereo channels — all with total recall. The console is





BIG EASY.

The M700 is a 32-buss production console series that combines sonic purity and a familiar, flexible architecture in standard configurations up to 128 input channels. Designed using a minimal number of active components, the M700's signal path is clean and efficient, which results in a natural sounding mix that's open, robust and transparent.

The ease and flexibility of the M700 Series can be extended by means of TASCAM's new Moving Fader Automation (MFA) package, a full-featured, stand-alone automation system which can be enhanced with a computer as a display terminal. The very responsive MFA package includes TASCAM-designed motorized faders with 12-bit resolution, along with capabilities for sub-grouping faders, mutes and solos.

If you haven't yet seen the remarkable M700/MFA production console in action, you can easily do so by calling (213) 726-0303. Or by writing TASCAM, 7733 Telegraph Road, Montebello, CA 90640.

TASCAM II.

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sued for programming suites and MIDI studios where the mixer can be controlled on screen; fader moves, mutes and EQ changes can be recorded dynamically, and all parameters can be stored indefinitely.

STAGE ACCOMPANY PPE 2410 PARAMETRIC EQUALIZER

The Stage Accompany PPE 2410 is a sophisticated, programmable, 2-channel, 4-band parametric equalizer with total control of all variable settings. The memory offers storage, recall and comparison of up to 64 different settings. Center frequencies are visible on highly accurate 5-digit display. By "sweeping" a narrow boosted peak, users can easily detect resonances and identify the frequencies at which they occur. 3-digit displays are provided for input level, cut/boost, Q factor, output level and for preset banks and registers. Input and output signal levels are displayed on LED bars with peak hold. With SAnet and MIDI interfaces

as standard features, computer remote control and studio automation are possible.



In a world of "or equals," Oxmoor Corporation introduces the DEQ-I and DEQ-II—high-resolution, programmable equalizers that simply have no equal.

Exceptional security. Set them and walk away, because Oxmoor's sophisticated system is more than just an easily removed front panel.

Comprehensive control. Both the DEQ-I and DEQ-II feature 29 constant-Q, minimum-phase, 1/3 octave combining filters, plus sweepable second-order low- and high-pass filters. Adjustment of third-octave filters and output gain is in precise 1/2 db steps over a

TWO EQUALIZERS. NO EQUALS.

(±)12 dB range. Store up to eight equalization curves and other settings in non-volatile memory presets for rapid recall. The DEQ-II's large LCD display and versatile front-panel controls make programming simple, while the DEQ-I's numerical read-out assists in programming through internal controls. Rear ports allow programming either model by a PC, a Macintosh, a PA-422 compatible controller system, or another DEQ-II.

Unequaled value. An unbeatable combination of security, flexibility, and performance—all at an affordable price.



OXMOOR

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The R-E-P Interviews Updated and reprinted from 20th anniversary issue.

Through the years, R-E-P's interviews have been an editorial mainstay. To date more than 134 people have been interviewed in 113 published interviews with rock stars, studio owners and engineers/producers to record company owners. Here's a sampling.

"The patch bay is like a cribbage board. The old Western Electric jack system is great, it's fine, it's positive. If it makes a bad contact, you jiggle it in and out three or four times, and it works. There are advantages to not miniaturizing certain functions. Our hands are still the same size, and if it's something that you're gonna do with your hands, it should be big enough that you can control it with your hands, and yet not so big that it's unwieldy. To make a little jack that you hold between your thumb and forefinger is unreasonable."

— Bones Howe, June/July 1970

"I don't think machines have done anyone a favor or helped the state of the music — they've hurt it considerably. That's a very loaded statement for someone who's made records with machines for five years. I don't think there's any reason to listen to something a machine did more than once to hear how cleverly it was done because there's no performance value. Not if it's quantized. Not if the dynamics have been corrected. Not if all the note values have been changed by a computer. Not if you can't make a mistake. A performance has all those things."

— Pat Leonard, September 1988

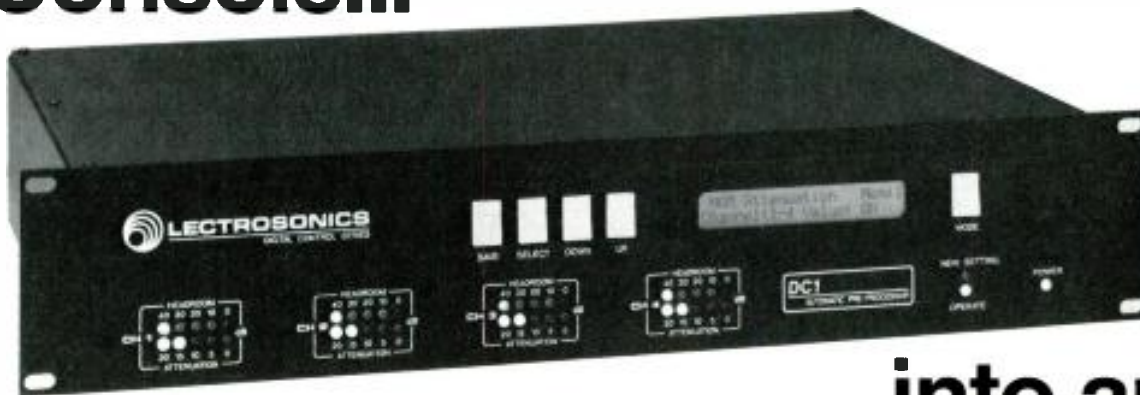
"I think digital recording will only come into its own when it becomes completely integrated with the desk. I think just having a digital machine connected to an analog desk doesn't make too much sense to me. When the tape machine is an integral part of the console, and it's a completely computerized unit which can do things that you can't do now, like synthetically process an echo sound that imitates "Heartbreak Hotel" without an echo unit ... that kind of thing. Then it will make sense."

— George Martin, February 1979

"I think eventually you won't have to own a reproducer. It will cause an overall revolution in systems of communications — your television, music, telephone ... everything will be tied together. The terminal in your house is fed from the telephone lines. Someday all recordings could be placed in a giant bank, and you

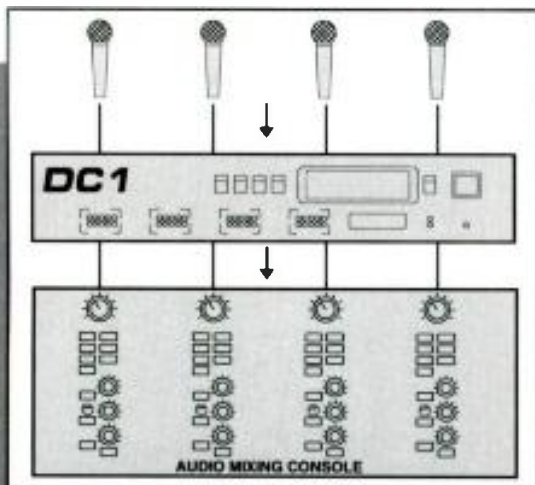
Continued on page 46.

Turn any Mixing Console...



... into an Automatic Mixer

Make a dramatic improvement in sound quality by minimizing feedback, background noise, and signal regeneration. The DC1 applies microprocessor-controlled attenuation to inactive microphones, turning active microphones on so quickly that late mics are a problem of the past.



Not only does the DC1 bring up active microphones faster than the console operator can, but it also frees the operator to do things besides riding gain on every microphone. When a mic is no longer active, the DC1 silently turns it down. Attenuation rate is signal controlled for inaudible operation.

The DC1 can also be used for fully automatic, unattended operation of any mixer. The DC1 adjusts system gain in proportion to the number of active microphones (NOM) to eliminate feedback. In addition, the DC1 uses an adaptive threshold algorithm to determine when to activate a microphone.

Other features include:

- Easy setup from front panel menus
- Three user programmable memory recalls
- Transparent operation will not alter console equalization or level settings
- Ultra-low noise microphone preamp preserves the signal to noise ratio of the console
- Up to 8 DC1's can be linked for 32 microphones
- Fail-safe relay bypass completely removes DC1 from the signal path

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STUDER/EDITECH DYAXIS II

Designed for professional multitrack recording and post production applications, the top-of-the-line Dyaxis II is a modular system allowing real-time multichannel capabilities with the added advantage of interchange be-



immediate between projects. Each 8-track, 4-channel Dyaxis II processor contains a multi-tasking CPU, DSP board with eight digital signal processors, time code reader/generator/synchronizer, and four channels of analog and digital I/Os. Features include 5-band parametric EQ with event based automation, internal time code synchronizer, multiformat digital I/O, advanced Macintosh-based control software, 24-hour technical support via the PAN computer network, Digital Combining up to six Dyaxis II processors provides up to 48 tracks of simultaneous playback and furnishes over 900 MIPS of digital audio power.

STUDER D740 CD RECORDER

CDs recorded on Studer's D740 CD Recorder offer full playback capabilities on all standard consumer and professional model CD players. Reference tracks, custom mixes, rough mixes, different order of songs, jingles and professional demos are just a few of the many uses for this versatile new medium. Integration into recording studios, broadcast facilities and post production houses is easily achieved through Studer's unique, compact design. The read/write recorder, converter, encoder, decoder, subcode supply are packaged in a single unit. A logically arranged keyboard allows fast accurate cueing and quick, easy access.



SYMETRIX 421 AGC-LEVELER

The 421 AGC-Leveler is a true AGC (automatic gain control) with applications for controlling levels from mics or audio chains, but unlike older AGC units, it can sense the difference between noise and signal. Features include a target volume control and parallel input/output meter. Noise is controlled by a downward expander that features



ing program-dependent operation. Other features include a peak-limiter for transient spikes, speech curve filters to optimize voice range intelligi-

bility, two parallel meters for fast set-up and accurate input/output monitoring and a fully balanced audio connections.

TAD (TECHNICAL AUDIO DEVICES) TCM-1821 SOUND REINFORCEMENT SYSTEM

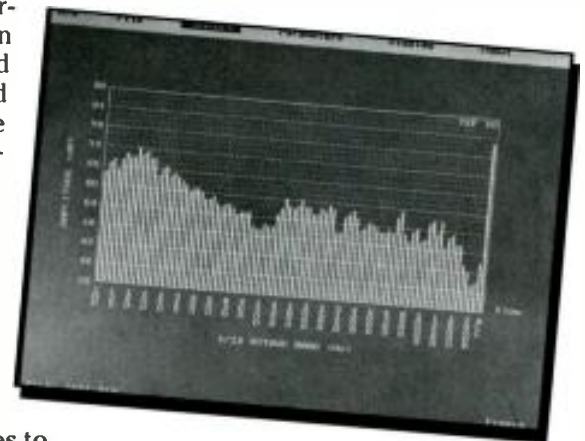
The TCM-1821 sound reinforcement system is engineered according to four TAD design methodologies: opaxial, apaxial, AFAST (acoustical-filter assisted tuning) and CGR (capacitive gap reduction) passive network. Opaxial enhances the quality of bass response with low-frequency transducers that operate acoustically in phase, but electrically out of phase, causing a more than 20dB reduction in the second harmonic distortion in the 50Hz to 100Hz range. TAD's apaxial asymmetrical horn design produces a tapered pattern of dispersion in the horizontal and vertical planes. AFAST: Aberrations in frequency response due to the interaction of acoustic waves are controlled by applying a second terminated vent to the primary system vent, minimizing coloration caused by phase anomalies.



TECHRON TEF 20 RTA SOFTWARE

TEF 20 RTA software is designed to provide audio professionals with the power to perform Real Time Analysis (RTA) with either the TEF 20 or TEF 20HI. With Sound Lab RTA, measurements can be made at 1, 1/2, 1/3, 1/6 and even 1/12 octave bands, while collected data can be viewed in 3, 6, or 12dB per division increments. For storage purposes, six sets of non-volatile memory are provided. Once data is stored, it can be manipulated by the user

to obtain overlays, or it can be compared to a standard with the use of a difference mode. An independent module of Sound Lab, RTA works in conjunction with other TEF 20 capabilities to supply wide-ranging sound analysis tools in a single, easy-to-use package.



T.O.A. ELECTRONICS, INC.-L-1102 LEVELER LIMITER

T.O.A.'s L-1102 level-limiter is a 2-channel, single rack-space device that can be used as a leveler for all line level signals and as a limiter for loudspeaker protection. One important application of the L-1102 is digital input control that minimizes the potential for digital distortion. A gate function with adjustable threshold from -40dB to -80dB and

Continued on page 48.

ALESIS **QUADRAVERB** 20K BANDWIDTH SIMULTANEOUS DIGITAL EFFECTS PROCESSOR

CLIP
-6 dB
-12 dB
-18 dB

INPUT OUTPUT

PROGRAM 99
"CLASSIC REVERB"

PAGE VALUE STORE CONFIG MIX MOD
REVERB 1 DELAY 2
PROG REVERB 1 DELAY 2 PITCH
STORE CONFIG 6 MIX 7 MOD

100 Reasons to Own a Quadraverb

1. It's the all-time classic reverb
2. It's fully programmable
3. Nobody tries to mix without it
4. I already own 3 and need 1 more
5. Everybody I know has one
6. Stereo in and Stereo out
7. Incredible MIDI implementation
8. Does up to 5 effects at the same time
9. Incredibly quiet
10. Great Dynamic range
11. Vocals sound incredible with Quadraverb
12. My guitar gently weeps
13. My girlfriend won't let me mix without it
14. My boyfriend won't let me mix without it
15. My producer won't let me mix without it
16. It works as well on stage as in the studio
17. 16 Bit Linear conversion
18. It's easy to program
19. It's easy to hook up
20. It works great in my MIDI system
21. It works great in my guitar rack
22. It works great with my bass rig
23. My flute sounds better through it
24. 20Hz to 20kHz Bandwidth
25. 127 MIDI sources can modulate any of 57 parameters
26. Works great in any country
27. You can take it on cruise ships
28. Everybody in Hollywood thinks it's cool
29. They use it back East
30. They use it out West
31. The North and South think it's great.
32. Affordable enough for demos
33. Perfect for masters
34. It will be with you throughout your career
35. Those cute buttons with the little lights
36. Pressure sensitive programming buttons!!
37. The chorus is unreal
38. Reverb + chorus Programs are awesome
39. Pro engineers can't believe it's so inexpensive
40. They've got one in every room where I rehearse
41. I need one in my rack and one at home
42. The vocals stunk until I added the Quadraverb
43. Instant vocal doubling + chorus + reverb + eq
44. My guitar finally has a voice
45. 20 Bit processing
46. Incredible resolution for perfect reverb tails
47. It sings
48. Fills in the cracks of my keyboard
49. It's like a synthesizer for processing
50. There's no better reverb
51. The multitaps are unbelievable
52. You can delay up to 1.5 seconds
53. With everything on, there's still 800ms of delay
54. The price is unbelievable
55. All Alesis reverbs are great
56. It makes my drum machine sound real
57. It was the finishing touch on my demo
58. ...and my demo got me a deal
59. It's great to borrow, but better to own
60. Late at night under headphones I leave the planet
61. My mixes sound like movies
62. My speakers sound bigger
63. Close your eyes and you're there
64. For a successful music career
65. For birthdays
66. For Christmas
67. The auto-panner is great
68. Michelangelo would have used one
69. It gives me new keyboard sounds for free
70. It's so musical sounding
71. It's as wet as you can get
72. Use as much as you like
73. The resonators are great for guitar
74. The ring modulators are great for sci-fi
75. The sampling is a cool convenience
76. You can automate parts of your mix
77. It's a necessity
78. The specs are great
79. It makes my ears feel better
80. It makes A & R departments hear better
81. I'd be lost without it
82. I don't need it at the beach...but I might
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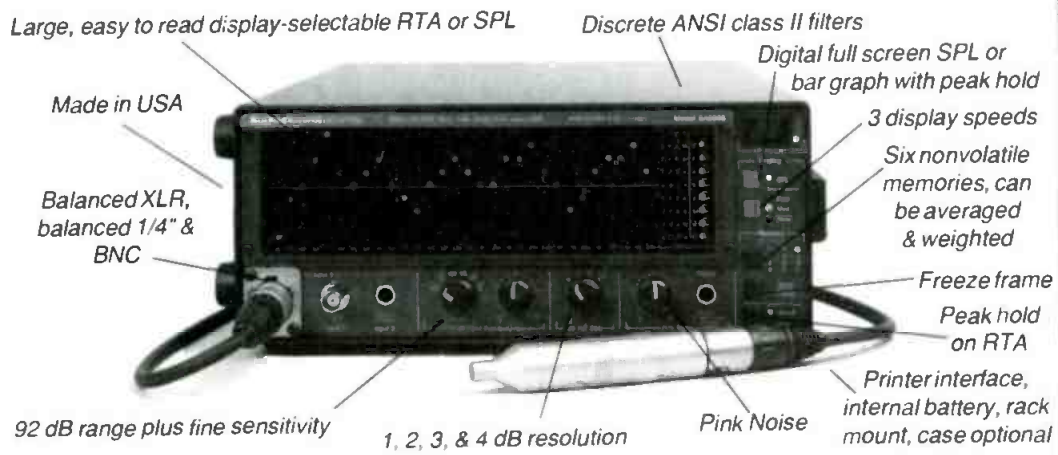
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Continued from page 42.

could just loan it out. When somebody completes their audio, they could take it down to the central CPU, make it into digital information and store it on a disk somewhere."
— *Tod Rundgren, December 1979*

"Microphones to me are like musical instruments. Each microphone, and, in fact, individual microphones within a model or manufactured type, will have its own color or its own characteristics. I've been engineering so long that I can listen to people speak and know what mics would work best on their voices. That's a big help. I don't waste a lot of time in the studio trying different microphones."
— *Bruce Swedien, July 1988*

"My empathy and my emotions are with the musician, from the beginning to the end. I don't play the game of 'He's only a musician,' which is where I think a lot of producers have made mistakes for years. You know, when I sat in the engineer's chair for years and years, watching other producers — which was the learning tool for me — I watched for diplomacy, and what I sometimes saw was a bunch of guys who weren't treated very well."
— *Phil Ramone, October 1977*

"If they say, 'Hey, I think we need 5dB at 10k,' that's pretty clear. I know what they think they want and probably what they do want. I would much rather have somebody come in and say, 'You know, the kick needs to sound less like a basketball.' And I'll say, 'I know exactly what you mean.' It's using your ears."
— *Ed Seay, February 1989*

"I don't think I've had any influences. At least I don't know of any. If I've copied anyone it's purely coincidental. Basically, I like classical. I don't even sit at the board anymore. I sit on one of the couches in front of the board. Then I can listen to the performances instead of the sound. Then, we get the sound together when we mix. So there's less to worry about technically. I leave that to the engineer. And once I finish a record, I never listen to it again. It's past history."
— *Roy Thomas Baker, August 1979*

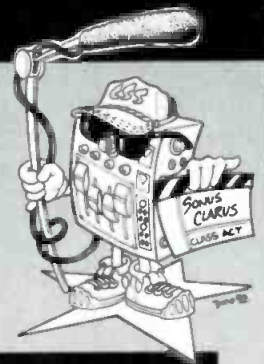
"The best drum sound is the one that works. I don't understand mixers who will solo the snare for an hour and get this monster sound. Well, what does it mean? Once you put it in the track, it may not be in character with the record. I tend to leave all the faders up a bit when I'm getting the drum sounds. I'll put a rough mix together to hear what everything's doing, and then pull all the faders back, but not turn them off, always keeping in touch with the song."
— *Bob Clearmountain, April 1991*

"Once you have this system set up where the artistry is spread thinner amongst more people, the producers and engineers, then the artist and the vision of the thing can be smaller and less significant. And that's what we've been having for a long time, with, of course, notable exceptions. And those exceptions are the only records where an artist truly has a vision, and a reason for being in the studio, and knows it, and refuses to be fooled by the system, and keeps the technology out of their way, consciously, much to the dismay of the engineer, I'm sure. Those records usually turn out to be true statements. They have something to say. Whether you like that kind of music or not, it doesn't matter. You can hear it in a minute. Some records are honest, and some are manufactured bullshit."
— *Bill Bottrell, June 1992* ■

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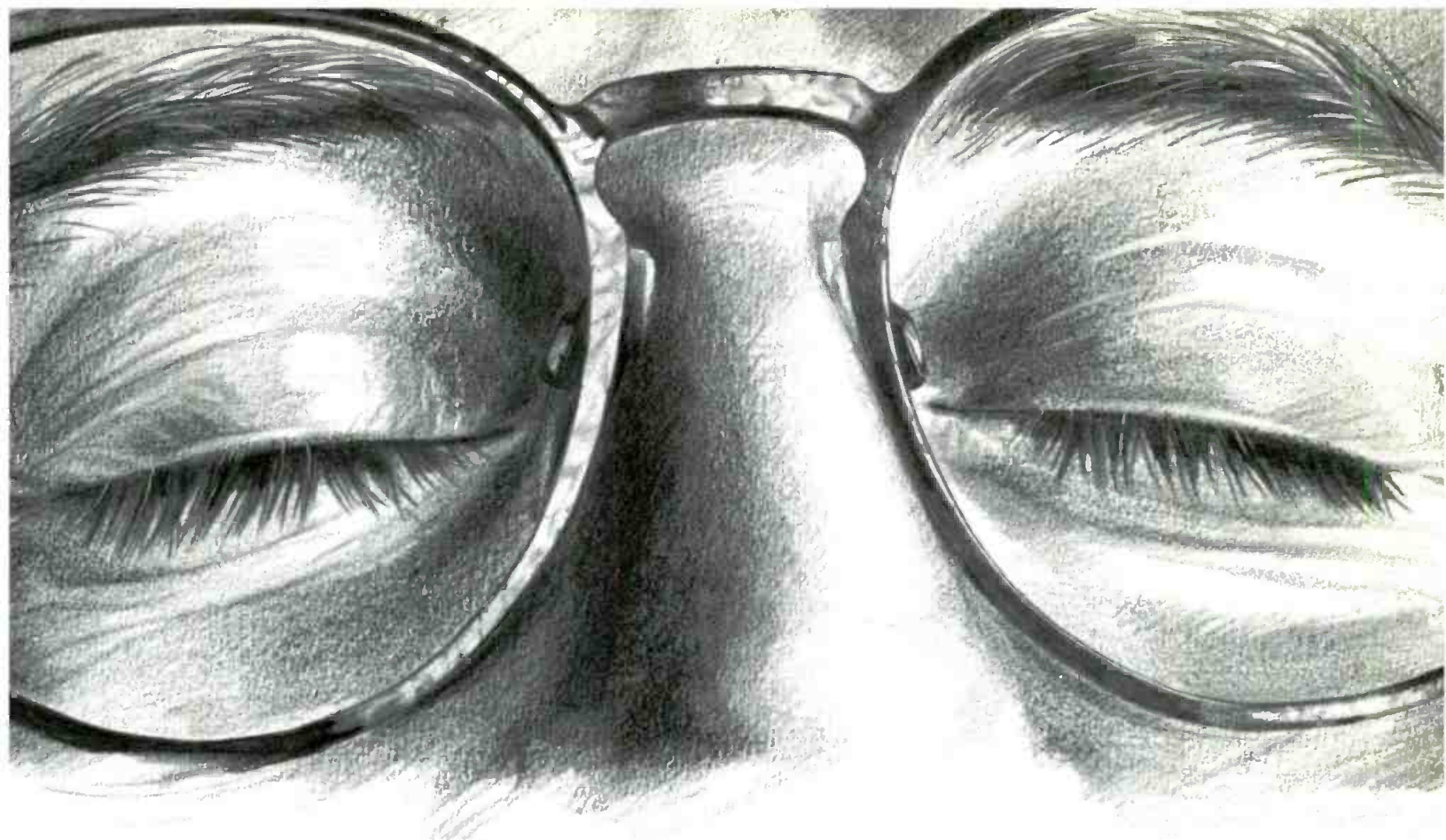
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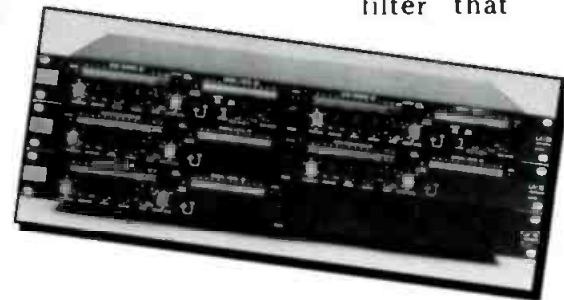
Continued from page 44.

gain reduction LEDs are also provided. Traditional applications include mixing console channel inserts for dynamics control and output processing on crossover networks. And sensing connectors are provided for when the L-1102 is used in limiter mode to monitor power amplifier output.



UREI LA-10, LA-22 COMPRESSORS/LIMITERS

Each of these single space rack units provides high-grade signal handling qualities. All feature differential-type signal inputs and outputs capable of handling amplitudes in excess of channel unit, but has a parametric can be positioned to change the function from a broad-band amplitude adjustment to frequency-specific adjustment. The LA-22 is capable of de-essing speech or music for radio, TV broadcast and post production applications and can be operated in non-parametric mode at the touch of a button.



VALLEY AUDIO PRODUCTS MODEL 460 NOISE GATE/EXPANDER

Each of the Valley Audio model 460 AUTOGATE's two channels includes an automatic gate and expander, featuring a continuously variable high pass and low pass filter set, a dynamic low pass filter and continuously variable threshold, range and release controls. A filter mode switch allows the normal filter set to be assigned either to the audio chain or to the external input.

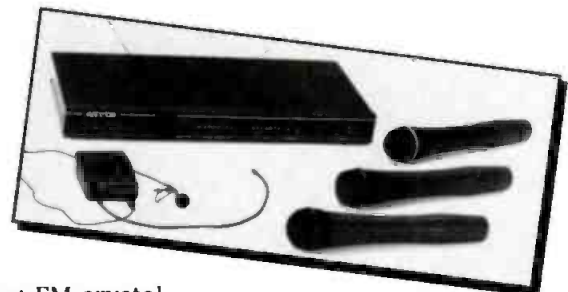
VALLEY AUDIO PRODUCTS DIGITAL COMPRESSOR/EXPANDER

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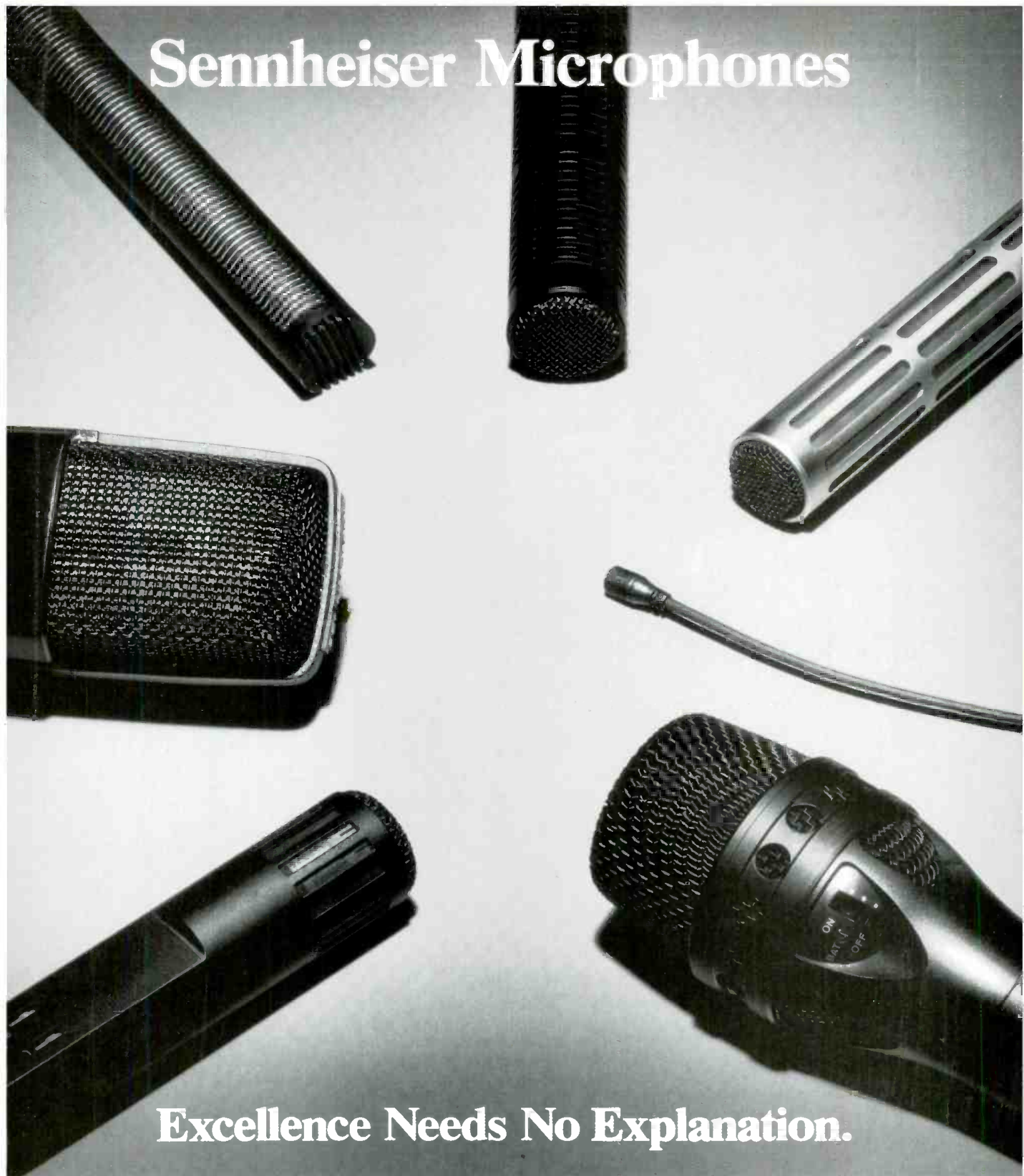
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Acoustical Physics Laboratories	3877 Foxford Drive	Doraville, GA 30340	404-934-9217	404-934-9217
Acoustical Supply Int'l.	100 Cherokee Blvd., Ste. 211	Chattanooga, TN 37405	615-752-1720	615-752-1725
Acoustics Design Group	0 Commercial Road	Guildford, Surrey GU1 4SU UK	048-250-3681	048-357-1162
ACO Pacific	2604 Read Ave.	Belmont, CA 94002	415-595-8588	415-591-2891
Adamson Acoustic Design	850 Brock Road, Suite 1	Pickering, Ontario L1W 1Z8 CANADA	416-420-6279	416-420-0813
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Media Technologies Inc.	2201-K Fifth Avenue	Ronkonkoma, NY 11779	516-467-1200	516-467-1258
AKG Acoustics	1525 Alvarado Street	San Leandro, CA 94577	510-351-3500	510-351-0500
AKAI/Professional	1316 E. Lancaster	Fort Worth, TX 76102	817-336-5114	817-870-1271
Alesis	3630 Holdrege Ave.	Los Angeles, CA 90016	310-467-8000	310-836-9192
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Anything Audio	63 Melcher Street	Boston, MA 02210	617-426-2875	617-426-2763
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 Mark of the Unicorn
 Marshall Electronic
 Marshall Electronics
 Martin America

Address	City/State/Zip	Phone	Fax
13-16 Embankment Gardens	London, SW3 4LW UK	44-71-352-8100	44-71-351-0396
1353 Boston Post Road, #11	Madison, Ct 06443	203-245-1444	203-245-8884
One Main Street	Whitinsville, MA 01588	800-992-5013	508-234-6158
1225 Grand Central Avenue	Glendale, CA 91201-2425	818-502-9100	818-502-0052
Box 120	S. Melbourne Victoria, 3208 AUSTRALIA	+61-3-690-8735	+61-3-690-8735
300 Cecil Street	Buchanan, MI 49107	616-695-6831	616-695-1304
9130 Glenoaks Blvd.	Sun Valley, CA 91352	818-504-3820	818-504-3828
840 E. Walnut Street	Carson, CA 90746	213-327-3180	213-327-0491
155 Great Valley Parkway	Malvern, PA 19355	215-647-3930	215-647-8908
P.O. Box 660015	Scotts Valley, CA 95067-0015	408-438-1921	408-438-8612
302 W. Ocean View Ave.	Delmar, CA 92014	619-755-0599	619-793-1491
220 Portage Ave.	Palo Alto, CA 94306-2242	818-909-9934	818-909-0803
One Alsan Way	Little Ferry, NJ 07643	201-641-1200	201-641-1640
1200 35th St., Suite 120	West Des Moines, IA 50265	515-223-1290	515-223-7749
30 Bay Street, Broadway	Sydney NSW 2007 AUSTRALIA	612-212-6111	612-281-5503
Tiefenhofstrasse 17	CH-8820 Wasedenswill SWITZERLAND	001780-6444	001780-0488
1100 Wheaton Oaks Court	Wheaton, IL 60187	708-653-4544	708-665-4966
15431 Blackburn Drive	Norwalk, CA 90650	310-921-1112	310-802-1964
18834 Tulsa Street	Northridge, CA 91326	818-368-1871	818-368-3850
3300 University Blvd.	Winter Park, FL 32792	407-679-0100	407-678-0070
30 Rich Street	Greenbrae, CA 94904	415-927-1225	415-927-4548
9130 Glenoaks Blvd.	Sun Valley, CA 91352	213-875-1900	818-767-4479
6261 Variel Ave. #C	Woodland Hills, CA 91367	818-884-6294	818-884-3108
1825 Research Way	Salt Lake City, UT 84119	801-975-7200	801-977-0087
7821 Burnet Avenue	Van Nuys, CA 91405	818-781-1022	818-781-3828
1863 West Carroll Street	Chicago, IL 60612	312-733-9555	312-733-6416
P.O. Box 500	West Redding, CT 06896	203-938-2588	203-938-8740
1790 Broadway	New York, NY 10019-1412	212-765-3410	212-265-8459
437 Atlas Drive	Nashville, TN 37211	615-331-8800	615-331-8883
P.O. Box 1860	Tempe, AZ 85280	800-366-1619	802-894-1528
825K Greenbrier Circle	Chesapeake, VA 23320	804-424-0896	804-366-0522
8600 Soper Hill Road	Everett, WA 98205	206-335-2533	206-335-2828
8522 National Blvd.	Culver City, CA 90232	213-841-0340	213-841-0348
1121-20 Lincoln Avenue	Holbrook, NY 11741	516-563-1181	516-563-1390
9550 Skillman LB125	Dallas, TX 75243	214-343-8525	214-343-2457
9701 Taylorsville Road	Louisville, KY 40299	502-267-7436	502-267-9070
5618 Odana Road	Madison, WI 53719	608-273-6333	608-273-5483
3453 Commercial Avenue	Northbrook, IL 60062-1818	708-272-1772	708-272-9324
3339 Union Pacific Ave.	Los Angeles, CA 90023	213-260-7212	213-260-4696
2624 Wilshire Blvd.	Los Angeles, CA 90024	213-828-6487	213-825-8757
8500 Balboa Blvd.	Northridge, CA 91329	818-893-8411	818-893-3639
10735 Burbank Blvd.	North Hollywood, CA 91601	213-876-0059	818-763-4574
3729 Corkerhill Way	San Jose, CA 95121	408-238-6062	408-238-6022
249 Kennedy Road	Greendell, NJ 07839	201-579-5773	201-579-6021
41 Slater Drive	Elmwood Park, NJ 07407	201-794-3900	201-523-2077
24 Commercial Blvd., Ste E	Novato, CA 94949	800-231-8273	415-883-5222
201 E. Dominguez St.	Long Beach, CA 90810	213-761-8287	213-604-4487
80 Turnpike Road	Westboro, MA 01581	508-366-9141	508-870-5932
200 Sea Lane	Farmingdale, NY 11735	516-249-3660	516-420-1863
Box 688	Hope, AR 71801	501-777-6751	501-777-6753
89 Frost Street	Westbury, NY 11590	516-333-9100	516-333-9108
1032 N. Sycamore Ave.	Los Angeles, CA 90038	213-469-4773	213-962-2603
13336 Alondra Blvd.	Cerritos, CA 90701-2205	800-421-9846	310-404-0748
800 Park Avenue Suite 109	Keene, NH 03431	603-352-4831	603-352-8757
581 Laser Road NE	Rio Rancho, NM 87124	505-892-4501	505-892-6243
1111 W. Mockingbird Ln. Ste. 1342	Dallas, TX 75247	214-637-9311	214-637-9314
825K Greenbrier Circle	Chesapeake, VA 23320	804-548-2300	804-548-2300
100 Beaver Street	Waltham, MA 02154-8425	617-736-0300	617-891-0340
Saddlemakers Lane, Melton	Woodbridge, Suffolk LP12 1PP U.K.	+44-394-380307	+44 394-385156
1509 Aviation Blvd.	Redondo Beach, CA 90266	310-379-2036	310-374-2496
16134 Wyandotte Street	Van Nuys, CA 91406	818-989-2059	818-989-2103
Route #1, P.O. Box 764	Rogers, AR 72756	501-925-1818	501-925-1841
222 Third Street	Cambridge, MA 02142	617-576-2760	617-576-3609
Box 438	Brooklandville, MD 20122	301-484-2220	301-486-0280
P.O. Box 2027	Culver City, CA 90230	310-390-6608	310-391-8926
22930 Miller Road	Chicago Heights, IL 60411	708-758-0652	708-758-0717

Company Name	Address	City/State/Zip	Phone	Fax
Martin Audio/AFA Pro Group	423 W. 55th Street	New York, NY 10019-4490		
Meridian Communications	P.O. Box 97	Alameda, CA 94501		
McCauley Sound	13608 94th Avenue E.	Puyallup, WA 98373		
Meyer Sound Labs	2832 San Pablo Avenue	Berkeley, CA 94702		
MicroAudio	3025 SW Canby St.	Portland, OR 97219		
Micro Technology Unlimited	156 Wind Chime Court	Raleigh, NC 27619-1061		
Midas	200 Sea Lane	Farmingdale, NY 11735		
MIDI Land	398 Lemon Creek Drive	Walnut, CA 91789		
Milab	200 Sea Lane	Farmingdale, NY 11735		
Monster Cable Products	274 Wattis Way S.	San Francisco, CA 94080		
Morenz Development	2790 Loker Ave. W. Sue 105	Carlsbad, CA 92008		
Mosses & Mitchell c/o Penney & Giles	2716 Ocean Pk Blvd., #1005	Santa Monica, CA 90405		
Motorola	1216 Remington Road	Schaumburg, IL 60173	708-576-3592	
Nady Systems	6701 Bay St.	Emeryville, CA 94608	510-652-2411	
Nagra/PHI Technologies	4605 N. Stiles	Oklahoma City, OK 73105	405-521-9000	
Nakamichi America Corporation	19701 South Vermont Ave.	Torrance, CA 90502	213-538-8150	
Neotek Corporation	1154 West Belmont	Chicago, IL 60657	312-929-6699	
Neumann	6 Vista Drive	Old Lyme, CT 06371	203-434-5220	
Neutrik USA	195-53 Lehigh Ave.	Lakewood, NJ 08701-4527	201-901-9488	
Neve	7 Parklawn Drive	Bethel, CT 06801	203-744-6230	
Newbridge Microsystems	603 March Road	Kanata, Ontario K2K 2M5	613-592-0714	613-592-0714
		CANADA		
NVision, Inc.	P.O. Box 1658	Nevada City, CA 95959	916-265-1000	916-265-1000
OD & ME b.v	Rekvelden 15	5503 NZ Veldhoven	314-054-3815	314-054-1111
		NETHERLANDS		
Omnimusic	52 Main Street	Port Washington, NY 11050	516-883-0121	
Opcode Systems	3641 Haven, Suite A	Menlo Park, CA 94025-1010	415-369-8131	415-369-1747
Optim Audio	733 Canal Street	Stamford, CT 06902	203-324-2224	201-836-6865
OptoDigital Design/Monster	8920 Business Park Dr., Ste 135	Austin, TX 78759	512-338-4707	512-794-9997
Optical Disc Corporation	12150 Mora Dr.	Santa Fe Springs, CA 90670	213-946-3050	213-946-6030
Orban	1525 Alvarado St	San Leandro, CA 94577	415-351-3500	415-351-0500
Otari Corporation	378 Vintage Park Drive	Foster City, CA 94404	415-341-5900	415-341-7200
Oxmoor Corporation	2111 Parkway Office Circle	Birmingham, AL 35244	205-985-7040	205-985-9966
Ozmond Communications	12804 Washington Blvd.	Los Angeles, CA 90066	213-823-5717	213-823-5543
Paktec Automation	28130 Avenue Crocker, #308	Valencia, CA 91355	805-257-7616	805-257-9474
Panasonic Pro. Audio Systems	Panazip 17A-7 6550 Katella Ave.	Cypress, CA 90630	714-373-7277	714-373-7903
Panasonic/Ramsa	One Panasonic Way, 2A-2	Secaucus, NJ 07094	201-348-7846	201-392-6001
Passport Designs, Inc.	625 Miramontes, Suite 103	Half Moon Bay, CA 94019	415-726-0280	415-726-2254
Peavey Electronics	P.O. Box 2898	Meridian, MS 39301	601-484-4258	601-484-4188
Penny & Giles	2716 Ocean Park Blvd., Suite 1005	Santa Monica, CA 90405	213-393-0014	213-450-9860
Pinc Link, Inc.	11684 Ventura Blvd., Ste 946	Studio City, CA 91604	818-760-4539	818-505-0341
Pioneer Electronics Tech.	1800 W. Holt Avenue	Pomona, CA 91768	714-623-3271	714-623-9923
Plitron Manufacturing, Inc.	250 Wildcat Rd.	Downsview, Ontario M3J 2N5	416-667-9914	416-667-8928
		CANADA		
Pro Co Sound	135 East Kalamazoo Ave.	Kalamazoo, MI 49007	800-253-7360	616-388-9681
Professional Audio Services	619 S. Glenwood Place	Burbank, CA 91506	818-843-6320	818-843-5754
Professional Audio Systems	660 N. Twin Oaks Valley Rd. Suite 101	Santa Monica, CA 92069	619-591-0360	619-591-3602
Professional Sound Corp.	10639 Riverside Drive	North Hollywood, CA 91602	818-760-6544	818-980-9911
Pygmy Computer Systems, Inc.	13501 SW 128th St., Ste. 204	Miami, FL 33186	305-253-1212	305-255-1876
QSC Audio Products	1926 Placentia Avenue	Costa Mesa, CA 92627	714-645-2540	714-645-7927
Quad Eight Electronics, Inc.	27771 Avenue Hopkins	Valencia, CA 91355	805-295-1324	805-295-1399
Quested Monitoring Systems	59 Maltings Place, Bagleys Ln.	London SW6 2BX	071-731-7434	071-731-3280
		ENGLAND		
Radian Audio Engineering Inc.	4520 Eisenhower Circle	Anaheim, CA 92807	714-693-9277	714-693-9278
Rane Corp.	10802 47th Ave. West	Mukilteo, WA 98275	206-355-6000	206-347-7757
RE Instruments	31029 Center Ridge Road	Westlake, OH 44145	216-871-4303	
Recording Industry Sourcebook	8800 Venice Blvd.	Los Angeles, CA 90034	213-841-2700	213-841-0437
Redwood Marketing	P.O. Box 27007	Nashville, TN 37227-0007	615-254-7400	615-242-5774
REM Music Products	3139 Loz Feliz Drive, #5	Thousand Oaks, CA 91362	805-379-4252	805-370-4351
Renkus-Heinz	17191 Armstrong Avenue	Irvine, CA 92714	714-250-0166	714-250-1035
Richmond Sound Design	1234 W. Sixth Ave.	Vancouver, BC V6H 1A5	604-732-1234	604-734-3901
		CANADA		
Rocktron Corp.	1900 Starr Batt Drive	Rochester, MI 48309	313-853-3055	313-853-5957
Roland Pro Audio/Video Group	7200 Dominion Circle	Los Angeles, CA 90040	213-685-5141	213-722-0911
Roldex Industries	9980 Glenoaks Blvd., Suite A	Sun Valley, CA 91352	818-504-6294	818-504-6833
Rolls Corporation	6995 South 400 West	Midvale, UT 84047	801-562-5628	801-562-5655
RPG Diffusor Systems	12003 Wimbledon Street	Largo, MD 20772	301-249-5647	301-249-3912
Russian Dragon/Jeanius Elec.	2815 Swandale Drive	San Antonio, TX 78230	512-525-0719	512-344-3299
Sabine Musical Mfg.	4613-G NW 6th Street	Gainsville, FL 32609	904-374-3829	904-371-7441
Saki Magnetics	26600 Agoura Road	Calabasas, CA 91302	818-880-4054	818-880-6242

Company Name	Address	City/State/Zip	Phone	Fax
Samson Technologies Corp.	262 Duffy Ave.	Hicksville, NY 11801	516-932-3810	516-932-3815
Saturn/ProMusica Sales	800 Park Avenue Suite 109	Keene, NH 03431	603-352-4831	603-352-8757
Sanken	1032 N. Sycamore Ave.	Los Angeles, CA 90038	213-469-4773	213-962-2603
c/o Developing Technologies Distributors				
Scharff Weisberg	599 Eleventh Ave.	New York, NY 10036	212-582-4705	212-757-6367
Schoeps/Posthorn Recordings	142 West 26th Street	New York, NY 10001	212-242-3737	212-924-1243
SCV Audio/QMI	15 Strathmore Road	Natick, MA 01760	508-650-9444	508-650-9476
Selco Products	7580 Stage Road	Buena Park, CA 90621	213-921-0681	714-739-1507
Sellmark Electronics	96 Dudley Road	Sudbury, MA 01776	508-443-8053	508-443-4844
Sennheiser Electronic Corporation	6 Vista Drive, P.O. Box 987	Old Lyme, CT 06371	203-434-9190	203-434-1759
Sescom	2100 Ward Drive	Henderson, NV 89015	702-565-3400	702-565-4828
Shure Brothers	222 Hartrey Avenue	Evanston, IL 60202-3696	708-866-2200	708-866-2279
Singular Solutions	959 E. Colorado Blvd.	Pasadena, CA 91106	818-792-9567	818-792-0903
Sliger Sierra Designs	P.O. Box 1170	Pioneer, CA 95666	209-295-5595	209-295-3531
Solid State Logic	320 W. 46th St	New York, NY 10036	212-315-1111	212-315-0251
Sonex Acoustical/Ilbruck	14207 Regatta Pointe Road	Midlothian, VA 23112	804-744-4824	804-744-1915
Sontec Electronics	Audio Drive	Goldbond, VA 24094	703-626-7256	
Sonic Perceptions, Inc.	114A Washington St.	Norwalk, CT 06854	203-838-4167	203-854-5703
Sonic Solutions	1902 Van Ness Ave., Ste 300	San Francisco, CA 94109	415-394-8100	415-394-8099
Sony Business & Pro. Group	3 Paragon Drive	Montvale, NJ 07645	201-358-4197	201-358-4907
Soundcraft USA	8500 Balboa Blvd.	Northridge, CA 91329	818-893-4351	818-893-3639
Soundcraftsmen	2200 S. Ritchey	Santa Ana, CA 92705	714-556-6191	714-662-0750
Sound Ideas	105 W. Beaver Creek Rd. Unit 4	Richmond Hill, Ontario L4B 1C6 CANADA	416-886-5000	416-886-6800
Soundmaster USA	900-A Hampshire Road	Westlake Village, CA 91361	805-494-4545	805-494-4936
Sound Technology	1400 Dell Avenue	Campbell, CA 95008	408-378-6540	408-378-6847
Soundtracs P.L.C./Dist. by Samson Technology Corp.	P.O. Box 9068	Hicksville, NY 11802-9068	516-932-3810	516-932-3815
EDI-tracker Pty, Ltd.	169 Bank St.	South Melbourne, Vict 3205 AUSTRALIA	613-690-8488	613-696-4864
SPARS	4300 10th Avenue N.	Lake Worth, FL 33461	407-641-6648	407-642-8263

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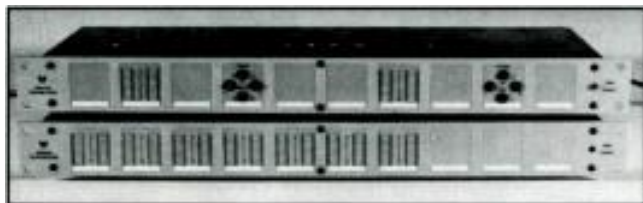
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Company Name	Address	City/State/Zip	Phone	Fax
Spatial Sound	743 Center Blvd.	Fairfax, CA 94930	415-457-8114	415-457-6250
Spectral Synthesis, Inc.	18568 142nd Ave. NE	Woodinville, WA 98072	206-487-2931	206-487-3431
Spectrum Signal Processing	301-3700 Gilmore Way	Burnaby, BC V5G 4M1 CANADA	604-438-7266	604-438-3046
Stage Accompany USA	65-60 Booth Street, #3J	Rego Park, NY 11374	718-896-5594	718-896-5594
Star Case	648 Superior Ave.	Munster, IN 46321	219-922-4440	219-922-4442
Steinberg Digital Audio GMBH	Eiffestrasse 596 P.O. Box 26 18 33	D-2000 Hamburg 26 GERMANY	(49) 40 21 15 94	(49) 40 21 15 98
Stellavox Digital Audio Tech.	Puits-Godet 20 CH-2000	Neuchatel, Switzerland	(41) 38 24 44 00	(41) 38 25 32 30
Stewart Electronics	11460 Sunrise Gold Circle	Rancho Cordova, CA 95742	916-635-3011	916-635-1787
Strand Magnetics	3350 Ocean Park Blvd. #205	Santa Monica, CA 90405	310-392-8111	310-392-9216
Studer Editech	1370 Willow Road, Suite 201	Menlo Park, CA 94025	415-326-7030	415-326-7039
Studer Revox America	1425 Elm Hill Pike	Nashville, TN 37210	615-254-5651	615-256-7619
Studioware	109 Park Ave.	Falls Church, VA 22046	703-532-9033	703-534-1827
Summit Audio, Inc.	644 N. Santa Cruz Ave., #7	Los Gatos, CA 95030	408-395-1403	
Sunkyong International	4041 Via Oro Ave.	Long Beach, CA 90810	310-830-6000	310-830-0646
Swire Magnetics	6701-I Northpark Blvd.	Charlotte, NC 28216	704-597-7145	704-597-7152
Symetrix, Inc.	4211 24th Avenue W.	Seattle, WA 98199	206-282-2555	206-283-5504
Synchrovoice	400 Harrison Ave.	Harrison, NJ 07029	201-483-7416	201-485-0266
Systems Development Group	5744 Industry Lane, Suite J	Frederick, MD 21701	800-221-8975	301-698-4683
Switchcraft, Inc.	5555 N. Elston Ave.	Chicago, IL 60630	312-792-2700	312-792-2129
Tannoy North America	300 Gage Ave. - Unit #1	Kitchener, Ontario N2M 2C8 CANADA	519-745-1158	519-745-2364
Tape Automation Ltd.	Unit 8, Haslemere Ind. Est. The Pinnacles, Harlow	Essex, CM19 5SY	(44) 0279 635300	(44) 0279 411573
Tapemaker	48 Urban Ave.	Westbury, NY 11590	516-333-2700	516-333-0643
Tapematic USA	5422 Carrier Drive, Suite 300	Orlando, FL 32819	407-354-1310	407-363-7699
Tapematic SPA	P.O. Box 441	Caledon, Ontario, L0N 1C0 CANADA	519-927-3401	519-927-3439
TASCAM/TEAC Professional Div.	7733 Telegraph Road	Montebello, CA 90640	213-726-0303	213-727-7635
T.C. Electronic c/o Virtual Designs	717 Lakefield Road, Suite C	Westlake Village, CA 91361	805-373-1828	805-379-2648
TDK Electronics Corp.	12 Harbor Park Drive	Port Washington, NY 11050	516-625-0100	516-625-0171

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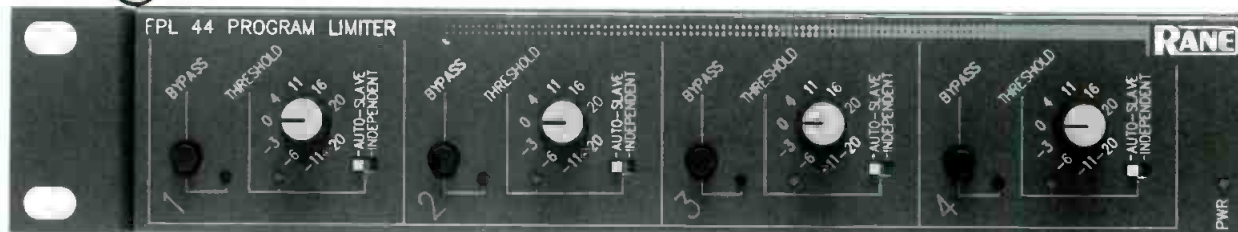
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Tech 21	1600 Broadway	New York, NY 10019-7413	212-315-1116	212-315-0825
Technical Audio Devices	2265 E. 220th St.	Long Beach, CA 90810	310-952-2415	310-952-2941
Techron, Division of Crown Intl.	1718 W. Mishawaka Road	Elkhart, IN 46517	219-294-8300	219-294-8329
Telex Communications	9600 Aldrich Avenue S.	Minneapolis, MN 55420	612-884-4051	612-884-0043
THAT Corporation	15 Strathmore Rd	Natick, MA 01760	508-653-6335	508-653-5334
3M Company	3M Center 223-5N-01	St. Paul, MN 55144	612-733-3888	612-736-1246
360 Systems	18740 Oxnard St. #302	Tarzana, CA 91356	818-342-3127	818-342-4372
TimeLine Vista, Inc.	2401 Dogwood Way	Vista, CA 92803	619-727-3300	619-727-3620
TOA Electronics	601 Gateway Blvd. #300	S. San Francisco, CA 94080	415-588-2538	415-588-3349
Total Audio Concepts	Unit 17 Bar Lane Industrial Park	Basford Nottingham NG6 OHU U.K.	(0) 602-783306	(0) 602-785112
Trident Audio USA	2720 Monterey St., Suite 403	Torrance, CA 90503	310-533-8900	310-533-7072
Tube Tech	1600 Broadway	New York, NY 10019	212-586-5989	212-489-4936
Trouper Industries, Ltd.	17800 South Main St., Ste. 116	Gardena, CA 90248	310-327-5857	310-516-1829
Turbosound/Div. of AKG Acoustics	1525 Alvarado Street	San Leandro, CA 94577	510-351-3500	510-351-0500
Turtle Beach Systems	P.O. Box 5074	York, PA 17404	717-843-6916	717-854-8319
Twelve Tone Systems	165 Bedford Street	Burlington, MA 01803	617-273-4437	617-273-1494
UltraAnalog	47747 Warm Springs Blvd.	Fremont, CA 94539	510-657-2227	510-657-4225
21st Century Limited	2002 N. Beachwood Drive	Hollywood, CA 90068	213-465-2002	213-463-1209
UREI	8500 Balboa Blvd.	Northridge, CA 91329	818-893-8411	818-893-3639
U.S. Audio	100 Boxart St.	Rochester, NY 14612	716-663-8820	716-865-8930
Valley Audio Products	9020 West 51st Street	Merriam, KS 66203	800-800-4345	913-432-9412
Vacuum Tube Logic of America	4774 Murietta St., #9/10	Chino, CA 91710	714-627-5944	714-627-6988
Valentino, Inc.	151 W. 46th St.	New York, NY 10036	212-869-5210	212-869-6259
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Audio Test and Measurement: Signal Levels

By M. Raymond Jason

The wheels of the professional audio industry turn on measurements: They guide product development, are professed enthusiastically by advertisers and serve to justify purchase decisions. And, they are the means by which we know whether our equipment is working.

As indispensable as they are, audio measurements tend to be subtle, exacting and occasionally controversial. As our equipment gets better, approaching in some cases the limits of perceptual perfection, meaningful measurement becomes more elusive. This is certainly the case in subjective testing, but is increasingly true in so-called "objective testing." Indeed, with the introduction of perceptual coding algorithms, such as PASC for Digital Compact Cassettes and ATRAC for Mini Disc, the gray area at the border between "subjective" and "objective" testing has widened enormously.

For audio measurements mundane or esoteric, the key to validity is proper application of certain fundamentals. Most fundamental of all, and therefore crucial to virtually every sort of test, is measurement of audio level.

AMPLITUDE

Audio information, whether it's in air, wire or fiber, whether it's literal (analog) or coded (digital), takes form in the amplitude and time domains. All units and scales useful in objectively quantifying audio are incarnations of these basic dimensions.

Different media require different units for expressing amplitude. The level-setting tone on your multitrack alignment tape, for example, is probably specified as 250 nWb/m² (nanowebers per square meter; sometimes m² is abbreviated to m). This is a magnetic fluxivity level, a measure of magnetic energy. There is no practical way to check its accuracy in the studio. Once

you've set up an ATR with a reference tape, further tape-based measurements use decibels.

The "zero" operating level in your analog consoles is an electrical sine wave, probably at +4dBu. This is also a decibel measurement relative to a standard energy level, but in the electrical case, measurements are easy; an ac rms voltmeter lets you calibrate the 0VU level to 1.2277V.

The name for energy in air is pressure; it is measured in units of pascals. You may not have run into pascals, because, again, practical measurements employ decibels relative to a standard. For sound, 0dB SPL (the threshold of hearing) equals 20 micropascals.

It's clear from the preceding overview that, although different units are required to measure amplitude of signal energy in different media, in virtually all cases practical measurements employ an appropriate standard level and then drop the units in favor of decibels.

DECIBELS

This presents a couple of salient questions: What exactly are decibels, and why are they the preferred method for audio measurement? Without a practical command of the answers, valid measurement becomes unlikely.

A decibel measurement is a single, dimensionless number that describes the distance between two signal levels according to a simple formula:

$$\text{dB} = 10 \log_{10} \left[\frac{\text{Power}_1}{\text{Power}_2} \right] = 20 \log_{10} \left[\frac{\text{Energy}_1}{\text{Energy}_2} \right]$$

This formula was created, and is useful, precisely because of its relationship to human perception.

Let's examine the decibel formula. The signal levels in question are divided, forming a ratio. This means that the level difference between one and two signal-level units produces the same decibel measurement as does the difference between 10 and 20 units or between one million and two million units. Many aspects of human per-

ception, including hearing, approximate a proportional, as opposed to a linear, response. This is why the ratio in the decibel formula makes more sense than would a subtraction, such as energy₁-energy₂.

**As indispensable
as they are, audio
measurements tend
to be subtle,
exacting and
occasionally
controversial.**

Then, this ratio is subjected to the logarithmic function and finally scaled to create the decibel number. Recall that the logarithmic function simply produces an exponent; specifically, the exponent that, if used with the function's base (the base is always 10 for decibel calculations), would re-create the function's argument.

M. Raymond Jason is an electronics engineer, Engineering Services Department, Audio Engineering Division, National Public Radio, Washington, DC.

factor of 20, here derived for P = power in watts, V = rms voltage and R = resistance in ohms:

dB=

$$10 \log \left[\frac{P_1}{P_2} \right] =$$

$$10 \log \left[\frac{V_1^2/R}{V_2^2/R} \right] =$$

$$10 \log \left[\frac{V_1}{V_2} \right]^2 =$$

$$20 \log \left[\frac{V_1}{V_2} \right]$$

where the second step uses Ohm's law, and the final step makes use of the identity $\log ab = b \log a$.

A useful property of logarithms is that enormous linear distances translate to manageable logarithmic distances, making audio math less tedious. The base-10 ("common") logarithm of the number one million, for example, is 6 (that is, $\log_{10} 1,000,000 = 6$, because $10^6 = 1,000,000$); a million-to-one pressure difference equals 120dB ($20 \log_{10} (10^6/1) = 120$).

Another useful logarithmic property is that equal linear proportions translate into equal decibel increments. So, not only do logarithms compress the range of audio level measurements, but they let us describe equal loudness changes with equal numbers of decibels. Ten decibels roughly equals a perceived doubling of loudness, whether from 30dB to 40dB or from 80dB to 90dB. Convenient.

Being dimensionless, decibels acquire physical meaning only by attaching a reference, which brings us back to the real world, and, unfortunately, to the end of this column. ■



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MASTERING THE DIGITAL DOMAIN

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Digital Domain

Bigger Business

By Rick Schwartz

Computers sales are no longer a niche market. This year for the first time the sales of personal computers will match those of videocassette recorders. We need to pause for a moment and consider what effect this will have on the audio industry. To the media giants planning the future of entertainment, we are not engineers or producers, but part of a team of content creators. We will provide the sound that goes along with motion pictures, high-definition television, interactive CDs and other forms of new media that are just around the corner.

CORPORATE CURIOSITY

But how close is all of this really? Close enough to where almost 800 people recently paid \$995 each for a

look into the multimedia crystal ball. This high-tech seance was called Digital World. Celebrating its third year, the eclectic event includes conferences, workshops and exhibits. More significant than the strong support from manufacturers and the media was a healthy interest from corporate America, including AT&T, CableLabs, DuPont, Eastman Kodak, Hanna-Barbera, Hallmark Cards, J.C. Penney, Leo Burnett Advertising, Paramount Pictures, Playboy Enterprises, MTV, Sega, Sony Music, Tandy and Time-Life Books. I've included this somewhat lengthy list for an important reason. It gives some insight on the effect that new technologies may have on advertising, communications, media, retail and entertainment in the '90s.

ELECTRONIC CONVERGENCE

A central theme of the 3-day conference was the convergence of content providers, or the erasure of bound-

aries between four isolated industries: entertainment (including publishing and the arts), the communications industries (cellular, satellite and cable), consumer electronics and the computer industries.

But what does this suggest? It means, don't be surprised to find the cable company offering phone services and the phone company offering pay-per-view movies. It means, expect your next cable box to contain a phone jack and a hook-up for a personal computer. It even means the next personal organizer you buy will hook up to your TV set and may incorporate cellular phone technology, high-quality music playback, handwriting recognition and more.

THE ZERO BILLION DOLLAR INDUSTRY

Because multimedia has been called "a zero billion dollar industry," I was surprised to find that there are more than 30,000 corporate sites with in-

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house video production facilities. In fact, the corporate video market represents 35% of a \$12 billion industry. Interest in multimedia is not waning. Attendance for the conference was up almost 60% over the previous year. As a result, Seybold Seminars is moving from the Beverly Hilton to the L.A. Convention Center for its '94 Digital World Conference. This is quite a contrast from the rapid rate of growth the audio industry is not now experiencing.

HOT TOPICS

Some of the more interesting seminars focused on interactive television and location-based entertainment, which includes virtual reality attractions for theme parks. Interactive TV has incredible potential but also some steep hurdles to jump. Unlike other technology conferences, which consist primarily of "suits" and "nerds," Digital World included the creative

side with artist rap sessions, panel discussions on intellectual property and performance art demonstrations.

FIBER IN THE HOOD

Even though the present cable network was designed to deliver video, it is capable of transmitting large amounts of digital data at very high speeds. Although it has a current limit of 77 analog video channels, up to 600 channels can be supported using digital compression. The cable industry is now working to come up with a standardized digital transmission system to make this possible. However, don't expect to see fiber-optic lines in your home anytime soon. Bringing fiber to the home is not economical, so the cable companies plan to bring fiber into the neighborhood, with coax feeds to each home.

QUICKTIME MATURES

Although QuickTime was just re-

leased in January, according to Apple, more than 200 applications now ship with QuickTime support. QuickTime demos have come a long way. Those tiny little grainy movies are now full-screen 30fps color. Contrary to popular belief, QuickTime has no screen size, frame rate or audio limitations. Supporting the rumor that multimedia is more fun to make than it is to eat, the Apple-sponsored QuickTime Workshop was a big hit.

But what does all of this have to do with the audio industry? Good question. With more than 600 cable channels, interactive television and portable multimedia players designed for the masses, someone will have to create and mix a lot of audio for all of the new titles that will be needed. Sign me up. ■

Rick Schwartz is a contributing editor to R•E•P and director of The Post Complex in Studio City, CA (formerly Music Animals). He can be reached via CompuServe at 70672,1377.

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Another Demise

By Tim Sadler

Often, an online forum can get information to the faithful even before it is bonafide news. Unfortunately, the rumors are often painful, especially if true, whether it's about a magazine closing or a major audio manufacturer. But, forewarned is forearmed.

The single biggest theme at the SPARS digital workstation shootout was that there were too many competitors. For many the news about NED was unwelcome, but those tuned in to the R•E•P forum were able to share their fears and their regrets with other users worldwide. Here is how the early returns looked as the bad news spread in July:

To: All

To everybody who might care, I found this note posted in the strictly audio section of the Broadcast Professionals Forum. I don't know for sure that this is true, but it concerns all of us — some much more than others.

The note says: "As you may or may not know, New England Digital, inventor of the Synclavier, has ceased to function as a company. It is said that the company has had monetary problems for some time. Rumor: Fostex is looking to obtain some of the software ideas under development at NED at the closing. In New York, an owners meeting is being organized tomorrow night (Wednesday, July 8, 1992) in order to establish a game plan for immediate problems and longer term plans. California users are apparently also organizing to exchange information and formulate a service plan. Any inquires with regard to the owners meeting in NY should fax requests for information to Mike Thorne at 212-989-4764.

— Ed Evans

From: Jeff Pennington 72557,3430
To: R•E•P/Live Sound! Magazine 75300,3141

Hmmm. I don't know any details at all, but I couldn't help but wonder if the high-tech R&D costs, for such products as the Syclavier, increased the

cost of the product so much that it all gets under-mined by the handful of "me, too" companies that find ways to sell it cheaper, once the technology is out of the bag.

— Jeff

From: Craig O'Donnell/ZiffNet 72511,240

To: Jeff Pennington 72557,3430

Jeff, nope, NED committed to making one-of-a-kind, "dedicated systems." You can't fight Digidesign offering almost the same thing based on a general purpose computer. The example is inexact but it'll do.

— Craig

From: R•E•P/Live Sound! Magazine 75300,3141

To: All

In three days of nothing but talking to NED owners, we couldn't find anyone who was trying to make money with their device and couldn't. The problem is that leasing or whatever method makes the NED possible generally means you are lashed to the screen for "X" months until it's paid off.

I personally was an eyelash away from a \$60K annual, 5-year, AV show contact in 1986, which was based on leasing a Synclavier to do the work. I often (usually) feel I'm better off for not sweating through those monthly payments. The real deal is that there are more workstation systems in each price bracket than potential buyers. So we can all count on this: NED won't be the last against the wall.

— Anthony McLean

From: Craig O'Donnell/ZiffNet 72511,240

To: R•E•P/Live Sound! Magazine 75300,3141

There's a business issue here (that has nothing to do with whether customers of NED are making money with their box). It's that music industry markets are "thin" and companies are woefully undercapitalized. What else do you think accounts for the "merger mania" from 1988 to 1991?

— Craig

From: John McDaniel 71022,2617

To: Craig O'Donnell/ZiffNet 72511,240

Yes, it is a business issue, which also includes some inability on the part of NED to see far enough ahead (admittedly something difficult, if not impossible, to do amidst today's rapid tech-

nological advances).

As a company, NED always seemed a bit behind in some aspect of its product: 1) NED was late to get on the MIDI bandwagon with a "MIDI is for wimps attitude." 2) It was late to get on the rising standards for user interfaces, and 3) NED was late to realize the need/market for desktop digital audio. (A client of mine begged Brad Naples for years to come out with a stripped-down, affordable version of what was then called the "D-to-D" [Direct-To-Disk] to complement his Synclavier in his private studio. What happened? Three or four years later Digidesign happened, that's what. He now owns their system.)

On the other hand, NED had an incredible product that led the technology, and they had first-class service. Having just two micro-niche products killed them.

— John McDaniel

From: Robin Coxe-Yeldham 70621,2252

To: John McDaniel 71022,2617

Inability on the part of NED to see far enough ahead existed and was perceived by some as an attitude problem. Tacking a recording system onto a piano keyboard, however well-crafted and powerful inside (I do think that the lovely term "file management" first crossed over into audio in reference to Synclav file organization) was not the smartest way to bring recording engineers into D-to-D land and expand their market. It took NED far too long to get off the "it's ours, therefore it's the only approach that's viable" soapbox.

The system has been a dinosaur for the last two years. I have similar feelings about SSL's Total Recall computer. Don't get me wrong; we need big powerful systems that operate at the leading edge, but the ones that don't continue to define that edge are going to have trouble. That nasty "vision" thing...

This was really just the tip of the iceberg. The coming months should bring prolific discussion as NED users everywhere grapple with how to support their systems. Unfortunately, with the demise of R•E•P, we won't be able to keep you up to date through the magazine. But, if you *were* on CompuServe... ■

Echo From the Heartland

By Richard Trump

The handshake was routine, the greeting from my client and friend was the usual: "How's it going, Dick?" My response, "Couldn't be better!" was what he expected. Then I paused, checked that he had a few minutes before his session, and began to speak my mind.

There's never enough time to explain how things are really going, but he asked and I felt like giving it a try. To say that this year has been interesting is a huge understatement. I'm reminded of the time an engineer remarked to me in a less-than-profound moment, "Life is like a VU meter. It has its ups and downs."

On a personal level, the downs this year have been downright scary, in fact. An absolute drought in my business caused such a cashflow shortage that we stretched our suppliers' patience well beyond the understanding point. An employee resignation (which I couldn't afford to replace) caused me to take up the soldering iron and the salesman's hat again.

Our industry has proved more susceptible to the troubling state of the economy than we would like to admit. We have lost some fine studios, suppliers and manufacturers, some to mergers and acquisitions — but a few have disappeared altogether. Company reps have been eliminated, cut back or merged with territories too large to cover.

But, thankfully, the ups this year have been gratifying and sometimes surprising. My operation in Des Moines has picked up some unexpected clients, helping us at the bottom line. We have received awards and media attention that my family felt was long overdue. Personally, I've had some added recognition for my work as a computer programmer.

Most of all, my year as president of SPARS has been especially rewarding. Not only have I had a group of understanding friends in whom I could confide and with whom I could consult, but the organization has grown in size

and strength during a period that has challenged the best of us.

This year's SPARS Digital Audio Workstation Conference in Los Angeles was acclaimed as the best ever. Nearly 200 participants were given demonstrations and hands-on experience of the widest spectrum of products available in this highly competitive field. Manufacturers and attendees left with a distinct sense of accomplishment and new understanding. Honest and direct communication — that's what SPARS is all about.

At the beginning of the year, SPARS sponsored a business conference at UCLA. War stories and the foibles of operating a recording service punctuated strong advice from the veterans and industry leaders who spoke at the 2-day gathering. Personally, I was at the absolute depth of my struggles for the year, but I came back with renewed strength and optimism. The wisdom and knowledge that was passed on during this conference (both onstage and at the dinner table) will help me and many others for years to come.

Decentralization and advanced forms of communication have created a national network that is the new audio community.

When my facility joined SPARS in 1983, we were undoubtedly one of the smallest studio operations to display the SPARS membership certificate. My reasons for joining SPARS were several, but I'd felt for a long time that the industry (and I) needed an organization that encouraged studio owners to talk to each other, to share experiences. The need to communicate with each other has become more important than ever.

I'm happy to say that this past year has seen SPARS grow internationally. A strong contingent of new members from Montreal strengthens our presence in Canada. And we've had new members join us from as far away as

Spain and Southeast Asia. On the domestic front, the New York and Northeast Regional chapters have been active under the leadership of Dave Teig. Monthly meetings are well-attended and the "studios only" meetings provide a forum for the open discussion that is one of the most important functions of SPARS.

I should mention that as I was working on this column I was asked by a major client to recommend a studio in Portland, OR. I did so, but unfortunately, we have no SPARS members in that city, and none in Omaha, Kansas City or St. Louis, all larger than Des Moines and in my own backyard. I know that each of these cities has fine recording facilities. My wish is that I could make recommendations of SPARS members for any state in the union.

We have a membership that represents the diverse nature and broad geographical boundaries of our business. In its 13-year history, SPARS has evolved from an organization composed of a core group of major studio owners to one that represents a true cross-section of the industry as it exists today. Decentralization and advanced forms of communication have created a national network that is the new audio community.

The bottom line for my year is what past president Dave Porter calls "the pride of ownership." This was one of the greatest rewards for my business and we've found that SPARS is at a record level of growth and effectiveness. We have accomplished much in the past year and stand ready to serve the recording industry as it continues to evolve.

Through our nationwide gatherings and conferences we've proved how valuable good communication can be. As I emphasized at the beginning of my term as president, I encourage those of you in the outer reaches of the heartland to join together with the major urban centers to become a greater voice in our organization. You need us — but, more important, we need you.

For information about SPARS, contact Shirley Kaye, executive director, at 1-800-771-7727. ■

The Society of Professional Audio Recording Services is the industry's best source of business information. For details on activities or membership, contact SPARS at 4300 10th Ave. N., Lake Worth, FL 33461; 407-641-6648; fax 407-642-8263.

Richard Trump was the 1991-92 president of SPARS and president of Triad Productions, Des Moines, IA.

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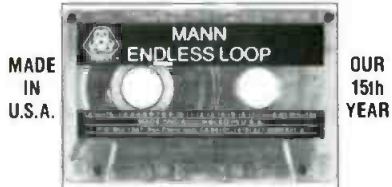
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The 4200 Series. Designed For The Control Room, Not The Living Room.

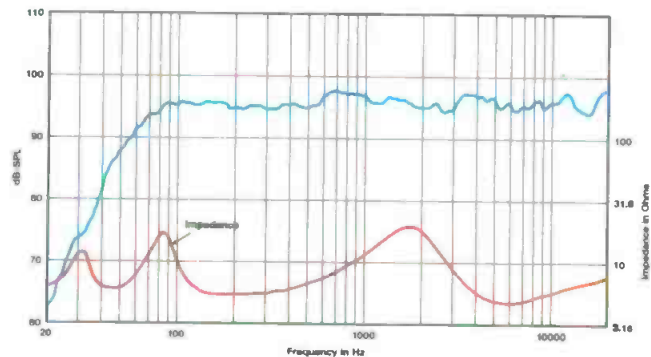
Today's recording studio has evolved into a multi-function facility which simultaneously addresses the specialized needs of music recording, film and video post, and radio production. In this environment, where the most critical listening often occurs in the final mix, close proximity monitors are often more important than the mains. The problem: most console top monitors, unfortunately, were designed for the living room not the control room. Until now.

With the 4200 Series we're taking our stand from where you sit: right where you work at the console. Designed, engineered and tested from this position, the 4200 Series is the first console mount monitor created specifically for the professional recording environment.

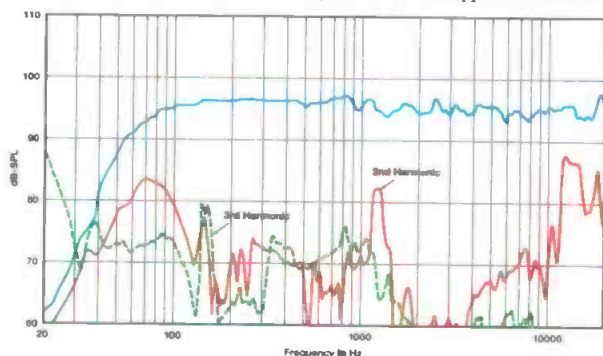
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4200 Series: console top monitors designed in the studio, for the studio, with sonic performance rivaling much more expensive monitors. 4200 Series: the shape, and sound, of things to come. Available at your local authorized JBL Professional dealer.



Frequency Response (Model 4206): 96 dB at 1 m, typical console listening levels



Distortion vs. Frequency (Model 4208) 96 dB at 1 m, typical console listening levels (distortion raised 20 dB)



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